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Functional Requirements Specification

Report

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Executive Summary

In late January 1997, the Department of Health and Family Services (DH&FS) General Practice Branch (GPB) engaged the IBM Consulting Group to conduct a project to deliver an appropriate functional requirements specification and supporting technical framework for Clinical and Administrative General Practice Computer Systems (GPCS) that will ultimately lead to widespread adoption and use by practitioners, and to investigate and report a broad range of issues surrounding the development, utility, adoption and effective use of the GPCS.

The broad objectives of this consultancy are documented in the *Project Charter*, which defines the key project management elements for this consultancy. The Functional Requirements Specification Report follows the GPCS Scope Definition and Stakeholder Consultation Report delivered in June 1997.

The purpose of this Report is to deliver the detailed functional specification of the GPCS. In addition, this Report consolidates the information gathered from the stakeholder consultation conducted during Phases Two and Three of this consultancy, and presents the analysis of key findings from the Joint Application Design (JAD) workshops on functionality required for the GPCS and issues impacting the successful delivery of this functionality and ultimate adoption by practitioners.

Apart from the detailed functional requirements specification (*Appendix C*), there are a number of significant aspects of the GPCS covered in this Report:

- There are a number of major interoperation principles and attributes of the GPCS required from the user perspective to enable both efficiency and productivity benefits, in addition to improved system availability, reliability and security to be realised both at an individual user and practice level.

- From extensive global research and stakeholder consultation conducted to date, the IBM Consulting Group has identified seven critical standards required to support the development and implementation of the GPCS from a functional perspective, and to enable significant benefits to be achieved in quality of patient care, practitioner effectiveness and practice efficiency. These standards form the recommended *Standards Framework for the GPCS.*

- During the course of this consultancy, IBM Consulting Group has identified a number of demographic data elements that represent a minimum demographic data set required to ensure a base level of interoperability between GPCS applications / functional components. The details of this data set need to be further defined, possibly extended further in scope and agreed by the relevant stakeholders. *Appendix D* details the recommended scope of a *DRAFT Primary Care Demographic Minimum Data Set*.

- There are a number of significant privacy and legal considerations surrounding the electronic health record that will have an impact on the GPCS.

Preface to this Report

The purpose of this Report is to deliver the detailed functional specification of the GPCS. In addition, this Report consolidates the information gathered from the stakeholder consultation conducted during Phases Two and Three of this consultancy, and presents the analysis of key findings from the Joint Application Design (JAD) workshops on functionality required for the GPCS and issues impacting the successful delivery of this functionality and ultimate adoption by practitioners.

It should be noted that the functional specification has been produced with a high level of practitioner input to, as accurately as possible, reflect the functional requirements of General Practice. Practitioner involvement in the JAD sessions reflected a broad range of computer literacy, including experienced, novice and non-users, and a reasonable gender balance and representation of specific user groups such as rural practitioners, locums and practice managers.

The intended audience of this Report is the software industry which will ultimately develop GPCS products. This Report should be read in conjunction with the following consultancy reports:

1. ***Technical Framework and Architecture Report* - which describes the high level technical architecture and standards for the GPCS.**

2. ***GPCS Scope Definition and Stakeholder Consultation Report* - which provides the overall scope of the GPCS, analysis of issues from stakeholder consultation and context for the Functional Specification Report.**

3. ***Final Report* - which provides the strategic context and direction, consolidates the research and stakeholder consultation findings, and presents the overall recommendations and next steps.**

This Report has the following sections:

Sections 1.0 and 2.0 provide the objectives and context for this Report.

Section 3.0 outlines the process adopted in the conduct of the JAD workshops, follow-up consultation and production and review of documentation.

Section 4.0 presents the key findings and preliminary conclusions from the analysis of information gathered from the JAD workshops.

Sec*tion 5.0* details the GPCS functional architecture / framework and major applications / functional components.

Sections 6.0 describes the major functional interoperation principles and requirements with functional operation scenarios to illustrate the intended high level of seamless interoperation required of the GPCS components.

Section 7.0 details a Standards Framework for the GPCS which describes the standards required to support the development and implementation of the GPCS. A recommended DRAFT primary care minimum demographic data set is presented in *Appendix D* of this Report.

Section 8.0 provides an overview of the significant privacy and legal considerations surrounding the electronic health record.

Section 9.0 details the most significant general requirements for the GPCS covering electronic health record architecture, general system requirements, security / authorisation, user interface, system performance and reliability, reporting, practitioner mobility, practice accounting and electronic communications.

Section 10.0 details the major constraints identified in the detailed functional specification that impact the timely and successful development and delivery of GPCS functionality, implementation and effective use of the GPCS.

Section 11.0 presents the functional scope of, and rationale for, GPCS releases based on the relative ranking / priority of the detailed function points / requirements and other criteria.

Section 12.0 provides an overview of the functional specification which is presented in *Appendix C* of this Report.

Finally *Section 13.0* outlines the major implications of the GPCS functional requirements and the recommended next steps.

The authors of this Report wish to acknowledge the valuable contribution of the GP Expert Panel and JAD workshop participants in the development of the functional specification and the quality review provided by the Project Steering Committee and Reference Advisory Board members. *Appendix A* provides a list of all workshop participants and key contributors. The IBM Consulting Group consultants that contributed to this Report are detailed in *Appendix B.*

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Section 1.0 Scope and Objectives of the Report

The purpose of this Report is to provide detailed functional requirements for the full GPCS based on the scope recommended in the previous GPCS Scope Definition and Stakeholder Consultation Report..

The specific objectives of this Report are to:

- Provide a detailed specification of the functional requirements based on the functional architecture developed previously.
- Present the key findings from analysis of the data collected from the Joint Application Design (JAD) Workshops which were conducted to develop and review initial draft detailed functional requirements, and to identify major issues that may impact on the successful delivery of these requirements.
- Present, in detail, the functional architecture for the GPCS, first outlined in the GPCS Scope Definition and Stakeholder Consultation Report, to provide the framework for specification of detailed functional requirements.
- Detail the major functional interoperation principles and the most significant general requirements required for effective operation of the GPCS
- Provide an overview of the major constraints impacting the timely and successful delivery of GPCS functionality, implementation and effective operation of the GPCS by practitioners.
- Present the recommended functional scope and rationale for initial and subsequent release of GPCS applications functions.
- Provide an overview of the major implications of the GPCS functional requirements and recommended next steps.

Section 2.0 Background and Context

Since 1992 the Government and the medical profession have been co-operatively studying the introduction of Information Technology into General Practice. The Information Management Steering group was established in 1993 and recommended that a common business specification statement for GP systems be produced.

In September 1995, the IBM Consulting Group was commissioned by the Department of Health and Family Services (DH&FS) Pharmaceutical Benefits Branch (PBB) to investigate the optimal use of Information Technology in the support of Electronic Prescribing and the provision of electronic medicines information.

While undertaking this engagement, it was recognised that rather than treat Electronic Prescribing in isolation, it should be considered in the context of a Clinical Workbench. Subsequently, IBM Consulting Group recommended in the Final Report presented to the PBB in March 1996, that a Core Clinical Workbench be introduced to 50% of Australian office-based practices within approximately two years.

The scope of the system to be specified by this consultancy has been broadened to encompass the provision of administrative support in the addition to providing clinical support for General Practitioners as recommended in the previous report.

The IBM Consulting Group understands the Clinical & Administrative General Practice Computer System (GPCS) to be a set of application functions or closely linked / integrated software applications (including clinical and administrative) that combine a high level of functionality and utility with a user-friendly and consistent user-interface to support high quality and efficient clinical practice. It is further recognised that seamless access to a range of information based services are highly desirable features and that the scope and feasibility of including a broad range of diverse functions as part of the GPCS needs to be properly assessed.

To permit the benefits identified in the IBM Consulting Group's Final Report to be obtained as soon as possible, it was recommended that the functional scope of an implementable Core GPCS be developed promptly.

The Functional Requirements Specification (*Appendix C*) provides a set of user requirements within a functional framework that covers the entire scope of the GPCS. This framework, which was initially developed during Phase Two of this consultancy (refer to *GPCS Scope Definition and Stakeholder Consultation Report*), and further refined during Phase Three, is intended to ensure that the functional specification appropriately addresses the stakeholder needs and expectations identified during the Customer Value Management workshops and other consultative activities (interviews, Issue Focus Group and JAD workshop sessions).

Section 3.0 Consulting Approach and Methodology

3.1 Overview of the Consultancy Process

During Phase Two of this consultancy, a Functional Framework was developed to enable the broad scope and depth of functionality required by practitioners (identified through the stakeholder consultation) to be effectively grounded.

The approach used to develop the Functional Requirements Specification and produce this Report, which is the major deliverable of Phase Three of this consultancy, involved several major streams of activity:

a. Background global research on doctor's desktop offerings, relevant projects and useful existing and emerging standards.

This activity was initiated during Phase Two and continued through Phase Three of the consultancy to identify relevant global (and local) initiatives and current projects involving application and standards development and implementation. This Report considers the most significant research findings impacting the functional specification.

Documentation of the major findings from this research is provided in the *GPCS Final Report* (the major deliverable of Phase Five of this consultancy).

b. Refinement of the GPCS Functional Framework.

The functional framework, which was developed in Phase Two of this consultancy to underpin the subsequent development of detailed function points / requirements, was further refined to accommodate the major findings from stakeholder consultation and research conducted to date. (Refer to *Section 5.0* of this Report).

c. Development of baseline ("pre-draft") functional requirements with GP Expert Panel

A set of baseline requirements was developed for each of the application / functional areas described in the functional framework from the outcomes of the stakeholder consultation and research conducted to date. The process of generation of these requirements involved considerable input from the GP Expert Panel, which provided overall guidance and critical review of all material produced.

d. Refinement of functional requirements through conduct of JAD workshops and follow-up consultation.

This step involved the conduct of eight workshops to investigate detailed requirements in the most important functional areas of the GPCS. During Phase Three, follow-up consultation with workshop participants and other individuals identified through this process was conducted to clarify or obtain information on specific issues.

The scope of the JAD workshops and follow-up consultation conducted is detailed in *Table 3.1* following.

Table 3.1: JAD Workshop Scope

Workshop	Functional Area(s) Covered
JAD-1 (Newcastle)	External Links to / from the GPCS; Diagnostic Test Management
JAD-2 (Hobart)	Electronic Prescribing and Medication Management
JAD-3 (Adelaide)	Electronic Health Record and Coding Management
JAD-4 (Melbourne)	Decision Support, Patient Management Planning and Delivery
JAD-5 (Sydney)	Document / Forms Management, Medical Information Management, Patient Education Management, Clinical Coding
JAD-6 (Perth)	Practice Administration - Billing, Financial Management, Practice Performance Management
JAD-7 (Sydney)	Practice Scheduling - Patient Appointment Scheduling and Management, Preventive Medicine Scheduling and Patient Recall Management
JAD-8 (Townsville)	General Requirements - Patient Selection and Task Management, Clinical Statistics and Management Reporting

e. Analysis of workshop findings.

A comprehensive analysis of findings from the JAD workshop sessions was conducted and documented in this Report.

f. Normalisation and priority ranking of the functional requirements.

The objective of this activity was to ensure coherency and provide consistency with needs / expectations of practitioners identified through Customer Value Management Workshops in Phase Two. In addition, individual function points were ranked based on an assessment of need in conjunction with the following input:

1. JAD workshop sessions
2. Customer Value Management workshops
3. Quality review by GP Expert Panel
4. Other stakeholder consultation

g. Production of Draft Functional Requirements Specification Report.

h. Analysis of Specification in conjunction with Draft Technical Framework (developed during Phase Four).

The objective of this activity was to ensure that the functional requirements were firmly grounded on an industry best-practice technical architecture and to identify any function points / requirements that could not be supported from a technology perspective.

i. Quality review of the Specification by GP Expert Panel.

Prior to releasing the document to the Project Steering Committee and Reference Advisory Board for review, the Report was subjected to a formal quality review by the GP Expert Panel in order to identify any major outstanding issues, identify and rectify any obvious omissions, inconsistencies or ambiguity, and to ensure clarity and readability.

j. Quality review and Finalisation of the Functional Requirements Specification Report.

This step involved review of the draft Report by the Project Reference Advisory Board and Project Steering Committee, placement of the Report (along with the Technical Framework and Architecture Report) on the consultancy Web Site to enable public review and comment. The total period allowed for review was one month. Following this review period, the Report was finalised, with the final version issued for endorsement by the DH&FS and Project Steering Committee.

Detailed documentation of all JAD workshop sessions conducted during Phase Three of this consultancy will be included as an attachment of the *Final Report*.

3.2 Reference Documentation

The major reference documentation for this Report includes:

- GPCS Scope Definition and Stakeholder Consultation Report [1]
- Technical Framework and Architecture Report [1]
- Stakeholder Consultation Transcripts [1]
- *The Good European Health Record*. CEC DGXiii - C4 Health Telematics (AIM) Project A2014. London: Centre for Health Informatics and Multiprofessional Education, 1994.
- CEN/TC 251. *Electronic Healthcare Record Architecture: Final Draft European Prestandard PT1-011*. Brussels: European Committee for Standardisation.
- National Health Data Committee. *National Health Data Dictionary Version 5.0*. Canberra: Australian Institute of Health and Welfare, 1996.

In addition, GPCS standards references are provided in *Section 7.6* and other specific references are made in footnotes where appropriate.

[1] These documents are provided as *Attachments* to the *Final Report.*

Section 4.0 Analysis of JAD Workshop Findings

4.1 Introduction

This purpose of this section is to present the key findings from the Joint Application Design (JAD) workshops conducted during Phase Three of this consultancy. These findings represent issues identified during the JAD sessions that were seen as being separate to, but having a direct bearing on, the functionality specified and constraints recognised in the Functional Requirements Specification (*Appendix C*).

These findings accurately reflect the views expressed by workshop participants and do not necessarily reflect the views of the consultants.

Detailed documentation of the JAD workshop sessions will be included in *the Stakeholder Consultation Transcripts* (attachment to the *Final Report*).

4.2 Summary of Key Findings and Conclusions

External Connectivity

- E-mail is considered to be vital for practitioners especially in rural areas.
- Links to diagnostic service providers and hospitals are very desirable and would improve the practitioners ability to provide quality patient care.
- Linkages / interfaces to existing legacy systems will need to be supported.
- Reliable and sophisticated interactive links with hospitals are seen as valuable to practitioners in order to achieve a smooth flow of information between all relevant carers, notwithstanding infrastructure issues and the lack of current capability existing in the hospitals.
- The choice of diagnostic service provider (by patient or practitioner) and pharmacist must be preserved and supported by the GPCS.

Privacy, Confidentiality and Data Security

- There was recognition of the need to preserve the privacy and confidentiality of patient information, with the patient ideally having control and awareness of how, and by whom their information is used.
- Secure transmission of patient data was viewed as essential to maintain privacy and confidentiality. This must also cover e-mail between both practitioners and other agencies.

- There was recognition that provision of comprehensive data security in the GPCS that supports the use of electronic signatures and full audit trails of activity on the electronic health record, has medico-legal importance for the practitioner.

- Whereas privacy, confidentiality and security of electronic health records were seen as important, there was also recognition that current paper based medical record systems are also not fully secure.

- Patient held Smartcards or 2-D symbology barcode tokens may be useful technologies to effect links between participants in the health care delivery process. Smartcards are seen as potentially useful to record relevant patient demographic, prescription and other information as the patient retains control of the recorded information until the card is given to an appropriate professional of their choice.

Electronic Health Record

- There was a widely held view that currently available electronic medical record systems are inadequate and that this partly explains the evident low usage of electronic medical systems in Australia (anecdotally put at between 1-2%).

- Practitioners raised the concerns of data ownership, ethical use and misuse of information and the evidentiary weight applied by the judicial system, as important issues that have an impact on maintenance, security, access and use of electronic health records.

- There was recognition of the importance of having the capability to assign a degree of certainty to observations made or conclusions recorded in the electronic health record.

- There were a range of views expressed amongst practitioners regarding the value of recording private thought processes and working notes separate from, but potentially linked to, the patient record for the purpose of creating a ‘doctor only’ and ‘public’ view of the electronic health record where the doctor is handling highly sensitive information which is not intended for disclosure to anyone including the patient.

- Access to, and use of, the patient record other than for the intended ordinary use by the patient’s doctor or practice staff, should be agreed between the doctor and patient and recorded in the electronic health record.

- There is evident confusion in practitioner’s minds regarding the medico-legal consequences of the use or non-use of decision support systems in clinical practice.

Operation and Use of GPCS

- The GPCS must not interfere with the patient-doctor relationship and the doctor’s use of the system must be acceptable to the patient.

- A highly usable, simple to learn and use, GUI based user interface that is consistent across all GPCS applications was seen as crucial by practitioners.

- Quick sub-second system response time and access to information was viewed as essential.

Decision Support

- Provision of full decision support functionality requires the availability of current, complete and relevant clinical medicine and drug information knowledge-bases.

- There is currently little content available in a suitable electronic form to effectively support decision support within the GPCS.

- Effective provision and maintenance of the currency of the large amounts of data needed for both clinical medicine and drug information knowledge-bases requires development of cost-effective maintenance and distribution strategies. Third parties such as industry, Government or the Divisions may have a key role in achieving this goal.

- Many practitioners expressed concern regarding the potentially high 'nuisance value' of poorly designed or overly intrusive decision support systems. The role of the systems was seen as being necessarily advisory and some expressed a desire for multiple levels of decision support, possible configurable to practitioner experience and interest.

- Decision support must be rapid and highly interactive to be useful.

- The clinical ambiguity and 'fuzziness' of General Practice makes the provision of diagnostic decision support difficult.

Forms Management

- There are some significant policy, legislative and flexibility issues that must be resolved before electronic forms management can be simplified and provide major benefits for the practitioner.

- There was wide consensus that forms management was an area of potentially high impact on General Practice.

- Practitioners are keen to be able to produce all required forms on standard sized plain paper (e.g. A4).

Clinical Coding

- There was wide variance in views expressed regarding the importance of clinical coding of patient health related data in effecting quality care delivery. However it was broadly recognised that coding patient data enabled significant benefits to be realised through the use of decision support and collection of comparative data.

- The implementation of the GPCS should aim to make coding optional.

- It is important that the GPCS support the use of multiple coding systems and term sets.

- Coding was seen as potentially a time consuming overhead in the use of the GPCS unless very efficient and easy to use interfaces to coding or term sets were used.

- The use of natural language term sets to drive coding of patient data was seen as being potentially very useful in the context of the GPCS but was recognised as still being under development.

Barriers to Adoption

- Practitioners are concerned with the ongoing commercial viability of vendors they may do business with because of problems with quality of continuing support, product upgrades and data conversion between systems.

- Many practitioners expressed concern with the data entry load that may be imposed by some applications and the resulting time penalties for use of a GPCS. Capture of data into an electronic health record needs to be highly efficient.

- The cost and method of funding of a GPCS were consistently raised as issues by practitioners in all JAD sessions. There was agreement that the imbalance between those that paid and those who receive benefits from computerised systems still exists.

- There was a view expressed that investment in the acquisition, maintenance and support of the GPCS should be cost-effective within the financial context of the practice and should contribute to practice profitability.

- There is a real fear amongst some practitioners that Government motivation to impose change is not benevolent.

- Usability and functional depth of the GPCS applications are seen as critical to adoption. GPCS applications should be similar to the standard found in major GUI based commercial financial systems such as MYOB, Intuit QuickBooks and MS-Money accounting packages.

Other

- There was wide agreement of the importance of quality practice performance information which to date has been difficult to obtain.

- There was a major concern expressed by many practitioners regarding their liability for failing to identify where diagnostic investigations had been ordered and the results received and actioned.

- Practitioners agreed that there was substantial difficulty with ensuring that all patients requiring surveillance were in fact adequately followed up and that an automated recall / reminder system would be of considerable value.

- Patient unique identifiers are viewed by many practitioners as being of practical benefit for the current primary care model and will become increasingly important as electronic communications and information interchange between practitioners and other health service providers / agencies is incrementally achieved.

Section 5.0 Functional Architecture for the GPCS

5.1 Introduction

The purpose of this section is to outline a functional architecture for the entire GPCS (covering both core and enhanced components) as described in the GPCS Scope Definition and Stakeholder Consultation Report and to provide a framework for future enhancements of the GPCS.

5.2 Overview of the Functional Framework

A robust functional framework was developed, based on literature research and analysis of findings from the stakeholder consultation conducted during Phase Two of this consultancy, and with the following objectives:

a. To enable detailed functional requirements that address the needs and expectations identified during the stakeholder consultation to be produced.

b. To provide the necessary linkage between the needs and expectations of practitioners and the key applications / functional areas.

The Functional Framework (refer to *Figure 5.1* below) consists of four major application groupings (termed 'Managers'), each of which is made of a number of individual applications / functions, and which are seen as being serviced by a layer of database, forms management, desktop systems management and communications infrastructure.

This framework assumes that the practice user directly interacts with the applications / functions that constitute the four major application groupings. These application groupings, which represent broad logical collections of clinical and administrative applications / functions considered to be important for effective practice operations (as identified through the stakeholder consultation conducted during Phase Two of this consultancy), cover the following functional scope:

1. ***Administrative Managers Group*** **-** these are comprised of:

- **Practice Administration Managers,** which provide core patient registration, selection and task management functionality and comprehensive financial, billing, practice performance and other administrative management functions.

- **Practice Scheduling Managers** which consolidate all major patient, staff and resource scheduling functions of the GPCS and provide comprehensive preventive medicine and patient recall / reminder management functionality.

2. ***Clinical Managers Group*** - these are comprised of:

   - **Pharmaceutical Therapy Managers** which provide a range of applications / functions covering all aspects of the planning, delivery and review of drug treatment. Included are the applications to manage information for doctor and patient, to manage medication history and create the new prescription, along with drug therapy decision support where appropriate.

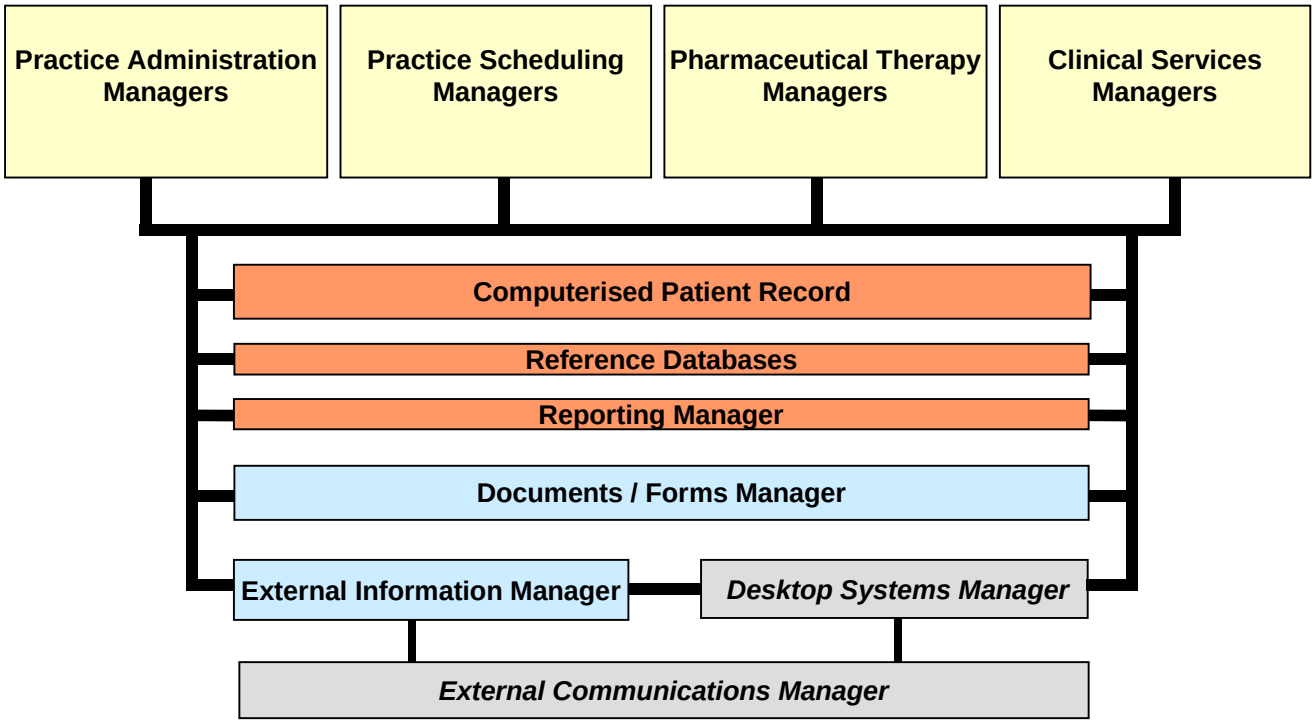
   - **Clinical Services Managers,** which provide a wide range of clinical functionality for the system. Included are all aspects of clinical record data capture and codification, clinical and statistical report management, patient management planning and delivery, in addition to presentation and management of medical and patient information, diagnostic test management and both static and dynamic decision support.

The constitution of the application groupings of this framework have been further refined through development of the detailed requirements, on-going research, GP Expert Panel review and the outcomes from the JAD Sessions conducted during Phase Three of this consultancy.

It should be noted that the term 'Manager' in the GPCS functional framework represents a system application or function that is capable of seamless interoperation and co-operative information interchange with other GPCS system applications / functions in order to carry out its specified function(s).

Section 5.3 following provides the detailed application / functional scope of the GPCS as defined in this framework.

Figure 5.1: GPCS Functional Framework



5.3 Framework Components

This section details the framework components for the full GPCS. The specific objectives and functional description overview of each application / function detailed below is provided as part of the Functional Requirements Specification in *Appendix C*.

5.3.1 Practice Administration Managers

Objectives

The objectives of the Practice Administration Managers are to:

a. Provide practice administration and financial management support for the practice.

b. Enable efficient task management and navigation across all GPCS applications.

c. Enable practice performance to be easily monitored and understood.

Functional Scope

The full scope of the GPCS Practice Administration Managers covers the following functional areas:

- Patient and Organisation Registration
- Patient Selection and Task Management
- Patient Account Management
- Financial Management
- Practice Performance Management
- Supplies / Inventory Management
- Customer Satisfaction Management
- Payroll Administration

5.3.2 Practice Scheduling Managers

Objectives

The objectives of the Practice Scheduling Managers are to:

a. Provide integrated practice scheduling for patients, staff and resources.

b. Enable effective patient recall and preventive medicine management.

Functional Scope

The full scope of the GPCS Practice Scheduling Managers covers the following functional areas:

- Patient Appointment Scheduling and Management
- Preventive Medicine Scheduling & Patient Recall Management
- Resource Management & Staff Rostering

5.3.3 Pharmaceutical Therapy Managers

Objectives

The objectives of the Pharmaceutical Therapy Managers are to:

a. Provide optimal electronic generation of prescriptions.

b. Enable best-practice medication management through provision of accurate and relevant drug information and drug therapy decision support.

c. Support local / practice dispensing of medicines.

Functional Scope

The full scope of the GPCS Pharmaceutical Therapy Managers covers the following functional areas:

- Prescription Generation
- Medication History Management
- Patient Drug Information Generation
- Drug Information Management
- Drug Therapy Decision Support
- Drug Dispensing Management

5.3.4 Clinical Services Managers

Objectives

The objectives of the Clinical Services Managers are to:

a. Enable capture of all patient related health information and comprehensive clinical coding of patient clinical information.

b. Provide functional support for diagnostic test ordering and results reporting, and patient management planning and delivery.

c. Provide medical information and levels of clinical decision support to assist practitioners with patient management and education.

d. Enable comprehensive, standardised clinical statistics and report management across all databases that are maintained by the GPCS.

Functional Scope

The full scope of the GPCS Clinical Services Managers covers the following functional areas:

- Patient Clinical History and Assessment (including Reason for Encounter Capture)
- Decision Support (Static and Dynamic / Event-Driven)
- Clinical Coding Management
- Diagnostic Test Management
- Patient Management Planning and Assessment (Investigation, Counselling, Drug Therapy, Procedures & Referral)
- Clinical Statistics & Report Management
- Medical Information Management (CME, Protocols / Guidelines)
- Patient Education Management

5.3.5 Computerised Patient Record

Objectives

The objectives of the Computerised Patient Record are to:

a. Provide a repository for patient demographic data and all patient related health information required for operation of the GPCS.

b. Provide a repository for all patient related financial information required for operation of the GPCS.

Functional Scope

The full scope of the GPCS Computerised Patient Record covers the following functional areas:

- Electronic Health Record
- Financial Record

5.3.6 Reference Databases

Objectives

The objectives of the Reference Databases are to:

a. Provide the information resources for all cross application information.

b. Enable local look-up and reference of this information by GPCS applications.

Functional Scope

The full scope of the GPCS Reference Databases covers the following functional areas:

- Practice Configuration Database (Staff List, Rooms / Facilities List, Credentials and Accreditation Lists)
- Clinical Coding and Other Code Lists (e.g. ICPC+, ICD10, Drug Codes)
- Diagnostic Services Databases
- Health Services Directory Database
- Organisations & External Providers Database
- Government Sourced Reference Databases (e.g. PBS, MBS, AMH)
- Local Operational Databases (e.g. Practice Formulary)

5.3.7 Reporting Manager

Objectives

The objectives of the Reporting Manager are to:

a. Provide a standardised, flexible, comprehensive report generation tool for the GPCS.

b. Enable report generation with linkage to other non-GPCS applications.

Functional Scope

The full scope of the GPCS Reporting Manager covers the following functional areas:

- Clinical Summary Report Generation
- Ad-hoc & Routine Clinical Management Reporting (Clinical Data Analysis, Clinical Audit, Clinical Research, Public Health, Accreditation and Statutory Reporting)
- Administration / Practice Management Reporting (Internal and External Practice Reporting)
- Linkage with Office Automation Tools

5.3.8 Documents / Forms Manager

Objectives

The objectives of the Documents / Forms Manager are to:

a. Provide a standardised tool for forms generation for the GPCS.

b. Provide standardised document management for the GPCS to enable handling of both electronic and written documents to be optimally managed by the practitioner and practice.

Functional Scope

The full scope of the GPCS Documents / Forms Manager covers the following functional areas:

- Forms Generation
- Document Management

5.3.9 External Information Manager

Objectives

The objectives of the External Information Manager are to:

a. Provide external linkage to other service providers and information sources.

b. Enable transmission and receipt of information between the GPCS and external sources.

c. Manage the receipt and temporary storage of information in a repository separate from the other GPCS databases.

d. Alert the appropriate GPCS applications / functional components when information from external sources has arrived to enable the commitment or discarding of the information to the GPCS databases to be decided through user interaction with the relevant GPCS components.

Functional Scope

The full scope of the GPCS External Information Manager covers the following functional areas:

- Diagnostic Services Communication (Test Orders & Results)
- Financial Information Transfer (HIC and other Health Service Funders)
- Hospital Information Exchange
- Inter-practitioner Communication (Other GPs, Specialists, Divisions of General Practice, Community Health and other Health Care Providers)
- Other External Information Exchange (Patients, Public Health Agencies, State and Federal Health Departments, Pharmacists, Suppliers)

5.3.10 Desktop Systems Manager

Objectives

The objectives of the Desktop Systems Manager are to:

a. Provide GPCS systems configuration, management and maintenance support.

b. Enable software and information currency for the GPCS.

c. Provide GPCS security and authorisation management.

d. Provide support for mobile computing data management.

Functional Scope

The full scope of the GPCS Desktop Systems Manager covers the following functional areas:

- Desktop Systems Set-Up
- Software Currency Maintenance
- External Information Currency Maintenance
- Data Integrity Management
- Desktop Security / Authorisation Management
- Systems Back Up and Maintenance
- Mobile Computing Data Management
- Reference Database Management

5.3.11 External Communications Manager

Objectives

The objectives of the External Communications Manager are to:

a. Provide the technical protocols for network communications and message exchange between external computers and the GPCS.

b. Facilitate encoding / decoding and transmission of information for interchange with external sources.

Functional Scope

The full scope of the GPCS Electronic Communications Manager covers the following areas:

- Communications Message Exchange Protocols
- Network Communications Protocols

5.4 Framework Assumptions

The following assumptions have been made in developing the GPCS Functional Framework:

- The Manager groupings or collections of applications / functional modules are logical groupings only and do not preclude other aggregations of these functions by GPCS developers and vendors.

- There are a set of GPCS infrastructure and common system services that are required to support the application modules irrespective of the number of applications in a given GPCS configuration (i.e. whether a minimal configuration with one application or a configuration with the full suite of GPCS applications).

Section 6.0 Functional Interoperation Principles

6.1 GPCS Interoperation Principles and Requirements

This section of the Report defines the user functional perspective of interoperation in the GPCS, which is to be delivered via the Technical Architecture.

There are a number of major interoperation principles and attributes of the GPCS required from the user perspective to enable both efficiency and productivity benefits, in addition to improved system availability, reliability and security to be realised both at an individual user and practice level. These principles are as follows:

GPCS Functional Interoperation Principles

1. **A Common User Interface for all GPCS applications (consistency of keystroke mapping, screen layouts etc).**
2. **Preservation of patient and disease context as user moves between different screens and areas of the system.**
3. **Easy consistent access to context sensitive help.**
4. **No requirement to enter any data more than once in the system, no matter what the source.**
5. **Essentially seamless transition between the different application modules and industry standard office automation tools.**
6. **Common / consistent approaches to patient and task selection, the addition of free text and the generation of reports throughout system.**
7. **Common capabilities to import and export data in industry standard formats.**
8. **Intelligent presentation of screens and data from legacy / existing systems.**
9. **Decision support that can utilise all information that is resident on the system.**
10. **A common single approach to the authorisation of user access throughout the system.**
11. **Provision of system wide system maintenance and backup facilities.**

It should be noted that underlying these functional interoperation principles, is a set of technical interoperation principles that underpin the requirement for a seamless integration of GPCS applications to be achieved through:

a. A consistent, comprehensive data set / data model which provides a common definition of the data elements that can be interchanged between all GPCS applications.
b. Common, defined inter-application message formats based on industry standard Application Programmer Interfaces (APIs).

c. Current industry interoperability standards that support information exchange such as OLE, CORBA, DICOM, DDE, ODBC, SQL.

More detail on the technical aspects of the GPCS interoperability is provided in the *GPCS Technical Framework and Architecture Report* which is the major deliverable of Phase Four of this consultancy.

6.2 GPCS Functional Operation Scenarios

The following scenarios are intended to demonstrate the intended functional relationship and interaction between the managers that constitute the GPCS Functional Framework and the external linkages that enable information exchange between various service providers and information sources / databases.

Further to this, these scenarios are also intended to provide a basis for development of detailed test cases / test scripts for the purpose of evaluation of key function points of the specification as detailed in *Appendix C*. Each scenario has major function points flagged as an alphabetic character: **[A]-[Z]**

Please note that all patients and doctors, and the opinions expressed by them in these scenarios, are entirely fictitious.

6.2.1 Scenario A: Diagnostic Test Ordering and Clinical Referral

Mrs Complex has just returned for her second visit to the practice after having first been seen a week ago with symptoms very suggestive of a simple ‘dose of the flu’. However she had rung 2 hours ago, to say she was still not better, was feeling a little breathless, and would like to be reviewed. The receptionist had taken the call, checked the days appointments for Dr Luke and informed her that on present indications (based on the number of patients with appointments and the numbers waiting for Dr Luke in the waiting room) that if she took an available appointment for two hours hence she would have a very good chance of being seen within 15 minutes of the appointment time. **[A]** The receptionist also checked on her computer that no-one had booked the computerised lung function evaluator (electronic spirometer) that was used in the practice for two hours hence and booked it for an hour. **[B]** The receptionists also told the computer system that she anticipated at least a 20 minute consultation and the computer produced a list of the patients who may be impacted with contact details so they could be asked to come a little later if they were contactable. **[C]**

On her arrival, the receptionist logged Mrs Complex’s arrival in the computer, and was shown that there was only one person due to be seen before Mrs Complex and concluded it was likely she would indeed get seen within 15 minutes of her appointment. **[D]**

As expected, after waiting about 10 minutes, Dr Luke shows the previous patient out and asks Mrs Complex to come in. As he had been pressed for time on the last encounter, Dr Luke had

only recorded the basic details relating to Mrs Complex at the last visit, and saw when he opened her Electronic Health Record that the record was not flagged as having been initially completed. **[E]** Before addressing the immediate problem, he decided to complete the remainder of the basic clinical and demographic information his computer system used.

Completing the record, where a strong family history of breast cancer was noted, automatically bought up a recommendation that consideration should be given to regular annual mammography, even though Mrs Complex was only in her very early 40's. **[F]** The system also noted that her last PAP Smear had been done and reported quite recently, was normal, and therefore scheduled a recall for two years time for a repeat smear.

After completing and recording a detailed examination Dr Luke was unsure as to quite what was the cause of the breathlessness. He consulted the appropriate diagnostic and investigatory guideline and determined that the basic investigations required included **[G]** :

- A Chest X-Ray
- Basic Haematology and Biochemistry
- Serology for the Atypical Lung Infections
- A Basic Lung Function Evaluation as done in-house by the Practice.

Dr Luke then accessed the appointment availability home page for the local radiology practice and organised a time for Mrs Complex to have her X-Ray. **[I]** He then selected an electronic X-Ray request form for the practice, filled in the specific clinical details and comments he wanted, and produced the completed request along with an envelope having the instructions on how to find the practice and Mrs Complex's name on it and handed them to her for her to check and take away. After this he placed orders for the Haematology, Biochemistry and Serology with his preferred pathology provider, (after having looked up the service details eg. collection details, cost etc) printed instructions for Mrs Complex as to where she should go to have the blood taken for the tests and committed all the information to Electronic Health Record. **[J]**

Dr Luke then asked Mrs Complex to come through to the Lung Function Evaluation Area where he conducted the test, and saw the results captured in graphical and numeric form directly into her Electronic Health Record. **[K]**

Dr Luke then took Mrs Complex back to his consulting room, spent some time explaining to her what the test showed and what he was hoping to discover in the investigations he had ordered. Dr Luke then recorded in the record a summary of their discussion, coded the major previous illnesses and the current episode data, and made an appointment for three days time with clear instructions to return promptly if she felt any worse. **[L]**

Three days later Mrs Complex returns. Dr Luke recalls he has seen the results of the basic investigations and the Chest X-Ray and brings them up on his terminal for review. **[M]** He also notes that a warning is flashing saying the serology is overdue. **[N]** He decides to call the laboratory, finds out that a result is now available, and will be transmitted to his desktop in the next 10 minutes, but that it is normal.

Dr Luke discovers during the consultation that Mrs Complex is no better and decides that the time has come to refer Mrs Complex to a specialist Respiratory Physician. Just before beginning the referral note, Dr Luke consults a diagnostic decision support database to see what the available coded diagnostic and investigatory data suggests by way of a diagnosis.

On the basis of decision support system's suggestion he decides to suggest that the specialist carefully eliminate both recurrent pulmonary emboli and chronic infective lung disease when seeing Mrs Complex. **[O]** Dr Luke then brings up a profile of the four specialist Respiratory Physicians he has used and assesses how happy he has been with the service provide by each of them. **[P]** He notes that only one of the four provides secure e-mailed electronic copies of their reports and decides to use her again. A quick phone call secures an appointment for Mrs Complex early the following week. Dr Luke suggests Mrs Complex comes back to see him two to three days after that and makes an appointment for the follow up.

After getting her consent, Dr Luke then, again using secure e-mail, makes his record available to Dr Hightech and gives Mrs Complex a printed clinical summary for her to check and take along to her appointment. **[Q]**

Late the next week, Dr Luke sees a secure email back from Dr Hightech, saying that Mrs Complex appears to have an atypical lung infection and that she has been commenced on some special antibiotics to attempt to eradicate it.

When Dr Luke sees her again the next day she says she is already feeling a lot better. The success prompts Dr Luke to remember he has not done the billing for Mrs Complex so he creates an invoice for the three encounters that have made up this episode with a breakdown of the refund Mrs Complex can expect from Medicare. **[R]** Mrs Complex happily provides the expected total payment with her credit card which is validated via Dr Luke's computer system. **[S]**

6.2.2 Scenario B: Preventive Recall and Patient Visit

It is the first working Monday of the month and Dr K Track has just reached the surgery to begin work for the week. Before seeing his first patient he goes over to his printer where he picks up the letters which have been automatically generated by his computer system on Sunday night. **[A]** These letters are the reminder letters for all his patients who need to attend the practice in the next month for either disease surveillance, screening or immunisation. He checks and signs each of the letters (approves e-mail reminders for those patients who have requested this service) notes that and then asks his office manager to put the remaining letters in the mail. **[B]**

Two days later Mrs Jones rings the surgery to obtain an appointment for her bi-annual Pap Smear and to bring her young daughter along for her measles vaccination. (The computer had noted the daughters need for the vaccination during that month and offered each an opportunity to come with the other if they wished, with back to back appointments). **[C]** As it happened Mrs Jones's daughter was happy to come along with mum and they arrived together a few minutes before their appointment time. After checking in with the receptionist they were informed that there were two people ahead of them in the queue to see Dr Track and asked would they like to have a quick cup of coffee while waiting. The ladies had agreed Mrs Jones would see the doctor first and so, when their turn came Mrs Jones went in first.

Dr Track immediately opened her clinical record on his system and was reminded that eight years ago Mrs Jones had had a life-threatening episode of asthma and that her asthma status should always be reviewed when she was seen for other reasons. An immediate peak flow measurement was taken using a small peak flow meter connected to Dr Tracks computer, and

the results were, after review, and confirmation by her that her asthma control appeared excellent, was filed in the Electronic Health Record. **[D]**

Dr Track then, after inquiring were there any other matters Mrs Jones wanted to raise, and recording the reason for this encounter to be routine screening, has his nurse join them while the smear was taken. Just prior to taking the smear the accompanying request forms had been automatically generated for the specialist cytologist Dr Track refers to, as well as a sticky printed label to attach to the specimen container. **[E]** Having confirmed there were no other preventive or screening activities due, Dr Track quickly printed a repeat prescription for the inhaled steroid Mrs Jones was on regularly. **[F]** Dr Track then closed her record and printed an invoice and statement for the services provided.

Ms Jones then joined Dr Track, being happy to have mum present for moral support while having the needle. Dr Track confirmed Ms Jones was well, was doing fine at school, and required no other service other than the measles vaccination. **[H]** A quick change of screen to the inventory system for the practice showed that the stock held was just above the automatic re-order level and that the batch has a year to run prior to expiry.**[I]** Dr Track took one ampoule from the stock and recorded it as having been given to Ms Jones, along with the date and time of the immunisation and the vaccine batch number. **[J]** He then gave the vaccine, waited to ensure Ms Jones had no acute reaction, created an invoice for the service. **[K]** Dr Track then closed Ms Jones's record and showed both ladies back to the receptionist where the billing arrangements were finalised.

Two weeks later Dr Track ran his outstanding diagnostic test report for the end of the month, **[L]** and noted, among other things that he had yet to see the report for Ms Jones's smear. He decides to give the laboratory a further week for the result to arrive and makes an electronic note to ensure he remembers to check in a weeks time if the result has not arrived in the meantime. **[M]**

At the end of the month Dr Track runs his pre-prepared reports for the Commonwealth Government and Medicare to claim payments for his vaccination and cancer screening activities during the month. **[N]**

6.2.3 Scenario C: New Patient Visit and Prescribing

Mr New has just moved into the area covered by Dr Smith's practice and on the advice of some local work colleagues has decided to use Dr Smith as his GP for the five year period he believes he will be working in this location before being promoted and re-located elsewhere. As he has had a cold for the last few days which has now 'gone to his chest' and is associated with a quite painful cough he decides to ring for an appointment for later that day.

Dr Smith's receptionist takes the call, notes that Mr New is a new, long term patient, and allocates a 30 minute appointment slot for later that day. **[A]** The receptionist also takes the opportunity to gather the basic demographic data needed by the practice computer system to register Mr New as a patient of the practice. **[B]**

Mr New later arrives at the practice, and, while waiting to see the doctor, is able to complete his registration details with the receptionist, and also work through an interactive questionnaire that captures much of his basic historic medical data which can be reviewed and verified during the consultation. **[C]**

Mr New is soon in to see Dr Smith, and explains that that pressing problem is the chest cold and that he feels some treatment is required. Dr Smith then proceeds to record, and code, the reason for this encounter as chest cold which is then stored in the patient record. After a full examination, while confirming and refining the information gathered with the electronic questionnaire, Dr Smith concludes the only significant acute problem is the chest infection, but also notes that Mr New's blood pressure is marginally elevated for a patient under 40 (145/90) and resolves to set up regular surveillance on this by scheduling six monthly BP checks and encouraging Mr New to try to get a some regular exercise, lose a little weight and try to reduce the amount of added salt in his diet. **[D]** Dr Smith has a patient education brochure on borderline high blood pressure and, after adding a few comments of his own, prints this out for Mr New to take with him. **[E]** Dr Smith is able to quickly and easily record the findings of the history and examination in the Electronic Health Record **[F]** and uses electronic images, stored on the computer, to record the examination findings. **[G]**

Mr New then asks should he have an antibiotic for his cold. Dr Smith opens the antibiotic prescribing guidelines and confirms that if a patient has purulent sputum that a course of Augmentin Forte is appropriate. He then moves to the prescribing module. In doing all these actions the system has kept Mr New as the current patient and his details are automatically used to populate the prescription form. **[H]** Dr Smith decides to prescribe Doxycycline, is shown that Mr New has no recorded allergy to this drug, confirms with the patient that this is the case and automatically selects the standard PBS pack size and strength for a single course in an adult male. **[I]**

Dr Smith asks Mr New where he would like the prescription filled, and Mr New says he has noticed a pharmacy close to his work so that one would be fine. Dr Smith then prints the prescription, signs it and sends an electronically signed copy to the pharmacist. **[J]** In the background the drug has been evaluated by Dr Smith's computer system for potential interactions with Mr New's other treatment and Mr New and his doctor have been shown the total cost of the treatment and how much Mr New would have to pay at the pharmacist.

Dr Smith concludes the consultation with creation of an invoice **[K]** which is given to Mr New by the receptionist and Mr New goes to the pharmacy to find his prescription ready and waiting for him to pay for and collect. **[L]**

6.2.4 Scenario D: Patient Account Generation

Mrs Regular has been a consistent visitor to the local practice over the years as indeed have their whole family. On this occasion she has brought her eight year old child along to have his ears checked and she is being seen as part of follow up and rehabilitation for an injury to an ankle sustained at work.

Mrs Regular and son arrive just prior to the usual commencement time for afternoon surgery. They are met by the receptionist who logs them both into the system as being in the waiting room, hoping to see Dr Jean Scott, who is their usual attendant. **[A]** When logging the Regulars in, the receptionist has inquired whether this visit for Mrs Regular is part of her work related problem (it is) as well as establishing that the responsible payer for the son's medical costs is the father, but that the bill should be addressed to Mr & Mrs Regular at their post office box and not at their home address, where a local dog is prone to eat any mail it sees. **[B]**

Dr Scott eventually sees the two Regulars and records their reasons for encounter and their assessment and treatment in the Electronic Health Record. **[C]** During the visit Mrs Regular said that the special bandage she was using has almost worn out and that she would like another one as it seemed to be helping her ankle. Dr Scott was able to look up the practice stock of the support bandage and its price and location in the store room. He was then able to issue the bandage to Mrs Regular and have the cost (with a margin) automatically added to the Workers Compensation Account for her. **[D]**

At the conclusion of the consultation Dr Scott produced the invoice for the Workers Compensation Authority, including the supplies provided for Mrs Regular to submit. **[E]** She also produced a statement covering the son's last three visits which has not been paid for. **[F]** Mrs Regular agreed to pay half of the invoice in cash, and asked that the remaining amount be billed to the family by a mailed invoice which her husband would ultimately pay. **[G]** Dr Scott quickly accepted the cash and generated a new invoice for mailing and a receipt for the cash she had taken.

At the end of the day the receptionist gathered the cash, cheques and other negotiable instruments and produced the daily banking report and the overall activity report for the practice day. Once these were reconciled the cash and cheques were deposited and the Postal Order was kept aside to be converted to cash the next business day **[H]**

The next day, following the usual second daily routine, the practice sent the electronic bulk billing claims to the Health Insurance Commission. **[I]** Review of the reports back from the HIC revealed that some funds had been misallocated and that an invoice that has been disallowed by the HIC was indeed correct and due to be paid. The appropriate changes were made in the accounting records to correct the misallocation and the bill was successfully re-submitted. **[J]**

6.2.5 Scenario E: Practice Management and Evaluation

Dr Poly had a number of non clinical activities planned over the next few days. He had a practice partners meeting and he had a meeting as secretary of his General Practice Division where it was planned to determine what the Division's clinical protocol should be for management of a slightly elevated PSA in the absence of significant symptoms.

As the practice meeting was the next day he decided to focus on that first (Dr Poly was a partner in an eight partner practice where there were also four assistants and fourteen support staff). At the meeting there were a range of issues to be covered and almost all of them would require obtaining reports from the practice computer system.

Firstly Dr Poly decided he would get the aggregate financial data for the practice from the system, including the current month earnings after expenses, year to date figures and current projections compared to budget and last year. **[A]** Having reviewed this information, and produced a number of summary graphs on overhead transparencies for the meeting **[B]** he decided to run a set of reports to assess the profitability by doctor of each of the partners and assistants when their use of practice resources was formally allocated (i.e. cost of supplies, proportional use of equipment etc). This revealed that one assistant was performing very effectively and that there were two partners who appeared not to be contributing as may have

been desired. **[C]** Dr Poly decided he would chat with these people before the meeting to minimise the risk of surprise during the meeting.

Having finished that analysis the next thing to be done was to run the inventory status reports to ensure that no disposables were close to expiry and that excessive stock was not being held of items which were not being used. **[D]** This report identified a variety of disposable speculum which was on regular order for an assistant who had since left the practice. Dr Poly sent an internal e-mail to all those in the practice asking the supply person to cancel the order and asking the other doctors could they see their way clear to using up the excess stock where possible. **[E]**

Dr Poly then turned to the matter of customer satisfaction. The practice had recently undertaken a customer satisfaction survey and the information had been received electronically and imported into a database for analysis by 'usual doctor seen' and distance from practice. **[F]** Having reviewed this data Dr Poly decided to merge data, by patient, from the appointment system and the Electronic Health Record to examine the impact of waiting time and duration of consultation on patient satisfaction. **[G]** Unfortunately this data is so sensitive Dr Poly declined to provide the creator of this scenario with the outcome of this analysis but he was able to say that significant changes would be made. The commentary from patients, combined with the data has also resulted in a significant new investment in comfortable facilities for patients who are waiting as the practice was seen my many who were asked as being quite inadequate in that area. Dr Poly is sure that the new facilities and the new tea and coffee machine for the patients will improve the practices competitive position in the area.

Lastly for the practice meeting Dr Poly ran his clinical practice audit reports that compare the current practice performance against a number of published and internal guidelines (e.g. screening rates, vaccination rates, antibiotic use in URTI's etc). **[H]** Over the last two years the practice has developed about 20 such reports which are run each month to ensure the quality of care provided is being maintained. **[I]**

For his last job of the evening Dr Poly turned his mind to the divisional meeting. He was sure all the up to date information he had would help some of his less computerised colleagues appreciate the clinical and administrative value and competitive advantage his practice was deriving from their investment in technology. He then turned back to the keyboard and after a few minutes had developed a report which for the patients in his practice showed the average interval between observation of an elevated PSA and the time some active therapy was undertaken either by one of the practice practitioners or a specialist. **[J]** When segmented by age, Dr Poly was impressed just how slow growing the disease was in the elderly, and was looking forward to sharing his practice's experiences with the others at the Divisional meeting.

Section 7.0 GPCS Standards Framework

This section presents the key, relevant standards that are required to support the development, adoption and use of the GPCS, based on extensive research and stakeholder consultation conducted during this consultancy. It should be noted that the standards discussed in this section are in addition to the recommended technical standards identified in the *Technical Framework and Architecture Report*. The findings from our research on standards are discussed further in the *GPCS Final Report*. Specific references are documented *in Section 7.6*.

7.1 Background

The previous IBM Consulting Group / Pharmaceutical Benefits Branch (IBM / PBB) Electronic Prescribing consultancy (1996) identified, as part of a broad Standards Framework, the need for highly focused and co-ordinated standards development in critical areas necessary to support the development and implementation of a Clinical Workbench. In particular, this consultancy recommended the development of an application interoperation standard that includes a common data set, and a national clinical data coding system for primary care.

In addition, the IBM / PBB consultancy identified a number of issues regarding electronic transmission of patient health data (including electronic prescriptions) which will require legislative recognition of electronic signatures, comprehensive data protection and data security that addresses message authentication approaches / data encryption etc, and harmonised privacy and confidentiality legislation that adequately addresses the health sector environment nation-wide and which is underpinned by a number of standards such as the *AS4400* Standard for Privacy Protection[1].

Further to this, recognition was given to the work being conducted by the IT/14 Committee of Standards Australia in the development of national standards such as AS4400, AS4700: HL-7 ADT Implementation Standard[2], and work being conducted by the IT/14/6 Sub-committee on development of messaging standards, including Electronic Medical Prescription Messages and UN/EDIFACT Health messages[3]. However, the scope and level of standards activity being undertaken by Standards Australia at the time of the IBM / PBB consultancy was not seen as delivering useable standards for advancing the development of highly interoperable Clinical Workbench applications within an acceptable timeframe without a level of funding and concerted effort over a short period.

The RACGP / MSIA General Practice Information Systems Standards Scoping Study (1996)[4] identified seven categories of standards needed for general practice information management:

- Data Dictionaries and Minimum Data Sets
- Clinical Terminology and Data Coding
- General Practice Systems Functionality and Evaluation
- Software Supplier Quality Systems and Quality Assurance
- Reference and Knowledge Data Bases
- Security and Privacy Standards

- Data Communication Standards

This study recognised the evident lack of information management and technical infrastructure in Australia necessary to support the development and implementation of highly integrated and network connected General Practice Information Systems. This study further identified a broad range of existing and emerging, mostly international informatics standards, that may be useful, but recognised the need for Australian initiative to modify existing standards to suit the local environment and specific intended purpose. As with the previous IBM consultancy, this study clearly recognised a lack of standards development in a number of key areas required to support highly integrated and network connected GPCS.

7.2 Overview of Recommended GPCS Standards

7.2.1 Introduction

From extensive global literature research and stakeholder consultation conducted to date, the IBM Consulting Group has identified eight critical standards required to support the development and implementation of the GPCS from a functional perspective, and to enable significant benefits to be achieved in quality of patient care, practitioner effectiveness and practice efficiency. These standards form the recommended *Standards Framework for the GPCS* and are briefly discussed in *Section 7.2.2* below (further discussion of these standards is provided as part of the research report included in the *Final Report* of this consultancy).

Before discussing the framework, the following points need to be made regarding software products and services evaluation / certification and software development quality assurance:

a. Software Products and Services Quality Evaluation / Certification Process
The need to develop a process for evaluation or certification of GPCS software products and services provided by the medical software industry is not seen as a critical requirement to support the development or implementation of the GPCS, but is however viewed as an important strategic option that could potentially have a positive impact on the delivery and adoption of quality GPCS products.

The implementation of an evaluation / certification process / programme could provide a number of significant benefits to both practitioners and the software industry if the process is well defined and the administration and management of the program is adequately funded and resourced. The Final Report Implementation Strategy considers this strategic option in detail.

b. Software Development Quality Improvement Approaches
From our extensive stakeholder consultation, there is clearly a need for the industry to focus on continuous improvement of the quality of software products and services provided to practitioners. There are a number of approaches available that may be adopted by software developers to underpin achievement of improved quality, however, these approaches, vary considerably in terms of cost of implementation and quantum and flow of benefits realised. Further to this, quantitative longitudinal data on software development process improvement and associated cost / benefits is sparsely published in the software quality literature[5], which makes it difficult to objectively assess the impact on business performance of the various approaches. Notwithstanding, the following approaches should be considered:

- Implementation of ISO-9000 series or TickIT standards (which involves implementation of a framework for assessment of a quality assurance programme) and certification to these standards[6,7,8,9,10]

- Implementation of Software Engineering Institute's Capability Maturity Model (CMM) framework for software quality assessment and process management[6,7,11]

In addition, emerging software process improvement standards, such as SPICE[6,12] may be of value to software developers in the future.

7.2.2 GPCS Standards Framework

The recommended standards framework for the GPCS consists of the following standards:

1. Electronic Health Record Architecture

A fundamental component of the GPCS is the Electronic Health Record, which provides a comprehensive repository for all relevant patient information in multiple forms, and which is capable of seamlessly interacting with GPCS applications to enable storage and retrieval of information as required.

In order to ensure optimal data management and interoperation between GPCS applications / functional components, it is vitally important that the GPCS is based on a standard electronic health record architecture. From extensive research, the IBM Consulting Group has concluded that the *Good European Health Record (GEHR) Architecture*[13] is the most appropriate and comprehensive health record architecture currently in existence.

The project to develop the GEHR was initiated by an Australian GP, Dr Sam Heard, working in London in the late eighties, together with the Professor of Medical Informatics at London University, Prof. David Ingram. The GEHR project was undertaken under the *aegis* of the European Commission Health Telematics Programme (Advanced Informatics in Medicine, Third Framework), from 1990 to 1994. A total of eight EU countries participated in the project with Prof. Ingram as the Project Director and with involvement of the Centre for Health Informatics and Multiprofessional Education (CHIME). More than 6 million ECUs (approximately A$9 million) was spent on the project over its four year life.

A follow-on project called *Synapses* is now underway within the fourth European Health Telematics framework. This is a three year project with a budget of 5 million ECUs (approximately A$7.5 million). It is being coordinated by Trinity College Dublin[14] and involves participants from hospitals, industry, universities, and research institutes in 12 EU countries. Prof. Ingram and CHIME are again intimately involved in this project[15] . A major aim of the Synapses project is to unite the main aspects of the GEHR architecture and the European CEN/TC 251 PT1-011 standard[16] with the generic components of other specialised architectures to provide a "Federated Healthcare Record Architecture".

Section 7.3 below provides an overview of the GEHR architecture, which is the recommended electronic health record architecture for the GPCS.

2. Primary Care Minimum Data Set

As recognised in the IBM / PBB consultancy, RACGP / MSIA study, and from extensive consultation during Phases Two and Three of this consultancy, there is an urgent need to develop a comprehensive data set for primary care, which would, together with a standard electronic health record architecture, enable the requirement for maximal and seamless interoperation between GPCS applications / functions to be fully addressed. Further discussion on data set requirements is provided in *Section 7.4* below.

3. Clinical Data Coding Standard for Primary Care

From the stakeholder consultation conducted during this consultancy, the need to determine a national clinical coding standard for the GPCS is most apparent when consideration is given to the ability of the GPCS decision support systems to maximally leverage the information contained in the electronic health record in order to provide timely, interactive, highly useful and relevant patient health related information to the practitioner.

The selection of a single national primary care clinical data coding standard has remained unresolved for a number of years without any conclusion being reached. The approach adopted in the Functional Requirements Specification is to permit multiple coding systems to co-exist and our only concern is to ensure that a highly satisfactory coding system is available to effectively support decision support and enable the highest possible level of automation of coding electronic health record data possible.

The problematic nature of coding systems is well illustrated in a recent study conducted by the CPRI Work Group on Codes and Structures to evaluate content coverage for major coding / classification systems in use today (including ICD9.CM, ICD10, CPT, UMLS, SNOMED, Read and NANDA)[17]. This study, published in JAMIA (1996), has concluded that:

"no existing clinical classification system presently captures the scope of clinical description that minimally describes patient findings and interventions for use as an integrated health terminology"

After due consideration, the IBM Consulting Group has concluded that, in consultation with the clinical community, the system developers should determine the suitability of present clinical coding systems for the purpose of decision support and make appropriate recommendations as to whether currently available coding systems are adequate or a new coding system needs to be devised to fully support decision support capabilities of the GPCS.

Determination of other coding systems required for other purposes (eg clinical research, morbidity coding) is not considered fundamental to the operation of the GPCS, however, the GPCS has been specified to enable multiple coding systems to co-exist, to enable a high degree of flexibility for practitioners.

The IBM Consulting Group believes that selection of coding system(s) to be used within the GPCS should be determined by criteria including:

- The purpose for which coding is being undertaken (e.g. clinical research, decision support, data gathering, epidemiological analysis etc)

- Effort involved and return provided for the effort expended.

- The need to have adequate coding granularity and sophistication to meet the needs of primary care practitioners.

- The ease of coding for the practitioner needs to be considered. Each practitioner will make a cost / benefit assessment as to the utility and value of undertaking the coding.

- The ease of translation from the selected code set to recognised internationally coding systems.

- The requirement for primary care practitioners to capture, if possible, both the reason for consultation and the ultimate diagnostic conclusion, as well as what action was taken for the patient. It is recognised that the capture of the reason for the encounter is less important in the specialist environment.

- The level of use of the coding system internationally to permit international comparisons of morbidity data etc.

4. Knowledge-base Design Guidelines

In order to ensure that the level of decision support capability identified through the stakeholder consultation as a key requirement of the GPCS can be delivered, it will be necessary to ensure that broad scope, content rich, highly integrated knowledge-bases of medical and drug therapy information are developed, and that these knowledge-bases can be seamlessly integrated with the GPCS decision support systems to support interactive access. This is consistent with the findings of the RACGP / MSIA Standards Scoping study.

At a recent Decision Support Workshop conducted by the DH&FS GPB in June 1997, involving a number of content providers and other stakeholders, it was recognised that these knowledge-bases will ultimately be used as both information repositories for the GPCS decision support systems in addition to reference sources of information for practitioners.

There are a number of issues concerning the delivery of knowledge-bases that will be capable of being effectively used by the highly sophisticated decision support systems of the GPCS. These issues include:

- Timely development and provision of suitable, highly useful information content
- Provision of knowledge-base information in standardised and consistent format

In recognition of the likely multiple information sources, knowledge-base design guidelines for content providers / knowledge-base developers will be necessary to ensure that consistency in format and a high level of inter-operation with the GPCS decision support systems can be achieved. These guidelines should, at a minimum, address:

- Information presentation format
- Information vocabulary / semantics issues

- Knowledge-base database structures
- Technical Application Programmer Interface (API) requirements to support integration / interoperation with the GPCS

Of particular significance is the ASTM E1460 (Arden Syntax) Standard Specification for Defining and Sharing Modular Health Knowledge Bases[18], which is primarily focused on health knowledge representation and provides a standard format and syntax for representing medical logic modules and guidelines that can be directly interpreted and executed by computer systems[19,20].

The European Commission PRESTIGE project, part of the 4th Framework (1994-1998) Telematics Applications Programme[21], is highly relevant to the development of structured electronic versions of clinical guidelines and protocols in a standard format that can be used with decision support tools to assist clinical practice. Development of knowledge-base design guidelines should appropriately consider the results of this and other related 4th Framework projects.

5. GPCS Interoperation Standard

A fundamental requirement of the GPCS is that the functional module / application components are highly interoperable and enable "plug and play" selection and seamless integration of multi-vendor GPCS application offerings. For this to be achieved, compliance with standardised technical interoperation principles, messaging formats and application programmer interface requirements will be necessary. The GPCS Technical Framework and Architecture Report provides some guidance as to the level of interoperation required, however the detailed work of defining the necessary messaging formats and APIs has yet to be completed.

Development of a specific GPCS Interoperation Standard will be a critical first step to ensure that "plug-and-play" GPCS application selection can be fully realised. Consistent with the previous IBM / PBB consultancy, there are a number of strategic objectives for developing this standard including:

a. To provide the practitioner with a wide range of choice of functional modules / applications that can be used within the GPCS environment, and to ensure that modules selected / purchased from software vendors that conform to this Standard will interoperate successfully.

b. Permit the clinical software industry to develop functionally rich modules in areas of particular expertise and to allow evolutionary growth of the functions available to the individual practitioner.

c. Provide confidence on the part of both vendors and users that their major investments are properly protected over time.

It should be noted that, due to the inherent technical complexity of this task, the development of the interoperation standard is not practicable unless coupled with a development project to enable comprehensive testing of the interoperation capability. This is discussed further in the Final Report - Implementation Strategy.

6. National Privacy Code of Practice for the Health Sector

As identified in the stakeholder consultation process, Australia currently has no unified, consistent legislative standards at the federal and state levels covering both the public and private sectors. Notably, the Commonwealth Privacy Act (1988) has no legislative standards that apply to the private sector. In addition, not all States have enacted privacy legislation. The scope and issues surrounding existing legislation are discussed in detail in a Privacy Commissioner submission to a House of Representatives Standing Committee inquiry into health information management and telemedicine (1996)[22] and a Discussion Paper on Privacy Protection in the Private Sector released by the Commonwealth Attorney-General's Department (1996)[23].

The Privacy Commissioner, in this submission, notes that the absence of uniform national privacy legislation covering both the public and private sector has translated into inherent weaknesses in the level of privacy protection afforded under self-regulatory approaches. These approaches include the voluntary adoption of Standards Australia AS4400 Standard for Privacy Protection without appropriate legislative backing to ensure conformance.

Both the Privacy Commissioner and the Attorney-General acknowledge the value of explicit codes of practice relating to the protection of personal information, however the Privacy Commissioner warns that organisation developed codes should be backed by legally binding standards. The Privacy Commissioner, in this submission recommends:

"Personal health information should ideally be subject to more stringent standards of protection than is provided by the current Information Privacy Principles. This might be achieved by means of a binding health privacy code issued under the Privacy Act."

Both the Privacy Commissioner and Attorney-General refer to the New Zealand Privacy Act (1993) which covers both the public and private sectors, provides a broad set of Privacy Principles and provides for Codes of Practice to be developed covering specific organisations, industries or professions.

Under this legislative framework, the New Zealand Privacy Commissioner developed the Health Information Privacy Code[24], which came into force in 1994. This code addresses the confidentiality issues surrounding the professional /patient relationship, management and retention of sensitive patient health information and applies to any individual or agency that provides health or disability services. In addition, the code provides rules for rights of access, correction, limits of use and disclosure of information, and specifically provides rules for the use of unique patient identifiers, and use of information for statistical and research purposes.

The Australian Pharmaceutical Advisory Council Working Party on Privacy Issues, in a discussion paper on privacy issues relating to use of medication data to promote quality use of medicines (1996)[25], concluded that "privacy issues need to be addressed", that consumers need to be informed and understand "why the personal information is being collected, what it is being used for, and to whom it may be disclosed; and knowing that it is stored securely, and that consumers can have access to their own information." The Working Party recognised the importance of explicit informed consent to the use and disclosure of information with regard to the use of medication data to promote the quality use of medicines.

In the US, a comprehensive report on the protection of privacy and confidentiality in computerised medical records was published by the U.S. Government Office of

Technology Assessment in September1993[26] and further updated in a later report on the role of information technologies in the delivery of health care in 1995[27]. The 1993 report, albeit somewhat dated now, provides a detailed assessment of the privacy, confidentiality, security, policy, legislative and standards issues surrounding the use of computerised patient medical records.

The Institute of Medicine (IOM), which completed a study in 1994 on health data use, disclosure and privacy strongly recommended the enactment of federal privacy legislation to protect the privacy and confidentiality rights for health data about individuals[28,29]. Also worth noting is the American Society of Testing Materials (ASTM) *Guide for Access, Privacy, and Confidentiality of Medical Records*[30], which is one of a growing number of privacy and confidentiality standards and guides being developed by ANSI standards bodies and affiliated standards development organisations in the U.S.

Recent attempts in the U.S. to enact legislation addressing medical records confidentiality, such as the Bennett-Leahy Bill (1996) and similar proposals to establish federal privacy policy for health information have largely remained stalled. However, some transitional legislation was enacted by Congress in 1996 (the Kennedy-Kassebaum Health Insurance Portability and Accountability Act) which provides some interim guidance regarding individual privacy and data confidentiality (albeit not the strong privacy rules viewed as essential to hasten the adoption of electronic standards for patient health information by privacy and consumer advocates and concerned health professionals) and mandates the enactment of comprehensive privacy rules by 1999[31].

The president of the American Health Information Management Association (AHIMA), in a recent testimony before the House Sub-committee on Government Management, Information and Technology in June 1997, has shown support for the 'Fair Health Information Practices Act of 1997', stating that it contains many of the provisions based on a code of practices that were developed by AHIMA in 1993. Most importantly, AHIMA has stated its willingness to work with Congress to enact legislation to protect an individual's right to privacy and to ensure confidentiality of individually identifiable health information.[32].

Further to this, in a statement released on the 29 July 1997, the White House announced that the federal government will act to regulate consumer privacy rights in electronic commerce unless on-line industry engages in effective self-regulation[33].

As recently as March 1997, the Prime Minister endorsed the development of voluntary codes of practice for privacy protection in the private sector and made the decision that no Commonwealth legislation would be enacted at this time to underpin the codes. Further to this, the DH&FS has indicated that it intends to commence work on the development of a voluntary health information privacy code relating to medical records held by private medical practitioners in the immediate future[34].

From our consultation with the Privacy Commissioner during this consultancy, the development of a national code of practice for privacy of health information in the health sector, and backed by an appropriate legislative framework would be an ideal outcome.

In order to ensure that the potential benefits of improved patient care delivery and health outcomes can be achieved through a networked connected GPCS (which enables appropriately secure transmission of personal health information between patient

authorised health professionals and agencies), a standard code of practice for the health sector (public and private) that addresses the complex privacy and confidentiality issues is required.

The IBM Consulting Group recognises the recently adopted policy position of the Commonwealth Government, however, we concur with the Privacy Commissioner's view that voluntary codes without appropriate supporting legislation will not provide uniform conformance and hence afford the level of protection of privacy and confidentiality that is expected by the community at large. It is, therefore, our view that a code of practice for the health sector should be developed along with appropriate enabling legislation under existing state and federal privacy acts (where appropriate).

7. Data Security and Data Protection Standards

In order to enable a full function GPCS to be used by practitioner as intended, adequate safeguards need to be included in the GPCS that ensure protection and preservation of the integrity of the data held in the GPCS databases, comprehensive data security to ensure an appropriate level of security / authorisation for access to and modification of data, and to enable secure use of public networks.

Fundamental to the provision of adequate data security for the GPCS is the need to use an agreed data encryption standard that addresses electronic encryption, authentication and non-repudiation approaches.

Presently in Australia there are no comprehensive standards with enabling legislation that fully address the issues of data security and data protection. The following Australian standards, however should be referenced in development of comprehensive data security and data protection standards:

- *AS4400:1995 Protection of Privacy Standard*[1] defines the requirements for personal privacy protection in health care information systems in Australia and provides some guidance regarding data security and data protection but not in sufficient detail to be useful at the detailed software design and development level. This standard is based on the principles contained in the Privacy Act 1988 and the information security principles detailed in the OECD Guidelines for the Security of Information Systems.

- *AS/NZS-4444:1996 Information Security Standard*[35], which is a joint Australian and New Zealand standard based on the British Standard BS 7799:1995, Code of Practice for Information Security Management, covers the physical, personnel, system access and network security management of information systems and provides a useful reference for detailed definition of data security requirements for the health sector.

It is apparent that progress by Standards Australia to define an Australian Health Sector Security Standard has been slow with the only significant output so far being a strategies paper on Public Key Authentication Framework (PKAF)[36], and no specific timeframes for completion of a draft or final standard have been set at this stage. In view of this slow progress, it would appear that the PKAF Inter Departmental Committee (IDC) involving a number of federal government departments and agencies (including the Health Insurance Commission) are moving quickly towards defining and implementing a PKAF standard by 3rd quarter 1998.[37] In addition, other Government agencies appear to have an interest

in aspects of data security such as the Attorney General's Department, which has an expert group focused on electronic signatures.[38]

With regard to data protection standards, internationally, of relevance here is the U.S. Government Office of Technology Assessment Report (1995)[39] which provides a comprehensive evaluation of standards, technology options, and legislative and policy issues for addressing data security.

Further to this, the recently passed Kennedy-Kassebaum Health Insurance Portability and Accountability Act of 1996 mandates both the development and adoption of standards for electronic exchanges of health information, and mandates the U.S. Congress or Secretary of the U.S. Department of Health and Human Services to enact privacy rules to govern electronic information interchange by 1999. Essentially this Act sets out a number of provisions regarding individual privacy, data confidentiality and data security, but does not provide comprehensive, strong privacy rules, which have been mandated to be enacted within a set 36 month timeframe.[31]

It should be noted that there are a number of U.S. organisations and standards bodies actively involved in developing data security and data protection standards and related issues which are highly relevant to the context of the GPCS. These include:

- The Computer-based Patient Record Institute (CPRI) has been active in publishing papers addressing issues of access to patient data, authentication and guidelines on information security.[40,41,42,43,44]

- The ASTM E31 Committee on Healthcare Informatics, which has developed a number of highly relevant data security standards, should be appropriately considered[19,20]:
  - ASTM *Guidelines for Minimal Data Security Measures for the Protection of Computer-based Patient Records*[45].
  - ASTM *Guide for Electronic Authentication of Health Care Information (1995)*[46].

  Further to this, three E31 Subcommittees focused on data security, privacy and confidentiality (E31.17, E31.20, E31.22) currently have 17 standards under ballot, in draft or outline with targeted completion in 1997)[47].

- The American Standards Committee (ASC) - X12, Electronic Data Interchange, currently has a number of security standards pertaining to messaging under development.[47]

- The Food & Drug Authority (FDA) work on defining issues around the use of electronic signatures, including legal acceptance, regulatory acceptance, enforcement integrity, validation/ reliability, security, standards and freedom of information.[19,20]

In the U.K. , the Data Protection Act (1984) applies to security and data protection for practice computers and computerised records held in the public and private sectors, with the practitioner required to register as a data holder under this Act[48]. This has led to considerable awareness of security issues and most practices have a good working understanding of the privacy requirements. Documents providing guidance to medical practitioners on data protection registration (June 1990) and access provision of the data protection Act (1987) have been produced to assist practitioners[49]. Further to this the

U.K. Department of Health issued a Guide on the protection and use of patient information[50] in 1996 which was developed to provide a legally binding data protection framework.
The CEN TC251 Working Group 6 has recently completed a digital signature standard (Security Categorisation and Protection of Healthcare Information Systems (COMPUSEC)) and is also engaged in work on trusted systems in conjunction with the EC sponsored AIM 'TrustHealth' 4th Telematics Framework project. The aim of this project is to build and test technical security services to support data confidentiality, document origin authentication, time stamps, access authentication and professional authorisation access controls.[47]

Also, of relevance is the recently completed EC sponsored Secure Environment for Information Systems in Medicine (SEISMED) AIM project (1992-1995), taking 42 months to complete and costing approximately 3 Million ECU, with 9 countries involved. The results of this project are a published comprehensive set of data security guidelines for European health care establishments which have been referenced by some 4th Framework Telematics Projects[51].

Finally, the European Union (EU) in 1995 issued a Directive (95/46/EC) covering the protection of individuals with regard to the processing and free movement of personal data. This Directive provides strict safeguards covering both personal data generally and sensitive data including health data. By October 1998, all fifteen EU Member States will have national laws that are congruent with this directive.[32]. As recently reported in the Australian Financial Review, the EU has announced that it "will not exchange data about individuals with nations that do not have 'adequate' privacy measures"[52]. The ramifications of this for Australia, if not already apparent, may be better assessed after September 17, when the world's privacy commissioners are due to meet in Brussels to discuss international standards for privacy protection.

8. Data Communication Standards

It is almost certain that the use of networked applications and the transmission of patient health data by GPs to many levels of the healthcare system will increase rapidly over the next few years. There are two main international standards for health data communication: the European CEN TC251 / UN-EDIFACT standard and the U.S. Health Level 7 (HL-7) standard[53,54,55].

There has been significant growth in the implementation of the HL-7 standard internationally. In addition, HL-7 is formally recognised as an accredited standards organisation by ANSI.

Standards Australia, through the IT/14/6 Health Informatics Communication Subcommittee and associated working groups, are currently working on refining the HL-7 standard and developing implementation guidelines for specific areas of healthcare use in Australia such as pathology, pharmacy, and hospital patient administration[2,4].

The National Consultative Group (NCG) For Private Healthcare EDI, which was formally convened in 1994, and with broad representation from private hospitals, private health insurers, DVA, DH&FS, HIC and software vendors, has been engaged with development of a number of electronic commerce standards including Hospital Casemix Protocol standard and draft standard message formats. Of particular significance is the agreement

reached in early 1996 with Standards Australia to converge with the NCG's AHS standards under Standards Australia IT/14 HL7 Committee.[56]

Further to this, in Australia, there is evidence of a growing number of health agencies and pathology providers having adopted and implemented HL-7.

The HL-7 standard, particularly from Version 2.3 (released in 1997), provides a large range of messages to support clinical data interchange in addition to administrative and financial data needed to support clinical practice. The HL-7 Version 3.0 standard, which is currently under development and expected to be released December 1998, will support four different message encoding schemes; ASCII character based, CORBA, OLE and EDIFACT. In addition, from HL-7 Version 2.3 onwards, MIME encoding of binary data is supported[20,57].

The HL-7 standard and United Nations (UN) Electronic Data Interchange for Administration, Commerce, and Transport (EDIFACT) standard (which is a generic message communications standard with health specific subsets[19,20] are in the process of being harmonised internationally and are expected to become a single integrated standard within the next two years.

The IBM Consulting Group therefore recommends that the HL-7 standard be adopted as the primary external GPCS health data communication standard.

7.3 GPCS Electronic Health Record Architecture Overview

As indicated in *Section 7.2* above, the Good European Health Record (GEHR) architecture is the recommended electronic health record architecture for the GPCS.

It must however be stressed that the application of the GEHR architecture by software vendors to detailed design and development of the GPCS electronic health record will need some flexibility to ensure that local (Australian) requirements (such as requirement for multiple patient aliases) as specified in the detailed functional requirements (*Appendix C*) can be appropriately satisfied.

7.3.1 Introduction

The GEHR project has developed a generic architecture for electronic healthcare record data which meets the comprehensive requirements of clinicians across professional disciplines and specialities. This architecture has been formally and rigorously expressed as an object model and as a complementary exchange format[58,59]. It should be noted that GEHR is an architecture with supporting data sets, specifications and recommendations for the implementation of compliant systems.

There is a large body of documentation on the GEHR project and architecture, available in the public domain and amounting to over 2000 pages in total. The documentation is divided into 24 'Deliverables' with some Deliverables being interim project reports and others covering specific aspects of the GEHR architecture. The GEHR documentation can be freely

downloaded from the GEHR Internet Web site. Deliverable 19[59] gives a good overview and summary of the whole project.

7.3.2 Important Features of GEHR

The important features of GEHR which are highly relevant to the GPCS include:

- The emphasis on the pre-eminence of the individual patient in considering the design, function, and performance of the electronic health record. GEHR states that to fulfil its role, the clinical healthcare record must:

  - Form the basis of a historical account
  - Record preventative measures
  - Support communication
  - Remind clinicians about anticipated health problems and planned actions
  - Identify deviations from expected trends
  - Provide a legal account
  - Support clinical research
  - Enhance efficiency of health professionals
  - Support continuing professional assessment
  - Support medical education
  - Accommodate decision support
  - Access medical knowledge bases
  - Assist with audit
  - Accommodate future developments

- Recognition of the need for robustness and flexibility in the EHR as fundamental attributes of the GEHR architecture.

- Recognition of the need to accommodate both structured and narrative data within the EHR.

- Recognition of the numerous classification / coding systems used in medicine and the need for the electronic health record to enable one or all of these coding systems to be used.

- The need to address a number of areas identified in the GEHR documentation as necessary for a coherent electronic health record architecture:

  - Portability requirements
  - Communication requirements
  - Ethical and legal requirements
  - Data security requirements
  - Education requirements

7.3.3 Ethical, Legal and Security Requirements of the EHR

The GEHR documentation places a strong emphasis on ethical and legal issues and states:

"The primary purpose of the EHCR [Electronic Health Care Record] is to benefit the patient by providing a record of care which supports present and future care by the same and other clinicians. The secondary purpose is to provide a medico-legal record of care provided and hence demonstrate the level of competence of the clinicians involved. Tertiary purposes must be legitimate (involve consent) and can never be allowed to compromise the primary or secondary purpose. Examples of tertiary purposes are the generation of data for health service management or public health programmes."[13]

The GEHR data security requirements include:

- A "watertight" method to identify the author of the record (electronic signature).
- Ability to update the record but it must be impossible to alter or erase previous entries.
- Ability to withhold components of the record from general viewing.
- A high degree of security against illegitimate use of the electronic health record.
- An agreed set of information recorded with every entry such as:
  - time and date
  - provider identification (personal ID, name, position, level of competence, location, telematic address)
  - coding system used
  - definition of ownership of information
  - who is permitted to view information

7.3.4 Description of the GEHR Architecture

"The GEHR architecture provides a framework which supports the full diversity of clinical data storage and communications requirements. It is formulated to encompass the different disciplines of primary and secondary healthcare, for doctors, nurses, and other health professionals and in all [European] countries."[58] .

The fundamental components of the GEHR architecture are[59] :

1. **Electronic Health Record**. This provides the container for all data about a particular patient.

2. **Transaction**. This is the basic unit of the clinical record and is defined as "the information recorded about a patient by a single author in one institution at one point in time." In order to ensure that meaning is preserved, the transaction is the smallest unit of information which can be transferred from one computer to another when information is shared.

3. **Health Record Item (HRI)**. This represents the finest granularity by which an individual piece of information may remain meaningful if viewed in isolation. The HRI is composed of an item name, its primary content value, and other associated identifiers, properties, and attributes. Simple examples are "Weight - 78 Kg" and "Family History - Hypertension".

4. **Health Record Item Collections**. These are groups of two or more HRIs and allow for the construction of more complex aggregations of data. For example the systolic and diastolic HRI components form a simple HRI collection of "blood pressure" when combined.

5. **Heading**. This provides annotation for groups of HRIs / Collections.

It is interesting to note that the CEN/TC 251 PT1-011 pre-standard for electronic healthcare record architecture[16], has adopted an almost identical structure to GEHR but with slightly different terminology. Thus the GEHR Health Record Item is equivalent to the CEN Record Item, and the Health Record Item Collection is called the Record Item Complex under CEN. There is no equivalent to the GEHR 'Heading' in PT1-011.

A more detailed description of the GEHR architecture is beyond the scope of this document and can be found in GEHR *Deliverable 19.*

Finally, it is worth noting that the GEHR project has developed two formal definitions in support of its proposals for a common electronic medical record architecture:

1. The GEHR Object Model which defines the structure and content of information at a particular site.

2. The GEHR Exchange Format which defines information exchange between sites.

The GEHR documentation emphasises that whilst the architecture is described as a formal Object-Oriented model, GEHR compliant systems are not required to implement all of its features and the use of an object oriented database is also not mandatory although this technology certainly may have significant benefits.

7.4 Primary Care Data Set Requirements

7.4.1 GPCS Minimum Demographic Data Set

During the course of this consultancy, IBM Consulting Group has identified a number of demographic data elements that represent a minimum demographic data set required to ensure a base level of interoperability between GPCS applications / functional components. Fundamental to this data set is the recognition that compliance and consistency with the NHDD where definitions already exist is essential and recommended candidate definitions / sources of definition are suggested where the NHDD does not address the data element.

The details of this data set need to be further defined, possibly extended further in scope and agreed by the relevant stakeholders. Refer to *Appendix D* for details of the recommended scope of a *Primary Care Demographic Minimum Data Set*. This is presented as a DRAFT data set and does not represent a complete set of data elements nor attempts to provide detailed data definitions.

7.4.2 Full Primary Care Data Set

In addition to a minimum demographic data set, it is also recognised that there are incremental benefits associated with increased application interoperation which can be achieved by defining a comprehensive data set for primary care and ensuring compliance of GPCS applications with this standard. To this end, from our research to date, the IBM Consulting Group has concluded that the baseline scope for this full data set should at least address the following:

1. To enable data transferability, decision support and co-operative inter-practice research, the GPCS requires a standardised organisation of the clinical record which should cover at a minimum the following:

   - Past history
   - Family history
   - Occupational history
   - Environmental history
   - Social / family situation and history
   - Current and past problems
   - Management and preventive plans
   - Encounter history

   The details and structure of the overall record needs to be agreed after significant consultation and research with a number of stakeholders.

2. The GPCS needs to specifically manage the following basic health record elements and structured data collections, with facility to code or draw from standardised term-sets and concept definitions:

   - Relationships
   - Allergies, cautions and sensitivities
   - Recreational and habitual substance usage, risk factors
   - Blood group
   - Occupation
   - Environment
   - Immunisations,
   - Functional state
   - Events - clinical, communicative, social and administrative
   - Issues
   - Protocols
   - Encounter date, reason for encounter, observations
   - Problem, diagnosis, certainty of labelling, severity of illness
   - Treatment plan
   - Interventions, procedures, therapeutic substances
   - Investigations, and referrals
   - Outcomes

   It will be necessary to define the data elements and specific data structures necessary to represent the above.

3. The data set will need to include necessary data elements for organisations (e.g. company, hospital etc) and financial claims.

The development of a national primary care data set standard will require some Government initiative to ensure that the standard:

a. Adequately considers the views of all the major stakeholders and is consistent with other relevant national data models where appropriate.

b. Can be developed in the shortest possible timeframe through a highly focused and co-ordinated effort.

c. Is adequately maintained by the most appropriate body to ensure continued relevance to primary care.

7.4.3 Patient Unique Identifier

During the stakeholder consultation, the issue of unique patient identifiers arose on a number of occasions, with the benefits, privacy and implementation issues surrounding use of identifiers vigorously discussed. Notwithstanding the current segmentation of care delivery and relatively limited communications links between health care service providers and agencies, there appears to be broad agreement that improvements in clinical care delivery by practitioners would be facilitated through use of a unique patient identifier within the current care delivery model.

It is further apparent that a move towards a managed / co-ordinated model for patient care delivery encompassing primary, secondary and tertiary care service providers and agencies will increasingly put pressure on implementing unique individual patient identifiers. This pressure is largely being driven by the ever growing need to link patient health data (both personal / identified and de-identified data) for the purposes of improving the quality and efficiency of patient care delivery, research and health outcome assessment. Significant privacy issues need to be overcome, with the Privacy Commissioner recommendation[22] that:

"Any proposal to introduce a system of unique patient identifiers should be widely debated and subject to detailed consideration. Any such system should have a clearly defined purpose, legal limitations on use and the ability to require a number to be produced, enforceable safeguards and avenues to address abuses."

Of significance is that the Privacy Commisioner acknowledges that the New Zealand code of practice for the health sector (1994)[24], which is backed by appropriate privacy legislation, specifically deals with the use of unique identifiers, and goes on to recommend that the federal Privacy Act should directly address this issue.

7.5 Clinical Coding Considerations

To enable the value of the electronic health record to be fully realised, sophisticated decision support /advisory systems will be required that can accurately interpret the data held within the patient electronic health record. This mandates the need to:

a. Capture and store the patient data in the electronic health record in a "computer manageable" form, i.e. appropriately coded representations of the clinically relevant data held within the record.

b. Ensure consistency in the application of coding terminology and semantics employed to code the data[60].

From our stakeholder consultation and research, there is recognition that the efficiency of data capture and ability to usefully "mine" the data to optimally assist and advise the practitioner, are key factors impacting adoption of computerised medical record systems.

Further to this, a common theme regarding clinical coding / health terminology classifications has emerged from our consultation:

- The reason for coding, what to code for and the level of granularity required to enable recording of all, or part, of the pertinent details of patient care, must ultimately be decided by the individual practitioner.

- The GPCS must support a number of clinical coding systems that enable coding of reason for encounter, diagnosis, disease, drug, treatment, diagnostic tests, and clinical outcomes.

- The GPCS must enable multiple coded representations of data to be stored with the patient electronic health record.

- Data entry of clinical codes must be efficient and as automated as possible.

Initiatives such as the European *GALEN-IN-USE* **[61]** project, commenced in January 1996, and emergence of early commercial prototypes, suggest that improvements in data capture technology and natural language systems that enable simple capture of adequate information and permit a very high level of automatic coding, are not far off.

7.6 References

[1] Standards Australia: *Personal Privacy Protection in Health Care Information Systems*. AS4400, Sydney, 1995.

[2] Standards Australia: *Implementation of HL7 Part 1: Admission, Discharge and Transfer*. AS4700, Sydney, 1996.

[3] Standards Australia: *IT/14 Health Informatics Committee Work*. April 1996.

[4] Project Report: *Standards and Accreditation for General Practice Information Systems - Scoping Project.* Medical Software Industry Association and The Royal Australian College of General Practitioners. D&SG Project 95/02008 95-0351.1, 1995.

[5] Jones, C: *The Pragmatics of Software Process Improvements*. Software Process Newsletter, IEEE Computer Society, No. 5, U.S., Winter 1995.

[6] Sanders J. & Curren E.: *Software Quality: A Framework for Success in Software Development and Support*. Addison-Wesley Publishers, U.K., 1995.

[7] Saiedian, H. & McClanahan, L.M.: *Frameworks for Quality Software Process: SEI Capability Maturity Model versus ISO900*. Software Quality Journal, 5(1) pp1-23, March 1996.

[8] Manchester Business School Study: *ISO9000 - Does it work?*. SGS Yarsley, U.K., 1995.

[9] McFarlane, M.: *Effective Implementation of ISO 9001/TickIT*. Software Quality Association (NSW) Newsletter, 9(3). Sydney, March 1997.

[10] Sneddon, J.: *ISO9000 Implementation and value-added: three case studies*. Vanguard Consulting, U.K., April 1996.

[11] Software Engineering Institute: *CMM Version 2.0 Methodology*. U.S., January 1997. Http://www.sei.cmu.edu//technology/cmm.

[12] Hodgen B.(International SPICE Project - Software Quality Institute, Griffith University): *Beyond Vision 2000*. Presentation to the Software Quality Association (NSW), Sydney, 14 October 1997.

[13] *The Good European Health Record*: CEC DGXiii - C4 Health Telematics (AIM) Project A2014. London: Centre for Health Informatics and Multiprofessional Education, 1994.

[14] The Synapses Project Office: *Synapses*. Dublin: Federated Dublin Voluntary Hospitals. Http:/www.cs.tcd.ie/synapses/. 1997.

[15] *Synapses*. London: Centre for Health Informatics and Multiprofessional Education, http://chime.ucl.ac.uk/health/SYNAPSES/, Jan 1997.

[16] CEN/TC 251: *Electronic Healthcare Record Architecture: Final Draft European Prestandard PT1-011*. Brussels: European Committee for Standardisation. Http://miginfo.rug.be:8001/centc251/prestand/wg1/pt1_011. ENV 12265,1995.

[17] Computer-based Patient Record Institute: *Action Plan for development of Health Data Standards*. U.S., November 1996. Http://www.cpri.org/summitt/term.html/

[18] ASTM E1460*: Standard Specification for Defining and Sharing Modular Health Knowledge Bases*. ASTM E31.15 Sub-committee, U.S.,

[19] Electronic Prescribing and Medicines Information Consultancy. *Working Paper 1: Background Research*. IBM Consulting Group, February 1996.

[20] IBM Global Healthcare Industry: *An overview of healthcare information standards*, Http://www.solutions.ibm.com/healthcare/market/white/standard.html, 1996

[21] *PRESTIGE Project: Guidelines in Healthcare*. European Commission DGXiii Telematics Applications Programme (1994-1998), Xiii.C4 Telematics Applications for Health. Http://www.rbh.nthames.nhs.uk/rbh/itdept/r&d/projects/prestige.htm.

[22] Privacy Commissioner: *Submission to House of Representatives Standing Committee on Family and Community Affairs Inquiry into Health Information Management and Telemedicine*. Submission, September 1996.

[23] Discussion Paper: *Privacy Protection in the Private Sector*. Commonwealth Attorney-General's Department. Canberra., September 1996.

[24] Privacy Commissioner New Zealand: *Health Information Privacy Code 1994*. Privacy Commissioner. New Zealand, 1994.

[25] Australian Pharmaceutical Advisory Council (APAC*): Discussion Paper on Privacy Issues Relating to Use of Medication Data to Promote Quality use of Medicines*. Canberra, 1996.

[26] U.S. Congress, Office of Technology Assessment: *Protecting Privacy in Computerised Medical Information.* OTA-TCT-576 Washington, DC: U.S. Government Printing Office, September 1993.

[27] U.S. Congress, Office of Technology Assessment: *Bringing Health Care Online: The Role of Information Technologies*, OTA-ITC-624 Washington, DC: U.S. Government Printing Office, October 1995.

[28] Computer-based Patient Record Institute: *Action Plan for Addressing Confidentiality and Security Issues in Implementing Computer-based Patient Record Systems*. U.S., November 1996. Http://www.cpri.org/summit/cps.html/

[29] Donaldson, M.S. & Lohr, K.N., Institute of Medicine: *Health Data In The Information Age: Use, Disclosure, and Privacy*. National Academy Press, Washington, D.C., 1994.

[30] ASTM: *Guide for Access, Privacy, and Confidentiality of Medical Records.* Sub-committee E31.17, U.S.

[31] Goldman J., Mulligan D., Centre for Democracy and Technology*: Ensuring Patient Confidentiality in the Electronic Age*. Http://www.medscape.com, USA, 1996

[32] Johns M.L., American Health Information Management Association*: Testimony before the House SubCommittee on Government Management, Information and Technology*. 5 June 1997.

[33] Whitestone R.: *White House to online industry: Protect consumers or else*. ZDNet, U.S., July 1997. Http://www5.zdnet.com/zdnn/content/inwo/0729/inwo0006.html.

[34] Commonwealth Department of Health & Family Services, General Practice Branch. Correspondence to IBM Consulting Group. (Information on Government privacy policy provided to this consultancy). Canberra, July 1997.

[35] Standards Australia & Standards New Zealand: *Information Security Management*. AS/NZS 4444:1996, Sydney, 1996.

[36] Standards Australia: *Strategies for the implementation of a Public Key Authentication Framework (PKAF) in Australia*. SA MP75-1996, Sydney, 1996.

[37] Health Insurance Commission. Correspondence to IBM Consulting Group. Canberra, July 1997.

[38] Health Insurance Commission. Correspondence to IBM Consulting Group: *Security Standards Progress*. Canberra, July 1997.

[39] U.S. Congress, Office of Technology Assessment. *Issue Update on Information Security and Privacy in the Networked Environment*, OTA-BP-ITC-147 Washington, DC: U.S. Government Printing Office, June 1995.

[40] Computer-based Patient Record Institute: *CPRI Product Catalog*. Http://www.cpri.org/products.html, U.S., 1997

[41] Computer-based Patient Record Institute: *Security Features for Computer-based Patient Record Systems*. U.S., September 1996. Http://www.cpri.org/docs/features.html/

[42] Computer-based Patient Record Institute: *Guidelines for Establishing Information Security Policies at Organisations Using Computer-based Patient Record Systems.* U.S., February 1995.

[43] Computer-based Patient Record Institute: *Guidelines for Information Security*

Education Programs at Organisations Using Computer-based Patient Record Systems. U.S., June 1995.

[44] Computer-based Patient Record Institute: *Guidelines for Managing Information Security Programs at Organisations Using Computer-based Patient Record Systems.* U.S., February 1995.

[45] ASTM: *Guidelines for Minimal Data Security Measures for the Protection of Computer-based Patient Records.* Sub-committee E31.12, U.S.

[46] ASTM 1762: *Guide for Electronic Authentication of Health Care Information.* Sub-committee E31.20, U.S, 1995.

[47] Medical Records Institute: *Overview of Health Care Security and Confidentiality Standards Development Efforts and Status - December 1996.* MRI Standards Update April 1997. Http://www.medrecinst.com/mrilegup2.html, U.S., 1997.

[48] Pitchford RA & Kay S: *GP Practice Computer Security Survey*, Journal of Informatics In Primary Care. September, 1995.

[49] Herd AN: *The Data Protection Act.* Http://www.ncl.ac.uk/~nphcare/GPUK/a_herd/dataintr.html, U.K.,1997.

[50] U.K. Department of Health*: The Protection and Use of Patient Information - Guidance from the Department of Health*. U.K. , 1996.

[51] SEISMED Project*: Data Security Guidelines for Health Care Establishments*. ETHO Health Telematics (AIM) Final Report SEISMED. (1992-1995). Http://www.ehto.be/aim/volume2/seismed.htm

[52] Butler G., Australian Financial Review: *Pressure for privacy laws for business*. August 6 1997 (p28).

[53] Health Level Seven (HL-7) Web Site. Http//dumccss.mc.duke.edu/ftp/standards.html

[54] Centre for Information Technology - Agency for Health Care Policy and Research*: Current Activities of Selected Health Informatics Standards Organisations,* Maryland, USA, June 1996.

[55] McDougall M: *Standard Gains Healthcare Industry Acceptance & Support.* Health Informatics, July 1995.

[56] Health Insurance Commission. Correspondence to IBM Consulting Group: *The National Consultative Group for Private Healthcare EDI - A Private AHS Standards Process*. Canberra, July 1997.

[57] American National Standards Institute - Health Informatics Standards Board (ANSI-HISB): *Inventory of Health Care Information Standards*, USA, January 1997.

[58] *GEHR Overview*. London: Centre for Health Informatics and Multiprofessional Education. Http:/www.chime.ucl.ac.uk/Health/GEHR/. 1995.

[59] GEHR Deliverable 19. *GEHR final architecture description*. London: Centre for Health Informatics and Multiprofessional Education. Http:/www.chime.ucl.ac.uk/Health/GEHR/. 1995.

[60] Coiera E.: *Guide to Medical Informatics, The Internet and Telemedicine*. Chapman & Hall Medical. 1997.

[61] The *GALEN-IN-USE Project*: Generalised Architecture for Languages, Encyclopaedias and Nomenclatures in Medicine. Http://www.cs.man.ac.uk/mig/giu/. 1996

Section 8.0 Electronic Health Record Privacy and Legal Considerations

8.1 Privacy and Legal Issues

From our stakeholder consultation and research, it is apparent that there are a complex set of sensitive issues surrounding the maintenance, access, storage, retention, transmission, ownership, disclosure and legal admissibility and acceptance of patient information held in electronic health records. In Australia, these issues are currently being hotly but openly debated amongst the consumer, legal and medical professional bodies and individuals.

Within the context of this consultancy, the following issues have been identified as having an impact on the design and operation of the GPCS:

- **Consumer / patient access to the health record and informed consent to disclosures of information**.

  The right of access to the health record is a particularly contentious issue with the Privacy Commissioner and consumer bodies clearly advocating that individuals should have a right of access to their health records and that this is particularly important in a network connected health sector where access to identified health information for health care or secondary purposes by an increasing number of people is likely (refer to the *Privacy Commissioner submission to a House of Representatives Standing Committee inquiry into health information management and telemedicine - 1996*).

  It is worth noting that although there is no general right of access, the state and federal Freedom of Information Acts do give this right to individuals to access health records held in most public hospitals. The issue of informed consent to disclosures of personal information held within the record is tightly linked with the right of access issue.

  It is likely that development of a suitable code of practice (refer to *Section 7.2* above), supported by appropriate legislation and standards such as the RACGP draft "Code of Practice for Medical Records in General Practice"[1] which specifically focuses on the privacy, confidentiality, and security of patient medical records and is intended to cover paper-based as well as computer-based records, and the AS-4400 health data privacy standard, will provide an appropriate framework to address this issue.

- **Evidence status of the electronic health record**

  The legal status of the patient electronic health record was repeatedly raised as an important issue during the stakeholder consultation. In addition, the RACGP National Information Management Committee (NIMC) in conjunction with the Information Management Steering Group (IMSG) and United Medical Defence have been actively examining the issue in detail, with a workshop held in March 1997[2].

  Whereas the Federal Government and State Government Evidence Acts appear to broadly recognise electronic records as admissible evidence to varying degrees, there is wide variability in the scope and level of authentication required. Further to this, the legal weighting a Court may apply to electronic records tendered as evidence is variable.

The issue of proof of validity of the electronic record is dependent on a number of factors including rigour and reliability of software / data integrity management employed, hardware issues related to the media used to store the record, integrity and reliability of data storage and retrieval, and individual work practices in ensuring data validity.

- **Doctor / Patient Confidentiality of Communications**

  Whereas the ethical obligation regarding protection of confidentiality of doctor / patient communication is well established, present State legislation to protect this confidentiality is inconsistent[3]. In some States confidentiality has been protected through creation of statutory privilege, in other states, such as NSW, progress to enact amendments to existing Evidence Act legislation for the purpose of creating a special evidentiary privilege appears to be slow.

  Essentially this privilege, where enacted, enables protection of doctor / patient communications from disclosure in Court, with the doctor unable to disclose any record of communication to the Court without the consent of the patient, with the notable exceptions including the case of higher public duty (e.g. in criminal proceedings), or where the communication was made in the perpetration of a crime.

8.2 Impact on the GPCS

The major impact of these issues on the functional and technical design of the GPCS is that, from a software development perspective, data security, data protection and data integrity are paramount and that authorised access to information should be easily handled by the system with full audit trail capabilities. More specifically:

- The GPCS will need to have a highly sophisticated and granular security / authorisation and audit trail capability that controls, manages and records all user and system activity on the electronic health record and other databases where personal information is held.

- The GPCS must ensure the data integrity of patient health related information held within the electronic health record and other databases.

- The GPCS must permit a view of the electronic health record, as it existed at any time in the past, to be easily constructed.

- The GPCS must provide comprehensive data protection safeguards covering all patient health related information held within the electronic health record and other databases Compliance with relevant legislation and a comprehensive national data protection standard (if developed) will be required (refer to *Section 7.2* above).

- Electronic transmission of personal health information from the GPCS to any external computer will need to comply with relevant legislation and a comprehensive data security standard (if developed) that addresses encryption, authentication and non-repudiation approaches for health care messages between agencies and service providers (refer to *Section 7.2* above).

The GPCS detailed functional specification provides requirements to ensure that these issues are adequately addressed by the software where appropriate, notwithstanding the current absence of comprehensive Australian data security and data protection standards.

The function points that cover data security, data protection and data integrity requirements in this specification were developed with reference to the AS-4400 health data privacy standard, RACGP draft code of practice for medical records, the Good European Health Record **[4,5]** and the Requirements for Accreditation (Version 3) **[6]**.

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[1] *Code of Practice for Medical Records in General Practice.* The Royal Australian College of General Practitioners. Rozelle:RACGP, Draft - Jan 1996.

[2] Report on Workshop. *Evidence aspects of Electronic Medical Records. Patient Access to Electronic Medical Records.* RACGP Office, Forest Lodge, 22 March 1997.

[3] Munro D. & Dempsie J. *Confidential Communication and the Doctor.* Journal of the MDU. Sydney, July 1997.

[4] GEHR Deliverable 8. *Ethical and legal requirements of the GEHR architecture and systems.* London: Centre for Health Informatics and Multiprofessional Education. Http:/www.chime.ucl.ac.uk/Health/GEHR/. 1993.

[5] GEHR Deliverable 19. *GEHR final architecture description*. London: Centre for Health Informatics and Multiprofessional Education. Http:/www.chime.ucl.ac.uk/Health/GEHR/. 1995.

[6] Document No. B2158. *Requirements for Accreditation (Version 3).* Leeds: NHS Information Management Group - April 1996.

Section 9.0 General Functional Requirements of the GPCS

9.1 Introduction

This section presents the principle attributes for the GPCS electronic health record and a set of common functional requirements that are intended to provide guidance as to the overall system characteristics and operational requirements that apply to the full GPCS suite of application / functional components.

Compliance of GPCS software with the electronic health record attributes and general functional requirements detailed in this section of the Report is considered mandatory.

9.2 GPCS Electronic Health Record Principle Attributes

At the highest level, there are a number of attributes that underpin the utility, relevance and potential benefits to be realised from an Electronic Health Record. These attributes were listed in a1991 U.S. National Academy of Sciences' Institute of Medicine (IOM) study[1] and are commonly referred to as the "12 Gold Standard" attributes for a Computerised Patient Record (CPR) in the U.S. literature[2]. (n.b.: In this context, CPR and EHR are equivalent)

Principle Attributes of the GPCS Electronic Health Record

The GPCS Electronic Health Record (EHR) must comply with the following IOM attributes:

1. **Offers a problem list.**
2. **Has the ability to measure health status and functional levels.**
3. **Can document clinical reasoning and rationale.**
4. **Is a longitudinal EHR and has timely linkages with other patient records.**
5. **Guarantees confidentiality, privacy, and audit trails.**
6. **Offers continuous access for authorised users.**
7. **Supports simultaneous multiple user views into the EHR.**
8. **Supports timely access to local and remote information resources.**
9. **Facilitates clinical problem solving.**
10. **Supports direct data entry by physicians.**
11. **Supports practitioners in measuring or managing costs and improving quality.**
12. **Has flexibility to support existing or evolving needs of clinical specialities.**

[1] Dick RS, Steen EB (eds.). *The Computer-Based Patient Record: An Essential Technology for Health Care*. Washington: National Academy Press, 1991.

[2] Dick R, Andrew W. *Explosive Growth in CPRs: Evaluation Criteria Needed*. Healthcare Informatics, Feb 1995: 110-114.

9.3 GPCS General Requirements

9.3.1 General System Requirements

Requirement ID	Requirement Description
GRSR-01	The GPCS must provide seamless integration of component modules to enable easy navigation, intelligent and highly efficient access to information across all modules
GRSR-02	The GPCS must have the capability to enable linking, merging and unlinking of patient records across different operating platforms with a comprehensive audit trail of link / merge history stored within the context of the patient records
GRSR-03	The GPCS must provide the ability to easily customise and automate system housekeeping functions including back-up, file and database record management, data integrity and systems management
GRSR-04	The GPCS must have integrated support for bar code processing (bar code reading and printing bar code labels) for patient identification, record management and prescription generation purposes
GRSR-05	The GPCS must have the capability to export data to industry standard databases, analytic tools and other Office automation tools using current industry standard exchange standards such as DDE and ODBC

9.3.2 Security / Authorisation

Requirement ID	Requirement Description
GRSA-01	The GPCS must provide comprehensive system security / authorisation and audit trail capabilities
GRSA-02	The GPCS must have comprehensive and easy to use database security/ access management tools
GRSA-03	The GPCS must have the capability to provide tailorable initial logon screens for different user categories

Please note the following:

1. **It is assumed that security / authorisation requirements will meet all relevant prevailing legal requirements**.

2. It is recommended that the security features for computer-based patient record systems, published by the CPRI, be implemented for the GPCS. These features cover authentication, authorisation, integrity, audit trails, disaster prevention / recovery, data storage and transmission[1].

[1] Computer-based Patient Record Institute: Security Features for Computer-based Patient Record Systems. U.S., September 1996. Http://www.cpri.org/docs/features.html/

9.3.3 User Interface

Requirement ID	Requirement Description
GRUI-01	The GPCS must have a common (generic), consistent, tailorable / customisable and easy to use "Windows" / GUI based user interface (mouse and icon / "point and click" driven interface)
GRUI-02	The GPCS user interface must provide practice users with consistent, easy, integrated access to all GPCS applications / functional components, data and system services in accordance with the practice determined GPCS security / authorisation schema
GRUI-03	The GPCS must have consistent help support tools that provide multiple levels of on-line help (including screen, menu, function, data field and keypad help levels) with the capability of adding user defined help
GRUI-04	The GPCS should have consistent help "wizards" or equivalent to assist users in critical configuration set-up or maintenance functions
GRUI-05	The GPCS must have highly useable data entry capabilities enabling a minimum of keystrokes for data capture and use of alternate data entry technologies (including bar code readers, optical scanning devices, smart card readers, hand-held pen-based notepad PCs / Personal Digital Assistants) and optionally voice recognition
GRUI-06	The GPCS must support definition of validated fields to enable appropriate range checking on data entered
GRUI-07	The GPCS must support multiple, user definable and customised access paths / views of clinical, prescribing and practice management information (e.g. therapeutic drug views, disease profiles, diagnostic views, clinical summaries etc) and enable easy configuration of the top screens to enable practitioner personalisation / individualisation of the GPCS
GRUI-08	Each GPCS application must have the capability to set the priority of screens and navigation sequence of screens on an individual user basis

9.3.4 Practitioner Mobility

Requirement ID	Requirement Description
GRPM-01	The GPCS must have the capability to manage the full range of practice configurations including: • solo practice • multi-site practice • remote site connection to practice server • remote site (no connection to practice server)
GRPM-02	The GPCS must have the capability to manage multi-site and multi-practitioner practices with a full range of support personnel (e.g. receptionist, nurse, physiotherapist)

9.3.5 System Performance and Reliability

Requirement ID	Requirement Description
GRSPI-01	The GPCS should conform to current industry standard performance benchmarks for system response times to ensure fast (sub-second) response to user initiated transactions
GRSP-02	The GPCS must have fast interactive response times enabling provision of real time information at the point of user decision making
GRSP-03	The GPCS and its functional components must be highly reliable with appropriate fault tolerance, data integrity and automated recovery capabilities to minimise any unscheduled system downtime
GRSP-04	Systems availability for the GPCS must conform to current industry standard benchmarks to ensure maximal up-time of the system (100% availability during practice business hours)
GRSP-05	Systems maintenance functions should be highly automated and enable any required periodic scheduled downtime for system maintenance to be minimal and able to be scheduled at user defined times

9.3.6 Practice Accounting

Requirement ID	Requirement Description
GRPA-01	The GPCS must have the capability to support financial sub-entities within the overall practice context
GRPA-02	The GPCS must have the capability to support practice accounting based on models which include: • Fee for service • Practice performance based • Capitation and population based • Contract • Managed care plans • Private health insurance • Employer funded
GRPA-03	The GPCS must have the capability to meet information management and reporting requirements for the practice accounting models listed in requirement GRPA-02
GRPA-04	The GPCS must have the capability to comply with all relevant Australian accounting standards and regulations

9.3.7 Reporting

Requirement ID	Requirement Description
GRPM-01	The GPCS must have a common, easy to learn and use, highly flexible and comprehensive ad-hoc database query tool which provides multiple user-definable indices for ease of locating required information in all GPCS databases
GRPM-02	The GPCS must have consistent cross-application / functional module report generation capability that is easy to use and provides both ad-hoc and routine, user definable, and customised reporting capabilities

9.3.8 External Communications

Requirement ID	Requirement Description
GREC-01	The GPCS must have comprehensive communications and networking capabilities to enable both interactive and non-interactive electronic information interchange between the GPCS practitioner and other external sources such as GPs, specialists, hospitals, pharmacies, pathology services providers, HIC etc
GREC-02	The GPCS must support current Australian health sector electronic messaging standards including HL7 and EDIFACT

Section 10.0 Major Constraints and Dependencies

This section consolidates the major constraints identified at a detailed function point level in the functional requirements specification (*Appendix C*). These constraints are in addition to a broad range of existing policy, legislative, standards, infrastructure and cost constraints mentioned earlier in this Report and in the GPCS Scope Definition and Stakeholder Consultation Report.

Manager Grouping: Pharmaceutical Therapy Manager

Prescription Generation

Constraint:

- At present the electronic transmission of prescriptions is not possible due to a lack of agreed publicly acceptable standards and enabling legislation regarding authentication and transmission, public concern about the privacy and confidentiality of the transmitted data and the lack of a suitable network infrastructure joining doctors and pharmacists.

Drug Information Management

Constraints:

- It is recognised that creation and maintenance of the drug information database will need to be carried out at a centralised level, e.g. at the divisional or departmental level or potentially by industry based third parties. This database will need to be coded in such a way as to remain stable through releases over time.
- It is recognised that suitable electronic medicines information and guidelines, for inclusion in a knowledge database, does not exist at present. To be of value this information must be appropriately structured and coded for access and retrieval by the relevant systems.

Manager Grouping: Clinical Services Manager

Patient Clinical History and Assessment

Constraint:

- The practitioner's right to privacy of recorded thoughts relating to a patient is a contentious issue.

Decision Support

Constraint:

- It is recognised that suitable electronic medical information and guidelines, for inclusion in a knowledge database, does not exist. To be of value this information must be appropriately structured and coded for access and retrieval by the relevant systems.

Clinical Coding Management

Constraints:
- The use of natural language terms is an area which may be addressed by outcomes of the GALEN Project among others.
- Maintenance of multiterm and unified coding sets imposes significant system and maintenance overhead.

Diagnostic Test Management

Constraints:
- The orders for diagnostic tests must conform with test provider and funder guidelines.
- The diagnostic test codes to be used in Australia have not been defined as of June, 1997

Patient Management Planning & Delivery

Constraint:
- At present Australia does not have the secure and accessible network infrastructure to permit secure transfer of patient data.

Medical Information Management

Constraint:
- This manager is totally constrained by the availability of relevant medical information in useable electronic form.

Patient Education Management

Constraint:
- This manager is totally constrained by the availability of relevant educational resources in useable electronic form.

Manager Grouping: Computerised Patient Record

Electronic Health Record

Constraint:
- The capability to record patient links to other relevant persons (e.g. immediate family, other 1st degree relatives, friends, carers, sexual partners) may require careful consideration of privacy implications.

Manager Grouping: Reference Databases

Government Sourced Reference Databases

Constraint:
- Some of the required Government sources may not be available electronically for a considerable period of time (e.g. the Australian Medicines Handbook)

Manager Grouping: Desktop Systems Manager

Constraint:

- It is recognised that meeting the security requirements will require careful technical design of the data architectures to be used in the system.

Manager Grouping: External Information Manager

Constraint:

- Electronic interchange of information between the GPCS and other service providers, hospitals and agencies is constrained by the current lack of a secure, private network infrastructure for the transmission and reception of sensitive clinical information.
- Electronic interchange of information between the GPCS and hospitals is constrained by current policy restraints and lack of Hospital infrastructure.

Manager Grouping: External Communications

Constraint:

- While there has been a range of standards considered for inter-system communication and message transmission in the pathology sector over the last few years, it has now become clear that the HL7 (Version 2.2 or later) is to be strongly preferred.

Section 11.0 Functional Scope of GPCS Releases

11.1 Rationale for GPCS Releases

As presented in *Section 5.0*, the full functional scope of the GPCS represents **55** major applications / functional components.

A key finding from the extensive stakeholder consultation conducted during Phase Two (refer to *GPCS Scope Definition and Stakeholder Consultation Report*) was that the concept of core and enhanced releases referred to in the Project Charter does not accurately accommodate the breadth of applications and depth or richness of functionality that must be delivered as part of an initial release of the GPCS.

From a pragmatic perspective, it is clearly apparent that there will need to be an initial release which is functionally rich, followed by subsequent releases that incrementally build on the depth of functionality delivered in the initial release and provide additional applications / functional modules over time.

In addition, the stakeholder consultation reaffirmed the desire by practitioners for functional "plug and play" modularity, which is consistent with the findings from the previous IBM / PBB Electronic Prescribing consultancy. In essence, for the GPCS this implies that users should be able to select modules from the four major clinical / administrative manager groupings, which application(s) / functional module(s) they wish to use and then enable incremental implementation of applications / functions to suit the level of skill, comfort and utility required on an individual user (i.e. practitioners and other practice staff) basis.

This level of functional modularity would have a positive impact on adoption and usage of the GPCS by practitioners and will enable the GPCS to address the high priority needs of both the 'power' users and 'novice' users.

The recommended scope of the initial and subsequent releases will be detailed in the *Final Report*. The following evaluation criteria will be used to determine the placement of applications / functions in the initial or subsequent release categories:

GPCS Release Evaluation Criteria

1. *Functional Need* (as determined from the individual ranking of function points and summarised in *Section 11.2* below).
2. *Technology Maturity* (i.e. whether the technology to deliver the specified function already exists or needs to be developed)
3. *Degree of Difficulty* to develop software that provides the specified functionality
4. *Known Constraints* impacting development or implementation
5. *Estimated Cost* to develop and implement
6. *Estimated Timeframe* to develop appropriate software

11.2 Functional Scope Specified for the GPCS

Table 11.1 below provides a list of the functional components of the GPCS and the functional scope specified for each component. This table is intended to enable easy identification of those functions / applications that require full or partial implementation based on Release Evaluation Criteria 1 & 2 only (listed in *Section 11.1* above).

It should be noted that this table has been compiled from analysis of the relative ranking of individual function points (requirements) detailed in the attached Functional Requirements Specification (*Appendix C*). *Section 12.3* following details the ranking classification criteria used.

The technology maturity and availability for each GPCS functional area has been assessed based on our global research of commercial systems originating overseas. We have not assessed the 90 plus vendor offerings in the Australian market in order to avoid making comparisons that may be commercially damaging and to preserve our consulting neutrality. It is recognised that in Australia much of Practice Management, Appointment Management and Prescribing has been addressed by existing offerings, but that few vendors have widely implemented clinical record management systems.

It should also be noted that, from a functional perspective, in order to ensure a maximum positive impact on adoption of the GPCS by practitioners, apart from all mandatory function points (high priority), many, if not most, of the highly desirable function points (medium priority) should be delivered as part of the baseline functionality.

Table 11.1: Overview of Functional Completeness of the GPCS

Manager Grouping	Application / Function	*Total Number of Function Points*	Number of Function Points Rated *HIGH*	Number of Function Points Rated *MEDIUM*	Number of Function Points Rated *LOW*	*Technology Maturity*: Systems Claiming Comparable Functionality in Use Today	*IDEAL INITIAL Functional Release*
Practice Administration Managers	Patient and Organisation Registration	11	9	1	1	[1],[3-5],[7],[8],[10],[11],[13]	**Full**
	Patient Selection and Task Management	12	12			[1],[3-5],[7],[8],[10],[11],[13]	**Full**
	Patient Account Management	41	41			[1],[3-5],[7],[8],[10],[11]	**Full**
	Financial Management	10	9	1		Widely Available Commercially	**Full**
	Practice Performance Management	9	6	3		[2],[3],[5],[7],[8],[10],[13]	**Partial**
	Supplies / Inventory Management	12	11		1	Widely Available Commercially	**Full**
	Customer Satisfaction Management	6	1	4	1	[8],[13]	**Partial**
	Payroll Administration	13	13			Widely Available Commercially	**Full**
Practice Scheduling Managers	Patient Appointment Scheduling & Management	21	21			[1],[3-5],[7],[8],[10-13]	**Full**
	Preventive Medicine Scheduling & Patient Recall Management	15	15			[1],[3-5],[7],[8],[10-13]	**Full**
	Resource Management & Staff Rostering	7		5	2	Resource Management [7],[8],[12] Staff Rostering Widely Available Commercially	**Partial**
Pharmaceutical Therapy Managers	Prescription Generation	14	14			[2],[6],[10],[12],[13]	**Full**
	Medication History Management	8	5	2	1	[2],[6],[10],12],[13]	**Partial**
	Drug Dispensing Management	4	4			Widely Available in Australia	**Full**
	Patient Drug Information Generation	7	7			Widely Available in Australia	**Full**

Table 11.1: Overview of Functional Completeness of the GPCS

Manager Grouping	Application / Function	*Total Number of Function Points*	Number of Function Points Rated *HIGH*	Number of Function Points Rated *MEDIUM*	Number of Function Points Rated *LOW*	*Technology Maturity*: Systems Claiming Comparable Functionality in Use Today	*IDEAL INITIAL Functional Release*
Pharmaceutical Therapy Managers	Drug Information Management	10	5	3	2	Widely Available in Australia	**Full**
	Drug Therapy Decision Support	8	7		1	Some Functions Widely Available in Australia – [6],[12],[13] Overseas	**Full**
Clinical Services Managers	Patient Clinical History & Assessment	21	19	2		[1],[9],[12],[13]	**Full**
	Decision Support (Static and Dynamic / Event-Driven)	19	14	2	3	Static [1],[2],[8],12],[13] Dynamic – Partial in [4],[12],[13]	**Partial**
	Clinical Coding Management	14	9	3	2	[3],[4],[7],[8],[11-13]	**Partial**
	Diagnostic Test Management	14	14			[1],[3],[12],[13]	**Full**
	Patient Management Planning & Delivery	12	11	1		[1],[12],[13]	**Full**
	Clinical Statistics & Report Management	4	4			[8],[9],[12],[13]	**Full**
	Medical Information Management	11	11			[1],[12],[13]	**Full**
	Patient Education Management	9	8	1		[1],[12],[13]	**Full**
Computerised Patient Record	Electronic Health Record	23	21	1	1	[8],[9],[12],[13]	**Full**
	Patient Financial Record	7	7			[1],[3-5],[7],[8],[10-13]	**Full**
Reference Databases	Practice Configuration Database	8	8			Exists where required in all systems	**Full**
	Clinical and Other Code Lists	8	8			Exists where required in all systems	**Full**
	Diagnostic Services Databases	8	8			Exists where required in all systems	**Full**

Table 11.1: Overview of Functional Completeness of the GPCS

Manager Grouping	Application / Function	*Total Number of Function Points*	Number of Function Points Rated *HIGH*	Number of Function Points Rated *MEDIUM*	Number of Function Points Rated *LOW*	*Technology Maturity*: Systems Claiming Comparable Functionality in Use Today	*IDEAL INITIAL Functional Release*
Reference Databases	Health Services Directory Database	8	8			Data Not Yet Available	**Full**
	Organisations and External Providers Database	8	8			Exists where required in all systems	**Full**
	Government Sourced Reference Databases	8	8			Exists where required in all systems	**Full**
	Local Operational Databases	8	8			Exists where required in all systems	**Full**
Reporting Manager	Clinical Summary Report Generation	6	4	1	1	[3],[12],[13]	**Full**
	Ad-hoc and Routine Clinical Management Reporting	7	6	1		[2],[3],[7],[8],[10],[12],[13]	**Full**
	Administration / Practice Management Reporting	7	6	1		[3],[7],[8],[10]	**Full**
	Linkage with Office Automation Tools	1	1			[4],[7]	**Full**
Documents / Forms Manager	Forms Generation	10	10			[3],[8],[7],[12],[13]	**Full**
	Document Management	5	5			[4]	**Full**
External Information Manager	Diagnostic Services Communication	3	3			[3],[10],[12],[13]	**Full**
	Hospital Information Exchange	5	3	1	1	[10],[12],[13]	**Partial**
	Financial Information Transfer	6	5		1	[1],[3],[8],[10],[12],[13]	**Partial**
	Inter-practitioner Communication	6	6			Widely available Commercially	**Full**
	Other External Information Exchange	3	2		1	[6]	**Partial**

Table 11.1: Overview of Functional Completeness of the GPCS

Manager Grouping	Application / Function	*Total Number of Function Points*	Number of Function Points Rated *HIGH*	Number of Function Points Rated *MEDIUM*	Number of Function Points Rated *LOW*	*Technology Maturity*: Systems Claiming Comparable Functionality in Use Today	*IDEAL INITIAL Functional Release*
Desktop Systems Manager	Desktop Systems Set-Up	4	4			Not Applicable	**Full**
	Software Currency Maintenance	7	7			Not Applicable	**Full**
	External Information Currency	6	6			Not Applicable	**Full**
	Data Integrity Management	10	10			Not Applicable	**Full**
	Desktop Security / Authorisation Management	16	16			Not Applicable	**Full**
	Systems Back-Up and Maintenance	6	6			Not Applicable	**Full**
	Mobile Computing Data Management	3	3			[10]	**Full**
	Reference Database Management	5	5			Not Applicable	**Full**
External Communications Manager	Communications Message Exchange Protocols	8	8			[6],[12],[13]	**Full**
	Network Communications Protocols	4	4			[6],[12],[13]	**Full**

The systems considered in the table above are overseas based. In Australia it is recognised that much of Practice Management, Appointment Management and Prescribing has been addressed, but that few vendors have widely implemented clinical record management systems:

[1] *General Practice System* from the Physician's Computer Company (http://www.pcc.com/partner.html)
[2] *Masterpiece* from MasterPiece Medical Inc (http://www.del-crane.com/products.htm)
[3] *Medical Manager* from Personalised Programming Inc (http://www.med2000.com/htm/page1.html) – serves 125,000 doctors in the U.S.
[4] *Midex Pro* from Avebury Computing Limited (http://www.avebury.co.uk/mxsell.htm)
[5] *Patriot Medical* from Patriot Healthcare Development Inc (http://users1.ee.net./phdinc/medical.htm)
[6] *Polyscript* from ProxyMed Inc(http://www.proxymed.com/frontpage.htm)

[7] *Practice Revolution* from Electronic Healthcare Systems Inc (http://www.ehsmed.com/practicepage.html)
[8] *Remedy Practice Management* from Creative Business Solutions Inc (http://www.cbsweb.com)
[9] *Turbo-Doc* Patient Medical Record (http://www.jayi.com/sbi/turbodoc/record.html)
[10] *Vamp General Practice System* from Reuters Health Systems Limited (http://www.vamp.co.uk/prprod01.htm)
[11] *VP-Med* from Vantage Point Software (http://www.healthcare-software.com/vpmed.htm)
[12] *Logician* from MedicaLogic Inc. (http://www.medicalogic.com/)
[13] *PCN Health Network* from Physician Computer Network Inc. (http://www.pcn.com/) – serves 98,000 doctors in the U.S.

The interested reader is referred to the Healthcare Computing Publications Home page (http://www.healthcarecomputing.com/) where details of over 1300 health care computing products are provided in searchable form in an on-line directory of medical software. Review of the details obtained from this site of the major U.S. practice management system vendors clearly shows a significant number of providers which offer very full function systems including comprehensive electronic medical records for practices ranging from 3-1000 end-users. In addition, a large directory of medical software can be found on the American College of Physicians Home page (http://www.acponline.org/).

Section 12.0 Functional Specification Overview

12.1 Scope of Specification

The GPCS functional specification comprises four major areas as detailed in *Table 12.1* below. The specification describes approximately **480 detailed function points / requirements** covering the entire GPCS Functional Framework of 55 applications / functional components.

Appendix C provides the detailed function points / requirements for the full GPCS and is presented within the context of the Functional Framework described earlier (*Section 5.0*).

Table 12.1: Scope of GPCS Functional Specification

Major Requirement Area	Number	Compliance Required	Report Reference
1. GPCS Interoperation Principles	11	*Mandatory*	Section 6.1
2. Electronic Health Record Principle Attributes	12	*Mandatory*	Section 9.2
3. General Functional Requirements	31	*Mandatory*	Section 9.3
4. Detailed Functional Requirements	478	*As indicated for each individual function point*	Appendix C

12.2 Structure of Detailed Requirements Specification

The specification for each of the major application / functions identified in the full scope of the GPCS, has been produced using the structured format described below:

- ***Manager Objectives*** - describes the primary aim(s) of the major application / function.

- ***Functional Description Overview*** - provides an overview of what the application / function is intended to achieve.

- ***Functional Requirements*** - list the detailed function points / requirements, provide a relative ranking / priority of the function points (*H = High, M = Medium, L = Low*), in addition to flagging constraints / issues that may, or are currently known to, impact the successful delivery of the functionality described.

- ***Linkages*** - identifies the message communication to / from other GPCS application / functional components. It is assumed that all GPCS applications / functional modules link to the Desktop Systems Manager. Where this is not obvious in the specification, the role the Desktop Systems Manager plays has been explicitly mentioned.

- ***Constraints / Dependencies*** - details the strategic / policy, development and implementation issues that may, or are currently known to, impact the successful delivery of functionality detailed in individual function points that have been flagged appropriately.

- ***Functional Operational Assessment*** - identifies, where appropriate, the relevant detailed functional operation scenario described in *Section 6.2* of this Report. The objective of including this section is to provide some guidance for development of detailed test cases / scripts which could be used as a basis for evaluation of key function points.

12.3 Function Point Relative Ranking Criteria

The relative ranking / priority of the individual function points detailed in *Appendix C* was made according to the following classification criteria:

Function Point Priority Ranking	Interpretation
High	Mandatory
Medium	Highly Desirable
Low	Desirable

High Priority (H) - the functionality specified by these function points is **mandatory** and addresses a basic or essential need for effective and efficient operation of the GPCS.

Medium Priority (M) - this category includes requirements that would provide considerable efficiency or productivity benefit to users and are therefore **highly desirable** by definition.

Low Priority (L) - this category is used to classify the "nice to have" or **desirable** requirements but which are not considered to be essential to the efficient, effective or safe operation of the GPCS.

Section 13.0 Implications and Proposed Next Steps

The GPCS described in this specification is a system which has the capability to support a major improvements in the quality, efficiency and overall position of Australian General Practice. The system is also, taken as a whole, state-of-the-art, and reflects a global heritage in terms of the functional and design ideas. However, nothing in the recommended initial release of the GPCS can be seen as being in any way beyond the capabilities of experienced developers of the Australian Medical Software Industry.

What is novel, and the source of the major challenge for the industry, is the combined breadth and depth of the proposed system, combined with the requirement that ideally there will be the capability for development of modules by a range of vendors which will be easily and simply brought together in a way determined by the needs of an individual practice. The clear requirement from practitioners we consulted was for the GPCS to have the scope, reach and capability to meet not only immediate needs but to position them for painless expansion of their system well into the future.

The major implication of the existence of this Specification and its companion Technical Architecture is that the time has now arrived for the strategic issues surrounding the ultimate delivery of this system to General Practice to be clearly and finally addressed, and for the development and integration work to begin. Little more needs to be said in this Report, except to reflect that there does not seem to have been much progress addressing these key issues and constraints since the previous GPCS Scope Definition and Stakeholder Consultation Report. The standards issues, especially, need prompt action if the delivery of the GPCS to its users is not to be significantly delayed.

From the perspective of this present Report the key next step is the delivery of the Final Report which will bring together all the deliverables provided to date into a coherent final set of recommendations for the steps required to make the GPCS a reality on the doctor's desk.

Appendix A: Workshop Participants and Key Contributors

JAD Workshop Participants

Name	Position	Workshop
Dr Barry Abeshouse	General Practitioner	JAD-5
Dr Tony Andrew	General Practitioner	JAD-7
Dr AM Babu	General Practitioner	JAD-7
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Dr Kristine Battye	Projects Co-ordinator, Townsville Division of General Practice	JAD-8
Dr Patrick Bolton	General Practitioner, Chairman, DIMS & Deputy Director, Central Sydney Area Health Service Division of General Practice	JAD-5
Dr Diana Bradbury	General Practitioner	JAD-1
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Dr John Burgess	General Practitioner	JAD-2
Dr Frances Cadden	General Practitioner	JAD-6
Dr Angelo Carbone	General Practitioner	JAD-6
Dr Tony Cooper	General Practitioner	JAD-2
Dr Verity Cooper	General Practitioner	JAD-3
Dr Marie Creighton	General Practitioner	JAD-6
Dr Paul Day	General Practitioner	JAD-4
Dr Michael Deacon	General Practitioner	JAD-1
Dr Peter Doyle	General Practitioner	JAD-8
Dr Gordon Eckert	General Practitioner	JAD-3
Dr Hayden Elderfield	General Practitioner	JAD-6
Dr Clare Fairweather	General Practitioner	JAD-3
Dr Rob Ferguson	General Practitioner	JAD-4
Dr Gerard Flaherty	General Practitioner & GP Expert Panel	JAD-2
Dr Robert Florida	General Practitioner	JAD-7
Dr Mark Foster	General Practitioner	JAD-1
Dr Oliver Frank	General Practitioner & IT representative, Adelaide North Eastern Division of General Practice	JAD-3
Dr Joseph Gallo	General Practitioner	JAD-7
Dr Karen Gartlan	General Practitioner	JAD-2
Dr Robyn Giec	General Practitioner	JAD-2
Dr John Goswell	General Practitioner	JAD-1
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Mr Des Hamilton	Pathologist, Hampsons Pathology	JAD-1
Dr Diana Hart	General Practitioner	JAD-5
Dr Noel Hickson	General Practitioner	JAD-5
Dr Robert Hills	General Practitioner	JAD-6
Dr Clifford Hing	General Practitioner	JAD-5
Dr Stephen Hodby	General Practitioner	JAD-6
Dr Doug Hor	General Practitioner	JAD-7
Dr Malcolm Ireland	General Practitioner, Lecturer, General Practice, Newcastle University & GP Expert Panel	JAD-1, JAD-5

Name	Position	Workshop
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Dr Peter James	General Practitioner	JAD-6
Dr Richard Keyes	General Practitioner	JAD-8
Dr Allan Kirkpatrick	General Practitioner	JAD-1
Dr Linda Lamb	General Practitioner	JAD-3
Dr Teng Liaw	General Practitioner, Lecturer, Department Public Health and Community Medicine, Melbourne University & GP Expert Panel	JAD-4
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Dr Richard McKinnon	General Practitioner	JAD-3
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Dr John Miller	General Practitioner	JAD-5, JAD-7
Dr Norman Miller	General Practitioner	JAD-6
Dr Brian Morton	General Practitioner, Chairman Northern Division of General Practice	JAD-7
Dr Idmond Ng	General Practitioner	JAD-4
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Ms Diana White	Practice Manager	JAD-7
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Key Contributors

Name	Position / Organisation
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Mr Peter Treseder	Standards Australia, Project Manager IT/14 Health Informatics Committee
Dr Don Walker	General Practitioner, Clinical Coding Specialist, Department of Community Medicine, Adelaide University & President of HISA

Appendix B: IBM Consulting Group Team

The IBM Consulting Group team that contributed to the production of this Report were:

Kellyanne Chu, Associate Consultant
Paul Clarke, Senior Consultant (Engagement Manager)
Geoff McDonnell, Managing Consultant
David More, Health Industry Specialist
David Rowed, General Practice IT Consultant; Chairman, GP Expert Panel

Appendix C: Detailed Functional Requirements Specification

Manager Grouping:	**Practice Administration Managers**
Manager:	**PATIENT AND ORGANISATION REGISTRATION MANAGEMENT**

Manager Objectives:

To capture and maintain the patient and organisational demographic information used by the rest of the GPCS.

Functional Description Overview:

The Patient and Organisation Registration Manager covers the following functions:

- Initial registration of new patient
- Maintenance of patient details
- Production of demographic reports

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PARM-01	Capability to capture the patient minimum data set required for operation of the GPCS from whatever information sources are available	**H**	
PARM-02	Capability to maintain the patient and organisational demographic details over time with appropriate maintenance of history and audit trails	**H**	
PARM-03	Capability to flexibly manage patient and family relationships preserving history of elements such as name changes, address changes etc.	**H**	
PARM-04	Capability to record in an organisational and external providers database, entities that may be responsible for bills and define the required attributes (eg Address, Directors, ACN Number etc) of the organisation for operation of the GPCS	**H**	
PARM-05	Capability to flexibly manage an unlimited number of patient aliases and other variable demographic information	**H**	
PARM-06	Capability to import demographic data from other practice management system under controlled conditions with appropriate audit controls	**H**	
PARM-07	Capability to merge patient identities and records into a single patient record	**H**	
PARM-08	Capability to record and manage patient identifiers provided by major health care providers or the HIC	**H**	
PARM-09	Capability to record, manage and utilise patient photographs for identification and security purposes within the GPCS	**M**	
PARM-10	Capability to utilise patient physical attributes for verification of identity (eg fingerprint scanning etc)	**L**	
PARM-11	Capability to produce audit reports and exception lists from patient database	**H**	

Linkages:

Electronic Health Record
Reference Databases (Organisations and External Providers Database)
Reporting Manager (Admin / Practice Management Reporting)
Patient Selection and Task Management

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Practice Administration Managers**
Manager:	**PATIENT SELECTION MANAGEMENT**

Manager Objectives:

To enable a patient to be selected as current for the purpose of working with that patient across all GPCS applications.

Functional Description Overview:

The Patient Selection Management Manager covers the following functions:

- Selection of a patient on flexible search criteria.
- Displays and makes available demographic data for the selected patient.
- Permits easy task initiation with the selected patient.
- Alerts the Decision Support Manager of the patient selection to initiate patient specific and context sensitive decision support.
- Preserves the currency of the patient being managed until a new patient is selected or the initiated task is not patient related.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PSEL-01	Capability to easily select a patient ,or a group of patients, from the patient database (Electronic Health or Financial Record). Also to be able to use a range of search criteria including name, unique patient identifier, arbitrary combinations of other demographic criteria and to employ techniques such as fuzzy logic matching and Soundex in the searches.	**H**	
PSEL-02	Capability to display a partial demographic record to confirm the correct patient has been selected and to then if required display the full demographic record	**H**	
PSEL-03	Capability to easily select and initiate tasks from a user defined task list with the selected patient (eg prescribe drug, display clinical or financial data, arrange referral etc)	**H**	
PSEL-04	Capability to alert the Decision Support Manager of a patient selection for patient specific and context sensitive decision support	**H**	
PSEL-05	Capability to provide the patient selection functionality at all appropriate points within the full GPCS application suite	**H**	
PSEL-06	Capability to maintain a most recently selected individual patient list ('patient active list') of up to a user defined number of patients	**H**	
PSEL-07	Capability to maintain the patient active list, where actions /tasks are outstanding of flagged by the practitioner	**H**	
PSEL-08	Capability to have the 'active list' automatically populated with the current days appointments	**H**	
PSEL-09	Capability to move a user selected patient from the 'active list' to a task holding file, and have that list be easily accessible from all appropriate screens in the system.	**H**	
PSEL-10	Capability to have the 'active task" list alert the user of un-finished tasks at a user defined interval	**H**	
PSEL-11	Capability to support the automatic display of user defined critical clinical data on an initial clinical screen from which further actions and information can be initiated or retrieved, once a patient selection is made.	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PSEL-12	Capability to alert the practitioner to the existence of a patient photograph within the system to assist is patient identification, and to record the age of the picture and reason for the lack of a photograph if it has been requested and declined.	**H**	

Linkages:

Electronic Health Record
Patient Financial Record
Decision Support Manager
All other User Applications within the GPCS.

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario(s) A to D from Section 6.2

Manager Grouping:	**Practice Administration Managers**
Manager:	**PATIENT ACCOUNT MANAGEMENT**

Manager Objectives:

To accurately capture and manage the financial liabilities of the individual patient and third parties to the practice for the purposes of patient care.

Functional Description Overview:

The key functions provided by the module include:

- Patient, Family, Third party, Workers Compensation, Medicare, Veterans Affairs billing
- Receiving payments and receipt production
- Manage external financial transactions
- Production of account statements
- Production of patient account related reports
- Provide appropriate linkage to other financial systems, patient loyalty system and MIS functions.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAM-01	Capability to easily create a linkage between a patient (or responsible payer or Government or private third parties) and a chargeable item to record a financial liability	**H**	
PAM-02	Capability to easily select all the required information to record a financial liability	**H**	
PAM-03	Capability to utilise appointment information to provide intelligent defaults and reduce data-entry requirements for patient accounting system	**H**	
PAM-04	Capability to, for the purpose of accurate identification, display patient details, account details, and recent visit history, liable parties and chargeable items and permit easy review of debt history and planned method of payment	**H**	
PAM-05	Capability of the system to easily look up patient databases, service databases, item charge databases and third party databases to enable efficient and accurate bill production	**H**	
PAM-06	Capability to assign patient charges to individual service providers within the practice or to assign patient charges to the practice as a whole as required	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAM-07	Capability to produce a patient bill which includes: • Account Name and address details • Patient identification • Address and Date • Practice and provider identification • Referring practitioner details • Reason for billing • Item number • Service description • Discount given and reason for discount • Workers Compensation details • Amount charged • Amount received • Outstanding balance on a total or per item basis if required	**H**	
PAM-08	Capability to capture and include free text as part of the patient bill at an item or bill level	**H**	
PAM-09	Capability to display and print service descriptions over multiple lines including service details (date, description and item number), provider and referral details for individual service transactions on a patient account	**H**	
PAM-10	Capability to fully support open-item accounting	**H**	
PAM-11	Capability to receive payment in multiple forms including cash, credit card, cheque and EFTPOS in any combination, and to receive part-payments for flagged non-rebateable component.	**H**	
PAM-12	Capability to automatically or manually flexibly assign payments, groups of payments or parts of payments to services or parts of services rendered	**H**	
PAM-13	Capability to create on-demand and routine statements following receipt of payments	**H**	
PAM-14	Capability to configure the system to enable suppression of printing of the entire or partial details of the patient account based on recent print history, according to a user-definable print time window	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAM-15	Capability to track and audit assignment of payments to service items	**H**	
PAM-16	Capability to receive and manage payments in advance including booked appointment and reservations	**H**	
PAM-17	Capability to produce patient comprehensible invoices, statements and receipts at any time	**H**	
PAM-18	Capability to produce bank deposit documentation including cash, cheques and credit cards in formats acceptable and convenient for depositing at relevant institutions	**H**	
PAM-19	Capability to charge by EFTPOS or credit card at point of billing including capability for electronic card verification	**H**	
PAM-20	Capability to receive payments by cheque and record drawer, bank, branch, BSB number, amount, cheque number and cheque authorisation details.	**H**	
PAM-21	Capability to provide on-line enquiries regarding patient itemised account status, including payment assignments, gap and full amounts and payments per calendar or fiscal year, to meet telephone and in-office enquiries	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAM-22	Capability to implement billing rules from external sources	**H**	**C1**
PAM-23	Capability to support secure electronic billing and receipting to third party insures (private and Government)	**H**	
PAM-24	Capability to handle debit accounts within the patient accounting system	**H**	
PAM-25	Capability to manage credit provision in the patient billing context including capture of appropriate credit and identification information	**H**	
PAM-26	Capability to produce HIC and other available assignment vouchers at the point of billing	**H**	
PAM-27	Capability to print a Medicare claim form at the point of billing	**H**	
PAM-28	Capability to accumulate total non-rebateable components of payments by individuals and/or families for a given period to control total out-of-pocket patient charges.	**H**	
PAM-29	Capability to bill a service to multiple parties for separate components, e.g. a third party plus an agreed personal component.	**H**	
PAM-30	Capability to produce standard patient accounting reports including: • Aged trial balance • Day journals by provider and practice • Income reports by provider and practice • Banking reports • Periodic service profile by provider and practice • Audit and exception reports	**H**	
PAM-31	Capability to bill patients based on a time based rate (eg hourly) and automatically match this to the closest MBS Schedule Item.	**H**	
PAM-32	Capability to send a message to the staff responsible for the billing as to the appropriate bill to be created.	**H**	
PAM-33	Capability to export patient accounting data and summary data to industry standard databases and analytic tools including spreadsheets	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAM-34	Capability for the practitioner to easily and directly create a patient bill from the clinical work location, and inform the front desk that the bill has been created	**H**	
PAM-35	Capability to charge accounting fees based on user defined criteria	**H**	
PAM-36	Capability to generate bill for failing to attend an appointment	**H**	
PAM-37	Capability to write-off bad debts and to flag doubtful and dishonoured debts	**H**	
PAM-38	Capability to support 'pay doctor cheque' billing by charging a patient moiety and printing or electronically transmitting the claim details	**H**	
PAM-39	Capability to create a patient account statement free of clinical data for use by debt collection agencies	**H**	
PAM-40	Capability to monitor the patients expected to be holding 'pay doctor' cheques as a result of 'pay doctor cheque' billing	**H**	
PAM-41	Capability to export relevant summary financial information into the General Ledger including total receipts, total debtors ledger, total billings and total write-offs by provider or other charging entities	**H**	

Linkages:

Patient Financial Record
Electronic Health Record
Organisations and External Providers Database
Government Sourced Reference Databases
Health Services Directory Database
Practice Configuration Database
Administration / Practice Reporting
Financial Management
Patient Selection and Task Management
Practice Performance Management
External Information Manager (Financial Information Transfer)
External Communications Manager (Network Communications)

Constraints / Dependencies:

C1. These rules are currently embodied in HIC regulations and private health fund payment schedules but may in the future originate from other sources

Functional / Operational Assessment:

Scenario(s) A to E from Section 6.2 (especially Scenario D)

Manager Grouping:	**Practice Administration Managers**
Manager:	**FINANCIAL MANAGEMENT**

Manager Objectives:

To capture, report, monitor and control the financial status of the practice.

Functional Description Overview:

The Financial Management System includes:

- General ledger
- Accounts receivable
- Accounts payable
- Asset management
- Commitment management

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
FINM-01	Capability to provide general ledger, accounts payable, general accounts receivable and asset and commitment registers of equivalent functionality and flexibility to major industry standard commercial packages, or to interoperate with such packages as may be commercially available.	**H**	
FINM-02	Capability to receive summary (and detailed, if required) patient accounting information from patient based accounting system	**H**	
FINM-03	Capability to manage both financial and statistical accounts within the general ledger (e.g. occasions of service)	**M**	
FINM-04	Capability to capture, manage and report on non patient based billing	**H**	
FINM-05	Capability to capture, manage and report on practice creditor financial transactions	**H**	
FINM-06	Capability to capture, manage and report on billing that is not based on individual patient services e.g. corporate consulting, Divisional work, Better Practice Program and other possible research, education and capitation programs.	**H**	
FINM-07	Capability to maintain an assets register and manage appropriate depreciation and write-offs	**H**	
FINM-08	Capability to maintain a commitments register	**H**	
FINM-09	Capability to produce standard reports and on-line enquiries to address the requirements of: • Liquidity management (cash on hand) • Asset management • Commitment management • Overall financial position • Creditor and debtor status	**H**	
FINM-10	Capability to have the flexibility to easily design a broad range of standard financial management reports covering requirements in detailed in FINM-09 above	**H**	

Linkages:

Patient Financial Record
Patient Account Management
Practice Performance Management
Administration / Practice Management Reporting
Patient Selection and Task Manager

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenarios D & E from Section 6.2

Manager Grouping:	**Practice Administration Managers**
Manager:	**PRACTICE PERFORMANCE MANAGEMENT**

Manager Objectives:

To provide comprehensive management information to support optimal practice operation.

Functional Description Overview:

Provides those responsible for the management of the practice with the information, analytic and decision support tools to enable financially prudent and effective practice management and development. This functionality should encompass the following:

- Monitoring, analysis and reporting on broad and user definable combinations of clinical, financial, practitioner and customer satisfaction, and activity data
- Capture and management of practitioner satisfaction data
- Capture and management of financial data from payers

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PPM-01	Capability to represent statistical information in graphical and text form	**H**	
PPM-02	Capability to import and export management information to commercially available analytic and database tools	**H**	
PPM-03	Capability to flexibly define and implement practice determined performance measures utilising all (or subsets of all) data elements captured by the system	**H**	
PPM-04	Capability to generate both on-demand reports and automated scheduled generation of reports at user defined times via the Practice / Administration Reporting Manager	**H**	
PPM-05	Capability to provide a summary view of practice-determined key performance indicators in user definable graphical or text form to provide a "cockpit" picture of the health of the practice	**M**	
PPM-06	Capability to receive and store reports and summary information from payers (e.g. HIC) in electronic form for management review	**M**	
PPM-07	Capability to produce a broad range of reports to develop a profile of practice activities, by practice and service provider, addressing such issues as: • Average charge per patient • Income type (e.g. Bulk Billing, Workers Compensation etc) • Referral patterns • Customer satisfaction • Billable and non-billable utilisation	**H**	
PPM-08	Capability to monitor and report on user errors, abuse, or suspected fraud across the practice and for individual users, in order to identify staff that need additional education / training in the correct use of the system or appropriate corrective action	**H**	
PPM-09	Capability to collect statistics necessary for inter-practice comparison	**M**	

Linkages:

Electronic Health Record
Patient Financial Record
Patient Account Management
Financial Management
Administration / Practice Management Reporting
Patient Selection and Task Manager
Prescription Generation
Office Automation
Desktop System Manager (Security / Authorisation)
External Information Manager (Financial Information Transfer)
External Communications Manager (Network Communications)

Constraints / Dependencies:

Nil

Functional /Operational Assessment:

Scenario E from Section 6.2

Manager Grouping:	**Practice Administration Managers**
Manager:	**SUPPLIES / INVENTORY MANAGEMENT**

Manager Objectives:

To provide a comprehensive capability to effectively manage the practice supplies and purchasing functions.

Functional Description Overview:

The system includes the capabilities for:

- Inventory management and control
- Goods reception
- Ordering
- Purchasing

The system will have the capability to ensure minimum stock loss through tracking of usage of product, expiry dates and other relevant items and in addition will provide linkages to clinical and billing systems to ensure appropriate charging of specified stock consumed in patient care

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
SUPP-01	Capability to support purchasing of large volume items from suppliers using Electronic Data Interchange	**L**	
SUPP-02	Capability to easily order all relevant supplies for the operation of the practice including surgical supplies, stationery (including Government stationery), medicines, cleaning supplies, disinfectants etc.	**H**	
SUPP-03	Capability to easily maintain and report on status of all inventory items in summary and itemised form	**H**	
SUPP-04	Capability to produce re-order reports on a "Just in Time" basis which takes into account high turnover items and likely re-order delays	**H**	
SUPP-05	Capability to define a user determined expiry warning period for dated inventory	**H**	
SUPP-06	Capability to manage "Doctor's Bag" medication	**H**	
SUPP-07	Capability to record goods reception and to link invoice to purchase order	**H**	
SUPP-08	Capability to manage part delivery of goods ordered and stock returns	**H**	
SUPP-09	Capability to capture, manage and report on purchasing commitments and to transfer commitment information to the financial commitments register	**H**	
SUPP-10	Capability to update financial commitments register based on receipt of goods to either stock or asset item status and to reflect overall status in the general ledger	**H**	
SUPP-11	Capability to manage sales tax and GST calculations where goods are sold to patients and have these taxes reflected in invoices and the general financials	**H**	
SUPP-12	Capability to classify all stock inventory items as either chargeable to patient or consumable	**H**	

Linkages:

Electronic Health Record
Patient Financial Record
Patient Account Management
Financial Management
Practice Performance Management
Administration / Practice Management Reporting
Patient Selection and Task Management
Drug Dispensing Management
External Information Manager (Financial Information Transfer, Other External Information Exchange)
External Communications Manager (Network Communications)

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario B and E from Section 6.2

Manager Grouping:	**Practice Administration Managers**
Manager:	**CUSTOMER SATISFACTION MANAGEMENT**

Manager Objectives:

To gather information on patient satisfaction for the purpose of improving and tailoring service provision in order to best meet patient needs / expectations, and to enable planned development of practice capabilities to best service those needs.

Functional Description Overview:

The customer satisfaction management system supports comprehensive management of GPCS generated data, integrated with client survey production and analysis.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
CUST-01	Capability to flexibly define survey instruments using standard and tailorable templates	**M**	
CUST-02	Capability to easily capture survey data and support analysis with appropriate industry standard analytic tools	**M**	
CUST-03	Capability to produce reports for internal practice review and external agencies including Government, Divisions of General Practice	**M**	
CUST-04	Capability to produce management reports on key satisfaction indicators	**M**	
CUST-05	Capability to maintain a database of classified complaints, responses to complaints, actions taken and other incidents relevant to customer satisfaction and generate appropriate summary reports as required	**H**	
CUST-06	Capability to support the analysis and reporting of patient satisfaction related data (e.g. patient walkout rate, non-attendance non-compliance, waiting times and bad debts) through linkage to patient appointment scheduling / management, and financial systems	**L**	

Linkages:

Electronic Health Record
Patient Financial Record
Patient Account Management
Practice Performance Management
Administration / Practice Management Reporting
Patient Selection and Task Manager
Patient Appointment Scheduling and Management

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario E from Section 6.2

Manager Grouping:	**Practice Administration Managers**
Manager:	**PAYROLL ADMINISTRATION**

Manager Objectives:

To calculate and record staff wages and related payments and liabilities.

Functional Description Overview:

The payroll administration system functionality encompasses generation of pay, calculation of payroll and group tax, superannuation, leave liability and workers compensation insurance, and produces appropriate staff and statutory documentation.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAY-01	Capability to capture all relevant personnel and tax modifying information (eg tax exemption) for the generation of pays	**H**	
PAY-02	Capability to capture actual time and attendance data to enable accurate calculation and generation of payslips and to identify exceptions from the staff rostering system	**H**	
PAY-03	Capability to accurately calculate and produce payslips taking into account awards, bonus and incentive payments, allowances, regulations and specific contract conditions (including practitioner payment based on patient billing)	**H**	
PAY-04	Capability to support payment of staff by Electronic Funds Transfer / Direct Deposit, cheque or cash	**H**	
PAY-05	Capability to automatically provide payroll summary data to the General Ledger including total pay, group tax, long service leave, superannuation, payroll tax liability	**H**	
PAY-06	Capability to calculate group tax liability	**H**	
PAY-07	Capability to calculate superannuation liability on an a per employee and per fund basis, and to manage payments	**H**	
PAY-08	Capability to calculate wage totals within time windows as required by workers compensation insurers	**H**	
PAY-09	Capability to maintain a leave register including accrued leave (holiday, sick and other special leave)	**H**	
PAY-10	Capability to produce Group Certificates as required.	**H**	
PAY-11	Capability to calculate pay roll tax liability	**H**	
PAY-12	Capability to produce end-of-year group tax reconciliation statements.	**H**	
PAY-13	Capability to produce superannuation status reports on a per employee basis, and on demand.	**H**	

Linkages:

Financial Management
Practice Performance Management
Administration / Practice Management Reporting
Patient Selection and Task Manager
Resource Management and Staff Rostering
External Information Manager (Financial Information Transfer)
External Communications Manager (Network Communications)

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario E from Section 6.2

Manager Grouping:	**Practice Scheduling Managers**
Manager:	**PATIENT APPOINTMENT SCHEDULING & MANAGEMENT**

Manager Objectives:

To easily make, view and dynamically schedule patient appointments with a practice service which optimally balances:

- Patient urgency and need
- Patient management sequencing
- Convenience to patient and service provider
- Physical and human resource constraints

with the ultimate aim of minimising patient waiting time and optimising patient flow and throughput.

Functional Description Overview:

The Patient Appointment Scheduling and Management System flexibly assigns a patient with an appointment time and service provider constrained by physical and human resource availability, patient urgency and need, convenience to patient, acceptability to service provider and service provider routines. The Manager enables dynamic allocation of resources to minimise waiting time.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAPP-01	Capability to easily enter new patient or select a patient and, when beginning an appointment, be show known special requirements e.g. extra time needed, waiting room, access, language and financial issues and the existence of already booked appointments.	**H**	
PAPP-02	Capability to easily find a suitable time and make an appointment given the patient's preference for provider (or a suitable provider given the patient's time requirements) with regards to resource constraints	**H**	
PAPP-03	Capability to produce management reports and graphs on patient throughput, resource utilisation, waiting times, peak activity times etc or link with the Practice Performance Manager to achieve the same objective.	**H**	
PAPP-04	Capability to document appointment specific notes	**H**	
PAPP-05	Capability to transfer patients between doctors and resources	**H**	
PAPP-06	Capability to multiply book and represent this on screen	**H**	
PAPP-07	Capability to record arrival time, no-shows, walk-outs in association with waiting room management and display appropriate alerts at presentation	**H**	
PAPP-08	Capability to cancel or move appointments and note reason for the action	**H**	
PAPP-09	Capability to provide alerts when patient appointment or presentation variation may have clinical impact	**H**	
PAPP-10	Capability to reflect individual practitioner's practice styles, timing and service patterns	**H**	
PAPP-11	Capability to schedule multiple time interdependent services within a single overall visit	**H**	
PAPP-12	Capability to make appointments for several persons across several providers within a single time cluster e.g. family	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PAPP-13	Capability to flexibly define sessions for a provider indefinitely into the future based on provider preference, day of week, leave and public holiday etc	**H**	
PAPP-14	Capability to download session appointment list and details to a mobile computer for use when not network connected and later upload altered information for reconciliation.	**H**	
PAPP-15	Capability to normally operate scheduling system by any authorised practice member from any remote location	**H**	
PAPP-16	Capability to present a dynamic integrated columnar (by provider or clinical service) display of all patients and all service providers for current and future days within the practice with current waiting times and estimates of likely worst case waiting times where relevant. (The columnar display is to be aligned either by time or booking slot)	**H**	
PAPP-17	Capability to flexibly view the individual service provider appointment schedule at user definable grid timings	**H**	
PAPP-18	Capability to provide a current dynamically refreshed summary list of the session appointments for a location that is easily accessible from the front screen of the GPCS and with all relevant appointment details displayed when selected	**H**	
PAPP-19	Capability to identify all outstanding future appointments for a patient and history of last attendances.	**H**	
PAPP-20	Capability to alert office staff to patients with special requirements for being reminded of appointments or having unusual time or resource requirements.	**H**	
PAPP-21	Capability to flexibly link with patient recall and preventative medicine systems	**H**	

Linkages:

Electronic Health Record
Patient Financial Record
Patient Selection and Task Management
Practice Performance Management
Preventive Medicine Scheduling and Patient Recall Management
Resource Management and Staff Rostering

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario B from Section 6.2

Manager Grouping:	**Practice Scheduling Managers**
Manager:	**PREVENTIVE MEDICINE SCHEDULING AND PATIENT RECALL MANAGEMENT**

Manager Objectives:

To ensure all patients requiring preventive medical and surveillance services are identified, recalled and followed up to guarantee the appropriate services are delivered.

Functional Description Overview:

The preventive medicine scheduling system has the following functional attributes:

- The ability on an automatic basis to search the patient database to identify patients requiring preventive services
- The ability to produce recall / reminder messages based on practice defined recall templates
- The ability to track the eventual levels of patient attendance and compliance against practice and published preventive medicine objectives where patient risk may be increased
- The ability to ensure effective recall and surveillance of patients requiring on-going management of established illness

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PREM-01	Capability to flexibly define a preventive issue set and associate patients fulfilling the criteria for this set on an individual or category basis with appropriate recall activities	**H**	
PREM-02	Capability to record the completion of a recall by finalising the recall encounter, and to schedule a new encounter when required.	**H**	
PREM-03	Capability to produce personalised patient friendly recall / reminder notices and correspondence	**H**	
PREM-04	Capability to record the reason for recall at the time of scheduling with relevant details covering management required etc.	**H**	
PREM-05	Capability to produce in-house reports identifying successful recall rates and outstanding patients requiring further follow up	**H**	
PREM-06	Capability to on a user defined basis to flexibly define a recall pattern for an individual patient	**H**	
PREM-07	Capability to support linkage to the patient attendance recording system to aid in validation of the occurrence of successful recall and ensure correct action is taken.	**H**	
PREM-08	Capability to display on all major patient screens the patient recall status to ensure recall surveillance activities are not omitted during patient attendance	**H**	
PREM-09	Capability to produce telephone reminder / recall lists	**H**	
PREM-10	Capability to manage integrated recalls and to record attendance for patients who are on multi-aspect asynchronous surveillance	**H**	
PREM-11	Capability to have the system supported by a practice and other approved guidelines and, for patients under surveillance, to identify patients who are not being managed in conformance with those guidelines.	**H**	
PREM-12	Capability to terminate disease or problem specific surveillance and record reason for termination or suspension.	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PREM-13	Capability to produce printed note / label for attachment to patient's paper file to flag the existence of a surveillance matter.	**H**	
PREM-14	Capability to place 'physician initiated recall' markers, at the time of an encounter, in the recall system to ensure patient follow-up is undertaken.	**H**	
PREM-15	Capability to send e-mail patient reminders if acceptable to patient	**H**	

Linkages:

Electronic Health Record
Patient Selection and Task Management
Practice Performance Management
Patient Appointment Scheduling and Management
Medical Information Management
External Information Manager (Other External Information Exchange)
External Communications Manager (Network Communications)

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario B from Section 6.2

Manager Grouping:	**Practice Administration Managers**
Manager:	**RESOURCE MANAGEMENT AND STAFF ROSTERING**

Manager Objectives:

To enable the optimum utilisation of practice resources and staff for the delivery of patient care.

Functional Description Overview:

This system encompasses the capture and management of utilisation and deployment data of human, equipment and building / accommodation resources used in the operation of the practice

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
RES-01	Capability to support multi-site resource management	**M**	
RES-02	Capability to flexibly assign patient, location, procedure and personnel to ensure optimum service delivery	**M**	
RES-03	Capability to integrate with patient appointment scheduling to best enable deployment of personnel, equipment and building / accommodation resources	**M**	
RES-04	Capability to manage and report on multiple resources including practice rooms and equipment	**L**	
RES-05	Capability to intelligently schedule resource deployment based on clinical needs	**M**	
RES-06	Capability to provide management reports on historic resource utilisation directly or via the Practice Performance Manager	**M**	
RES-07	Capability to produce costed staff rosters which can be optimised for cost taking into account award conditions, overtime costs and availability of resources and which can link to the payroll and budgeting applications of the GPCS.	**L**	

Linkages:

Financial Management
Patient Selection and Task Management
Practice Performance Management
Reference Databases (Practice Configuration Database)
Payroll Administration
Office Automation

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario A from Section 6.2

Manager Grouping:	**Pharmaceutical Therapy Managers**
Manager:	**PRESCRIPTION GENERATION**

Manager Objectives:

The objective of the Prescription Generation Manager is to produce a complete, accurate, pharmacist friendly, prescription in either paper or electronic form and to appropriately record the prescription transaction in the patient electronic health record.

Functional Description Overview:

The prescription generation manager, under the control of the practitioner, and possibly after some intermediate processing within decision support, collects the necessary information, from:

- The medication information from the Drug Information Manager
- The database of demographic data held about the patient who is being prescribed for
- The practitioner information required for prescribing from the medical personnel database and produces either a printed prescription or an electronic prescription ready for transmission to the selected pharmacist

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PRSC-01	Capability to easily select the patient and the medicine to be prescribed to make initiation of new treatment efficient.	**H**	
PRSC-02	Capability to produce a correctly formatted, legible, printed prescription, on Health Insurance Commission approved prescribing paper, which conforms to the requirements imposed by the relevant State and Federal Authorities and the Commonwealth Department of Health, and which contains all the information required for the prescription to be legally dispensed	**H**	
PRSC-03	Capability to produce prescriptions which satisfy the all potential funders of pharmacist payment, (eg the Pharmaceutical Benefits Branch and the Veterans Affairs Department) for the purposes of pharmacist payment	**H**	
PRSC-04	Capability to maintain a current medication list for each individual patient that accurately reflects the practitioner's view of what the patient is, and ought, to be receiving.	**H**	
PRSC-05	Capability to provide very easy selection of drugs to be prescribed from the current medication list and, if required, the patient's medication history and to use that information for prompt generation of repeat prescription(s)	**H**	
PRSC-06	Capability to maintain a history of medicines prescribed for the purposes of record keeping regarding, research and/or audit of, prescribing patterns and drugs prescribed	**H**	
PRSC-07	Capability to use a combination of methods including numbered, tamper resistant prescribing paper and computer security access control to prevent unauthorised use of the prescribing system	**H**	
PRSC-08	Capability to comply with the specific methodologies and restrictions imposed on the prescription of dangerous drugs to ensure that local State requirements are met and that prescriptions produced conform with such requirements both in format and record keeping	**H**	**C1**
PRSC-09	Capability to electronically transfer the information contained in a valid prescription to a pharmacist of the patients choice, for dispensing by that pharmacist	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PRSC-10	Capability to generate prescription including barcodes and to capture the prescription details on smart-card or similar techology	**H**	
PRSC-11	Capability to select medicines to be prescribed on a range of attributes including PBS and Veteran's Affairs requirements, cost to funder and patient, disease category, pregnancy, requirement for special authority, OTC	**H**	
PRSC-12	Capability to define an early expiry date for a prescription	**H**	
PRSC-13	Capability to define an appropriate period for therapeutic review and have that reflected in the amounts and forms prescribed.	**H**	
PRSC-14	Capability to set a system default where brand names are automatically converted to the generic equivalent where this is appropriate on the basis of bioequivalence.	**H**	

Linkages:

Electronic Health Record
Medication History Management
Drug Therapy Decision Support
Reference Databases (Government Sourced Databases, Local, Drug Code Lists)
Patient Selection and Task Management
Document / Forms Management
Drug Dispensing Management
External Information Manager (Other External Information Exchange)
External Communications Manager (Network Communications)
Desktop Systems Manager (Security / Authorisation)

Constraints / Dependencies:

C1 - At present the electronic transmission of prescriptions is not possible due to a lack of agreed publicly acceptable standards and enabling legislation regarding authentication and transmission, public concern about the privacy and confidentiality of the transmitted data and the lack of a suitable network infrastructure joining doctors and pharmacists.

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Pharmaceutical Therapy Managers**
Manager:	**MEDICATION HISTORY MANAGEMENT**

Manager Objectives:

The objective of the Medication History manager is to capture and manage all medication, medication use and medication outcome information required for effective and safe therapeutic drug management.

Functional Description Overview:

The medication history management system captures the history of medicine use in an individual patient and the outcome of that use over as much of the patients' life as information is available.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
MEHI-01	Capability to capture, utilise and report on the patient's history of medication use and the efficacy of that medication use where possible	**H**	
MEHI-02	Capability to provide a summary of current therapy, significant previous therapy and allergies, and to make that information available to the prescriber at the point of prescription generation	**H**	
MEHI-03	Capability to capture and report on all relevant OTC medicine, recreational and practitioner dispensed drug use to maximise the likelihood of potential interactions being recognised	**H**	
MEHI-04	Capability to warn the prescriber where there is a familial illness present in the family that may require careful consideration of some forms of therapy (e.g. malignant hyperpyrexia)	**L**	
MEHI-05	Capability to produce de-identified medicine use, efficacy and adverse reaction data for use by research projects, drug companies, etc.	**M**	
MEHI-06	Capability to produce automated Adverse Drug Reaction Reports, via the Document / Forms Manager, to simplify submission of these reports to the TGA	**H**	
MEHI-07	Capability to utilise medication history data to provide reports on levels of apparent compliance with desired levels of medication consumption	**H**	
MEHI-08	Capability to produce practice wide reports on matters such as experience of drug safety and efficacy via the Ad-Hoc Clinical Report Manager	**M**	

Linkages:

Electronic Health Record
Prescription Generation
Drug Therapy Decision Support
Reference Databases (Govt Sourced Databases, Local)
Patient Selection and Task Management
Drug Dispensing Management
Document / Forms Management
Ad-Hoc & Routine Clinical Reporting Manager

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Pharmaceutical Therapy Managers**
Manager:	**PATIENT DRUG INFORMATION GENERATION**

Manager Objectives:

The objective of the Patient Drug Information Manager is to ensure that the prescriber can provide the patient with accurate, written tailored information relevant to the uses a particular medicine is being used for in an individual patient.

Functional Description Overview:

The Manager maintains a comprehensive indexed database of available documents (including official CPI) and makes them available for display, annotation and printing depending on the circumstances.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PDI-01	Capability to maintain a database of Drug Information with appropriate indexes to facilitate easy and prompt location of the required material	**H**	
PDI-02	Capability to maintain current version of Drug Information in the practitioner's database through look up of appropriate reference source(s)	**H**	
PDI-03	Capability to selectively print relevant portions of Drug Information for the patient without compromising the integrity of approved CPI	**H**	
PDI-04	Capability to annotate the Drug Information with specific clinical comments and produce hardcopy for patients without altering official text such as CPI	**H**	

Linkages:

Electronic Health Record
Drug Therapy Decision Support
Patient Selection and Task Management
Patient Education Management
Document / Forms Management

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Pharmaceutical Therapy Managers**
Manager:	**DRUG INFORMATION MANAGEMENT**

Manager Objectives:

The objective of the Drug Information Manager is to ensure the prescriber has access to current, complete, reliable medicine information to assist with all phases of the prescribing process.

Functional Description Overview:

The Drug Information Manager provides the information resource on which prescribing decision support is built. The Manager integrates the different sources of drug information available (much of which can be found in either MIMS or the proposed Australian Medicines Handbook) to the prescriber into a coherent indexed accessible medicine information knowledgebase covering:

- Clinical Medicines Information (eg AMH, MIMS etc)
- Medicine Cost, Availability, Authority & Presentation Information
- Medicine Use Guideline Information
- Drug - Drug Interaction Information
- Drug - Food Interaction Information
- Drug - Disease, Indication, Interaction, Contra-indication & Warning Information

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DRIN-01	Capability to quickly and easily search, display and print the Drug Information knowledge-base by multiple views including drug, disease, side-effect, efficacy, precautions	**H**	**C1,C2**
DRIN-02	Capability to quickly and easily identify the provenance of any information held in the Drug Information knowledge-base	**H**	**C1**
DRIN-03	Capability to define "information" expiry times beyond which, for each data set, the practitioner will be warned that the information being used may not be current	**H**	**C1**
DRIN-04	Capability to easily integrate new and updated medicine related information sources into the Drug Information knowledge-base from material provided in industry standard transfer formats	**H**	**C1,C2**
DRIN-05	Capability to record a history of use of the Drug Information knowledge-base in the patient's clinical record	**H**	**C1**
DRIN-06	Capability to, with audit trail protection, be able to personalise and / or select existing therapeutic guidelines to suit the practices adopted	**H**	**C1**
DRIN-07	Capability to seamlessly service prescriber drug information requirements in an integrated way from external information services available to the GPCS	**H**	**C1**

Linkages:

Electronic Health Record
Prescription Generation
Drug Therapy Decision Support
Reference Databases (Govt Sourced Databases, Local)
Patient Selection and Task Management
Drug Dispensing Management

Constraints / Dependencies:

C1 - It is recognised that creation and maintenance of the drug information database will need to be carried out at a centralised level, e.g. at the divisional or departmental level or potentially by industry based third parties. This database will need to be coded in such a way as to remain stable through releases over time.

C2 It is recognised that suitable electronic medicines information and guidelines, for inclusion in a knowledge database, does not exist at present. To be of value this information must be appropriately structured and coded for access and retrieval by the relevant systems.

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Pharmaceutical Therapy Managers**
Manager:	**DRUG THERAPY DECISION SUPPORT**

Manager Objectives:

The objective of the Drug Therapy Decision Support is to ensure that, wherever possible, the prescriber is maximally supported and advised in the prescribing process that the patient receives the right dose of the right drug at appropriate intervals to minimise side effects, maximise therapeutic benefit and avoid allergies and adverse interactions.

Functional Description Overview:

The Drug Therapy Decision Support system provides the following functions, supported by data held in the Drug Information knowledgebase and electronic health record:

- Assistance in the selection of appropriate medicines and dosages for the management of a patients known illnesses, guided where appropriate by relevant therapeutic guidelines
- Warning of prescription of medicines to which patient is known or thought to be allergic
- Warning of prescription of medicines which are contra-indicated based on age, sex, occupation activities, lifestyle, risk of pregnancy, pre-existing illness or other factors
- Warning of potential for drug-drug interactions
- Warning of potential for drug-food interactions
- Alerting of potentially useful interactions
- Monitoring of drug compliance and consumption
- Monitoring of medication-related outcomes

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DRDS-01	Capability to make easily user friendly, agreed therapeutic guidelines accessible at the point of prescribing	**H**	
DRDS-02	Capability to generate real-time interactive warnings, based on all the potential issues raised above, that will attract the attention of the prescriber and permit appropriate changes to be made to the planned prescription if required	**H**	
DRDS-03	Capability to record that an alert / warning has been issued by the system, and the action taken by the prescriber to respond to the situation	**M**	
DRDS-04	Capability to have the system learn for specific patients that specific alerts and warnings have been addressed and give the user the option to turn that specific warning off for a user-defined period.	**M**	
DRDS-05	Capability, based on clinical diagnostic information, to identify relevant guidelines and protocols locally accessible that may be of value and / or assistance to the prescriber and to make those easily accessible for review	**M**	
DRDS-06	Capability to provide the prescriber with adequate explanatory information, including relevant references, for all warnings and alerts generated by the system	**H**	
DRDS-07	Capability to monitor the volumes prescribed against the current medications list and to alert the practitioner to the possibilities of potential non-compliance or potential abuse.	**H**	
DRDS-08	Capability to categorise warnings into potential severity groups (e.g. mild, moderate, severe) and permit the user to disable, for a period of six months, warnings of consequences of mild severity after having, as an individual practitioner, been warned about a specific potential consequence on two occasions.	**L**	
DRDS-09	Capability to provide appropriate drug dosage and interval decision support for the dosing of all common medications where this is required, and provide dosage recommendations based on measured drug levels, measured effects and other important factors.	**L**	
DRDS-10	Capability to integrate with the clinical, dietary and nutritional information already held in the system	**H**	

Linkages:

Electronic Health Record
Prescription Generation
Medication History Management
Reference Databases (Govt Sourced Databases, Local)
Patient Selection and Task Management
Drug and Medical Information Management
General Clinical Decision Support
Drug Dispensing Management

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Pharmaceutical Therapy Managers**
Manager:	**DRUG DISPENSING MANAGEMENT**

Manager Objectives:

The objective of the Drug Dispensing Manager is to provide the management of within practice medication dispensing.

Functional Description Overview:

The Drug Dispensing Manager, under the control of the practitioner, and possibly after some intermediate processing within decision support, permits the labelling and delivery of medication to a patient with appropriate alerts and warnings.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DDM-01	Capability to produce a comprehensive label for the practitioner to affix to the medication that includes information on the Drug, the Patient and instructions for medication consumption and use.	**H**	
DDM-02	Capability to flag medications that require alerts to be affixed to warn of potential problems (drowsiness etc)	**H**	
DDM-03	Capability to facilitate the management of the practice medication stocks.	**H**	
DDM-04	Capability to record the 'in-practice' administration of medications	**H**	
DDM-05	Capability to have the accounting system generate an invoice or part invoice based on the medication dispensed.	**H**	
DDM-06	Capability to generate a unique record number, which is displayed on the label (e.g. as a barcode), which uniquely identifies each item dispensed.	**H**	
DDM-07	Capability to support dispensing by doctors who have their own formulas for creams, lotions etc	**L**	
DDM-08	Capability to monitor financial aspects of dispensing activity through the supplies / inventory management system.	**H**	

Linkages:

Electronic Health Record
Prescription Generation
Medication History Management
Reference Databases (Govt Sourced Databases, Local)
Patient Selection and Task Management
Drug and Medical Information Management
Drug Therapy Decision Support
Supplies / Inventory Management
Patient Account Management

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Clinical Services Managers**
Manager:	**PATIENT CLINICAL HISTORY & ASSESSMENT**

Manager Objectives:

The objective of the Patient Clinical History and Assessment Manager is to ensure accurate capture and recording of the patient's RFE, history and physical assessment and to also capture and record any notes, comments or conclusions the practitioner wishes to record in association with the history and examination.

Functional Description Overview:

This manager is responsible for capture of much of the information that is held in the electronic health record.

The manager covers the following broad functional areas:

- Capture and recording of the reason for encounter
- Capture and recording of patient's overall clinical history, - covering clinical, social, family, occupational, nutritional and other relevant areas
- Provides transparent integrated access to therapeutic drug use history
- Referral History and use of other practitioners (including non-medical)
- Capture and recording of the clinical examination and any associated measurements (weight, blood pressure etc)
- Capture of practitioner notes comments and conclusions to facilitate later patient discussion, education and management

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PCLH-01	Capability to capture and record the patient history in the components of the traditional long case format (past history, family history, social history etc) for assessment and documentation and on-going management of new patients who are establishing a long term association with the practitioner.	**H**	
PCLH-02	Capability to capture and record individual patient visits in a rapid structured method, including the S.O.A.P. and RFE formats, for ongoing management or short visits where suitable.	**H**	
PCLH-03	The capability to quickly and with minimum effort on the part of the practitioner capture the main reason for encounter, and possible additional reasons (if present)	**H**	
PCLH-04	The capability to code the reason(s) for encounter into accepted, standard term sets or user defined groups for later analysis and reporting	**H**	
PCLH-05	The capability to attach free text notes to the stated reason for encounter	**H**	
PCLH-06	Capability to flexibly use either data capture format based on the user's clinical, practice and educational needs and requirements	**H**	
PCLH-07	Capability to capture history and physical examination information from alternative data entry devices such as pen based terminals, cameras, diagnostic instruments, secondary (external) storage devices such as smart cards, etc	**M**	
PCLH-08	Capability to easily flag key information in the patient's history for presentation on the 'patient front screen' and in the clinical summary (Note: this is the 'Note Bene' information described in the GEHR Architecture, i.e. particularly important information which should be seen every time the clinical record is opened)	**H**	
PCLH-09	Capability to display, save to an external secondary storage device, and print both complete and summary health reports (the format and content of the reports being user definable) for an individual patient for their review and use	**H**	
PCLH-10	The capability to utilise the information captured in the Electronic Health Record for ordering, reports, referral and other correspondence	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PCLH-11	The capability to graphically capture data within a clinical history and examination session where appropriate to represent sites of pain, injury etc	**H**	
PCLH-12	The capability to capture and record all numeric data obtained during an encounter in numeric form.	**H**	
PCLH-13	The capability to record working notes and impressions during an encounter and have them automatically disappear at a user defined time after the closure of the visit or commit all or part of the notes to the record	**M**	**C1**
PCLH-14	The capability to record a detailed audit trail of all entries committed to the Electronic Health Record and to provide reasonable assurances that access to that record was by whom the audit trail says it was	**H**	
PCLH-15	The capability to import and export data in industry standard formats for use by other General Practice Systems	**H**	
PCLH-16	The capability to capture information for the clinical record in structured format to ease coding and other analysis issues	**H**	
PCLH-17	Capability to capture and record diagnostic information (both provisional and final) as well as differential diagnostic possibilities on an episode / encounter basis, each to be held as either free text or coded information.	**H**	
PCLH-18	Capability to display and manage both current and inactive problem lists including status of each problem (eg active, inactive, times of onset and resolution, and diagnostic codes) for each encounter	**H**	
PCLH-19	Capability to assign a unique problem identifier / number to problems within a patient record to enable the linkage of problems with other problems, diagnostic orders, results, outcomes , medications and treatments.	**H**	
PCLH-20	Capability to capture, categorise, manage and code elements of a problem list under the following headings: • Reason For Encounter • Transient Problem • Active, Resolved or Inactive Problem • Health Risk Factors	**H**	
PCLH-21	Capability to maintain a set of notes and records that are private to the doctor, containing sensitive information that the practitioner would prefer not ever to be disclosed to the patient	**H**	**C1**

Linkages:

Electronic Health Record
Patient Selection and Task Management
Clinical Coding Management
Reporting Manager (Clinical Summary Report Generation, Ad-Hoc & Routine Clinical Report Generation)
Diagnostic Test Manager
Patient Management Planning and Delivery
Document / Forms Management
External Information Manager (Inter-Practitioner Communication)
External Communications Manager (Network Communications)

Constraints / Dependencies:

C1 The practitioner's right to privacy of recorded thoughts relating to a patient is a contentious issue

Functional / Operational Assessment:

Scenario A and C from Section 6.2

Manager Grouping:	**Clinical Services Managers**
Manager:	**DECISION SUPPORT**

Manager Objectives:

The objective of decision support is to optimally use the information held within the GPCS and its associated support databases to maximise the efficacy, quality and safety of the care provided to patients by the practitioner.

Functional Description Overview:

Decision Support within the GPCS provides the following major functions:

- Configurable Static Decision Support (e.g., provision of treatment guidelines, drug interaction detection etc)
- Configurable Dynamic Decision Support (e.g., interactive, real time warning during prescribing of patient specific allergy to a class of drugs)

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DSS-01	The capability to flexibly initiate variable depths of decision support based on clinician requirements and experience, preserving at all times an indication of the availability of additional decision support during use of the GPCS.	**H**	
DSS-02	The capability to identify and make easily available user friendly, agreed therapeutic and other management guidelines during the consultation in the context of the patient's condition, or when a new diagnostic conclusion is recorded.	**H**	**C1**
DSS-03	The capability to generate real-time interactive warnings, based on the clinical knowledge-base, that will attract the attention of the practitioner and permit appropriate changes to be made to the planned management if required	**H**	**C1**
DSS-04	The capability to record that an alert / warning has been issued by the system, and the action taken by the practitioner to respond to the situation	**H**	
DSS-05	The capability to have the system learn for specific patients, and a specific practitioner , that specific alerts and warnings have been addressed and should not be repeated for a user-defined period.	**H**	
DSS-06	The capability to support the creation, development recording and implementation of local decision support guidelines, and support sharing of guidelines between practices.	**H**	
DSS-07	The capability for the practitioner to override any individual warning issued by the system with justification of the action recorded in the electronic health record.	**H**	
DSS-08	The capability to provide the practitioner with adequate explanatory information (and the capability to customise it), including relevant references, for all warnings and alerts generated by the system.	**H**	
DSS-09	The capability to integrate with the pharmaceutical, dietary and nutritional information already in the system	**M**	**C1**
DSS-10	The capability to profile each provider as to the level of decision support provided in each clinical topic area .	**H**	
DSS-11	The capability to integrate with diagnostic decision support utilising commercial diagnostic decision support systems	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DSS-12	The capability to alert the practitioner to the arrival within the system of new information from pathology, radiology and other such important sources.	**H**	
DSS-13	The capability to alert the practitioner that a requested investigation or referral has not been completed by receipt of a result or report within a user defined time window.	**H**	
DSS-14	The capability to assist structured data entry by patients, nurses, other practice staff and clinicians e.g information on RFE and functional status.	**L**	
DSS-15	The capability to capture the use of a specific treatment guideline and then be alerted on the next or an appropriate visit to assess and record the outcome of the use of the guideline.	**H**	
DSS-16	The capability to identify deviations from expected trends eg HbA1c trending up, ferritin trending down beyond user defined limits, with display of the data that elicited the warning.	**M**	
DSS-17	Capability to utilise data mining technologies to identify possible diagnostic, preventive, health risk and other factors which should either generate patient recall or be discussed with the patient on their next visit.	**L**	
DSS-18	Capability to integrate with specialised and domain based inference engines and rule bases to improve overall practice performance.	**L**	
DSS-19	The capability to provide user defined real-time warnings and reminders when pre-defined clinical situations emerge (e.g. patients who may be invited to participate in a clinical trial, or whose age, illness or sex modify a specific treatment)	**H**	

Linkages:

Clinical Services Managers
Pharmaceutical Therapy Managers
Electronic Health Record
Patient Selection and Task Management
Preventive Medicine Scheduling and Patient Recall Management
External Information Manager
External Communications Manager (Network Communications)
Drug and Medical Information Managers
Reference Databases

Constraints / Dependencies:

C1 It is recognised that suitable electronic medical information and guidelines, for inclusion in a knowledge database, does not exist. To be of value this information must be appropriately structured and coded for access and retrieval by the relevant systems.

Functional / Operational Assessment:

All scenarios in Section 6.2 have elements of decision support.

Manager Grouping:	**Clinical Services Managers**
Manager:	**CLINICAL CODING MANAGEMENT**

Manager Objectives:

The objective of the Clinical Coding Manager is to enable the correct linkage of clinical codes to a patient's clinical record to facilitate analysis of disease incidence, outcomes and to support decision support.

Functional Description Overview:

The Clinical Coding Manager has the following main functions:

- Conversion of patient clinical information to a coded representation for use by other elements of the GPCS
- Maintenance and update, as required, of code lists for use by other functions within the GPCS.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
CCOD-01	The capability to simply and easily derive from a captured reason for encounter, diagnosis, problems, and treatment, a coded representation of that information for use within the GPCS	**H**	
CCOD-02	The capability to interactively utilise natural language terms to aid in the coding process and to simply permit the practitioner to accept the suggested coding.	**H**	**C1**
CCOD-03	The capability to employ text-based processing systems to search clinical records for clinical data to assist with research and coding.	**H**	
CCOD-04	The capability to utilise several coding systems (eg ICD9-CM.AM, ICD10.AM, ICPC, ICPC+, Read, SNOMED, MBS) as coding strategies depending on practitioner preference and the purposes for coding.	**H**	**C2**
CCOD-05	The capability to support multiple coding systems for the same clinical data collection to enable coding for different purposes and reports	**H**	**C2**
CCOD-06	The capability to use new, user defined or modified coding systems for particular purposes or projects (e.g. practice research, special interests, morbidity surveys, inter-practice comparisons etc)	**M**	**C2**
CCOD-07	The capability to easily and flexibly manage conversion of natural language terms into all standard codes, and to manage personalised elaboration of the terms employed.	**L**	**C2**
CCOD-08	The capability to produce reports on extensions made to practitioner's term set for use in ongoing development of term sets and codes.	**M**	
CCOD-09	The capability to record the time, date and person responsible for the assignment of a particular code in a particular coding event.	**H**	
CCOD-10	Capability to record codes linked to patient history, episodes and encounters in a way that permits the history and creation of the codes to be preserved.	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
CCOD-11	Capability to link coded clinical problem data longitudinally in time by use of problem numbers and to link related problems in each record within the GPCS	**H**	
CCOD-12	Capability to take a selected term from a term set and put it into the patient record to get consistency in term use within the system.	**M**	
CCOD-13	Capability to attribute codes to a patient record at any time during or after the encounter	**H**	
CCOD-14	The capability to, where possible and useful, convert coded data between major accepted code sets for comparative purposes using authoritative coding maps.	**L**	**C2**

Linkages:

Electronic Health Record
Patient Selection and Task Management
Patient Clinical History and Assessment
Reporting Manager (Clinical Summary Report Generation, Ad-Hoc & Routine Clinical Report Generation)
Reference Databases (Clinical Code Lists)
Diagnostic Test Management
Patient Management Planning and Delivery

Constraints / Dependencies:

C1 – This area may be addressed by outcomes of the GALEN Project among others

C2 – Maintenance of multiterm and unified coding sets imposes significant system and maintenance overhead.

Functional / Operational Assessment:

Scenarios A and C from Section 6.2

Manager Grouping:	**Clinical Services Managers**
Manager:	**DIAGNOSTIC TEST MANAGEMENT**

Manager Objectives:

The objective of the Diagnostic Test Manager is to manage diagnostic test ordering and results processing.

Functional Description Overview:

This Manager has the following main functions:

- Managing the diagnostic test ordering from user selected diagnostic services providers
- Collection of data from in-house diagnostic testing.
- Manage the reception, review and recording of results information.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DTES-01	The capability to specifically communicate with user selected diagnostic service providers to arrange for diagnostic tests and procedures to be undertaken both in written and electronic form, and to capture on the electronic order all details required by the provider and the GPCS.	**H**	**C1**
DTES-02	Provide the facility for the clinician to easily choose a particular diagnostic service provider for a particular test or test group and utilise the correct ordering template for each provider.	**H**	**C1**
DTES-03	The capability to reference the required diagnostic services databases during the ordering process to obtain appropriate ordering information, specimen and patient preparation guidelines and information regarding potential costs and charges for the patient.	**H**	
DTES-04	The capability to define and utilise personalised or practice defined order sets for convenience or investigation of specific clinical problems or disease entities.	**H**	
DTES-05	The capability to select the tests required from a most commonly ordered test list (practitioner specific) or the user selected full diagnostic services test database, and to search all the diagnostic services test databases if required.	**H**	
DTES-06	Capability to order multiple diagnostic tests on a test order form for a specified diagnostic services provider	**H**	**C1**
DTES-07	Capability to request chronologically repeating tests on the test order form	**H**	
DTES-08	Capability to communicate with user selected diagnostic services providers to cancel previously ordered tests and capture the reason for test cancellation	**H**	
DTES-09	The capability to securely and confidentially receive results electronically in text and numerical format depending on the data context and to, after practitioner review, record the data in the Electronic Health Record	**H**	
DTES-10	Capability to flexibly display the results in text and graphical form (user definable) and print copies of results on demand	**H**	
DTES-11	Capability to record paper results records in the Electronic Health Record using Scanning / OCR technology.	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DTES-12	Capability to alert the practitioner to the arrival of new results (urgent, internally urgent, abnormal, requiring new specimen and requiring review) and display them in an appropriate patient context, if this is not already handled within decision support manager.	**H**	
DTES-13	Capability to implement diagnostic test coding to assist with result comparison over time	**H**	**C2**
DTES-14	Capability to flag certain orders as urgent for laboratory processing and others as internally urgent within the GPCS to ensure the practitioner knows immediately the result has arrived.	**H**	

Linkages:

Electronic Health Record
Patient Selection and Task Management
Clinical Coding Management
Reference Databases (Diagnostic Services Database)
Patient Clinical History & Assessment
Patient Management Planning and Delivery
Document / Forms Management
Decision Support
External Information Manager (Diagnostic Services Communication)
External Communications Manager (Network Communications)

Constraints / Dependencies:

C1. The orders for diagnostic tests must conform with test provider and funder guidelines.

C2. The diagnostic test codes to be used in Australia have not been defined as of June, 1997

Functional / Operational Assessment:

Scenario A from Section 6.2

Manager Grouping:	**Clinical Services Managers**
Manager:	**PATIENT MANAGEMENT PLANNING & DELIVERY**

Manager Objectives:

The Patient Management System has the objective of optimally supporting the easy formulation and implementation of the management plan for each individual patient, with the exception of drug therapy which is managed elsewhere.

Functional Description Overview:

The Patient Management System provides support for the following activities:

- Documentation of Patient Treatment Plan
- Patient Referral
- Patient Counselling
- Immunisation and Vaccination
- Minor Procedure Conduct

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PMPD-01	The capability to produce printed referrals and associated documentation, using information held within the GPCS, so assuring minimum additional data entry.	**H**	
PMPD-02	The capability incorporate user-definable information in a range of easily selected referral letter templates, all of which permit additional free text entry.	**H**	
PMDP-03	The capability to record patient management plans for active review and follow up, with linkage to the problems being addressed.	**H**	
PMPD-04	The capability to record the fact of a referral and then actively follow up the outcome of the referral to ensure patient is not lost to continuing care	**H**	
PMPD-05	The capability to maintain a user entered list of those to whom referrals are usually made, and to monitor referral activity by practitioner, speciality, special interest, VMO status, charging practices, practice and type of referral (specialist, investigatory, laboratory), degree of need, safe waiting time, level of service received, reason for referral, duration of validity etc	**H**	
PMPD-06	The capability to record and manage records of the conclusions and outcomes of the patient's care, with the minimum free text entry possible for future guidance	**H**	
PMPD-07	The capability to record and maintain the records of all procedures undertaken within the practice including vaccinations, minor surgical procedures etc	**H**	
PMPD-08	The capability to securely and confidentially receive clinical information (eg referral reports) electronically in text and numerical format depending on the data context and to, after review, record the data in the Electronic Health Record	**H**	**C1**
PMPD-09	The capability to securely and confidentially transfer patient referral and other relevant information electronically to nominated recipients who are authenticated as the correct receiver of the information and to receive a confirmation of receipt of the information.	**H**	**C1**
PMPD-10	Capability to prompt the clinician to enter the rationale for clinical decisions and record this information in the EHR	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
PMPD-11	Capability to develop, record and monitor complex ongoing patient care plans for an individual patient, with adequate structure to enable monitoring of conformance to the plan, and to assist with decision support.	**M**	
PMPD-12	The capability to produce reports for audit and research on all forms of patient management delivered by the practice.	**H**	

Linkages:

Electronic Health Record
Patient Selection and Task Management
Clinical Coding Management
Clinical Statistics and Report Management
Reference Databases (Diagnostic Services Database)
Patient Clinical History & Assessment
Patient Management Planning and Delivery
Document / Forms Management
Decision Support
External Information Manager (Inter-Practitioner & Diagnostic Services Communication)
External Communications Manager (Network Communications)

Constraints / Dependencies:

C1 - At present Australia does not have the secure and accessible network infrastructure to permit secure transfer of patient data.

Functional / Operational Assessment:

All clinical scenarios (A,B,C) from Section 6.2

Manager Grouping:	**Clinical Services Managers**
Manager:	**CLINICAL STATISTICS & REPORT MANAGEMENT**

Manager Objectives:

The Clinical Statistics and Report Manager has the objective of providing, for those involved in practice operations, a full range of standard reports on all aspects of clinical activity, with the additional feature of full ad-hoc reporting functionality across all databases which are maintained by the GPCS.

Functional Description Overview:

The Clinical Statistics and Report Manager produces all the clinically orientated reports for the GPCS, using standard or user defined report templates, which are produced within, and delivered by, the Reporting Manager. The reports include:

- Patient Activity Reports (Volumes, Times, Treatments Given etc)
- Illness and Disease Prevalence Reports
- Disease and Encounter Outcome Reports
- Population Based Reports
- Infection Control and other Audit Reports
- Practice Research Reports
- Ad-Hoc Reports

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
CLRE-01	The capability to flexibly produce both standard, modified standard and fully ad-hoc reporting on all data held within the GPCS	**H**	
CLRE-02	The capability to submit electronic reports on aspects of practice activity (eg immunisation reports) to appropriate agencies, following review and approval of the information by a practitioner.	**H**	
CLRE-03	The capability to produce a full range of graphical and HTML reports where required and appropriate.	**H**	
CLRE-04	The system must come with modifiable report templates covering all the areas mentioned under Functional Description Overview above.	**H**	

Linkages – Internal to GPCS:

Electronic Health Record
Patient Selection and Task Management
Reporting Manager (Ad-hoc and Routine Clinical Management Reporting)
Patient Clinical History & Assessment
Patient Management Planning and Delivery
Document / Forms Management
External Information Manager (Other External Information Exchange)
External Communications Manager (Network Communications)

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenario E from Section 6.2

Manager Grouping:	**Clinical Services Managers**
Manager:	**MEDICAL INFORMATION MANAGEMENT**

Manager Objectives:

The objective of the Medical Information Manager is to ensure the practitioner has access to current, complete, reliable clinical information to assist with all phases of the care delivery process, acting in concert with the slightly more specialised drug information manager.

Functional Description Overview:

The Medical Information Manager provides the information resource on which clinical decision support is built. The Manager integrates the different sources of information available to the prescriber into a coherent indexed accessible medicine information knowledgebase covering:

- Clinical Medicine Information (eg Harrison's on Disk)
- Community Services and Support Information
- Referral Guidelines and Information
- Nutritional Guideline Information
- Therapeutic Guideline and Clinical Benchmark Information
- Public Health / Preventive Health Information
- Continuing Medical Education
- Relevant Divisional and Practice Information
- Management of a library of non-electronic resources for practitioner referral and use.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
MEIN-01	The capability to rapidly select information resources for display to and printing for the practitioner or patient.	**H**	**C1**
MEIN-02	The capability to set an expiry date for all data sets held in the database (depending on the likely duration of currency of the data) to ensure a warning is given when old data is about to be used	**H**	**C1**
MEIN-03	The capability to record the provenance of all data sets	**H**	**C1**
MEIN-04	The capability to index and manage a library of printed and multimedia resources which may be used for reference purposes.	**H**	
MEIN-05	The capability to record the use of reference material regarding a patient in the electronic health record	**H**	
MEIN-06	The capability to flexibly add to and update the clinical knowledgebase from files provided in industry standard data transfer formats, and to record the attributes of each data set that is added / updated to the knowledgebase	**H**	**C1**
MEIN-07	The capability to utilise natural language search engine technologies to maintain a comprehensive searchable index of all the material held in the knowledgebase and clinical records.	**H**	
MEIN-08	The capability, where supported by the knowledgebase, to link / preserve bookmarks in the data sets to the electronic patient record for documentation and easy re-location of data important to a specific patient. (Note: It is expected that, when implemented, database updates will not move bookmarks)	**H**	
MEIN-09	The capability to support CME activities by scheduled download of both notices of meetings and materials to simplify CME compliance	**H**	
MEIN-10	Capability to assist GPCS users to maintain records of, and undertake, QACE activities	**H**	
MEIN-11	The capability to integrate external data sources (e.g. Medline) where required from either CD-ROM or via a Network Connection	**H**	

Linkages – Internal to GPCS:

Electronic Health Record
Patient Selection and Task Management
Decision Support
Desktop Systems Manager (External Information Currency Maintenance)
External Information Manager (Other External Information Exchange)
External Communications Manager (Network Communications)

Constraints / Dependencies:

C1 – This manager is totally constrained by the availability of relevant medical information in useable electronic form.

Functional / Operational Assessment:

Scenarios A-E in Section 6.2

Manager Grouping:	**Clinical Services Managers**
Manager:	**PATIENT EDUCATION MANAGEMENT**

Manager Objectives:

The Patient Education Manager has the objective of providing the practitioner with accessible, reliable and understandable patient education resources which will assist in the overall delivery of patient care.

Functional Description Overview:

The Patient Education Manager has the following broad functions:

- Acquisition, conversion (if required) and indexing of appropriate patient educational material (eg patient drug and disease information)
- Presentation of material in printed and display formats
- Management of the patient educational database to ensure currency, reliability and accuracy
- Management of a library of non-electronic resources for patient education.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EDUM-01	The capability to rapidly select educational resources for display to and printing for the patient.	**H**	**C1**
EDUM-02	The capability to set an expiry date for all data sets held in the database (depending on the likely duration of currency of the data) to ensure a warning is given when old data is about to be used	**H**	**C1**
EDUM-03	The capability to record the provenance of all data sets	**H**	**C1**
EDUM-04	The capability to index and manage a library of printed and multimedia resources which may be given or lent to a patient.	**H**	
EDUM-05	The capability to record the provision of educational material to a patient and outcome of patient education in the electronic health record	**H**	
EDUM-06	The capability to maintain an indexed list of specialised information resources and support groups etc to which a patient may be referred and to provide the patient with a printed note of such information	**H**	
EDUM-07	The capability to access and use educational information in a full range of languages	**H**	
EDUM-08	The capability to tailor educational information to the patient's sociodemographic profile, health problems and therapy	**M**	
EDUM-09	The capability to access and use educational information in a full range of educational levels and backgrounds	**H**	

Linkages:

Electronic Health Record
Patient Selection and Task Management
Patient Drug Information Management
Decision Support
Desktop Systems Manager (External Information Currency Maintenance)
External Information Manager (Other External Information Exchange)
External Communications Manager (Network Communications)

Constraints / Dependencies:

C1 – This manager is totally constrained by the availability of relevant educational resources in useable electronic form.

Functional / Operational Assessment:

Scenarios C in Section 6.2

Grouping:	**Computerised Patient Record**
Database:	**ELECTRONIC HEALTH RECORD**

Objectives:

To provide a repository for all patient related health information required for operation of the GPCS.

Functional Description Overview:

The Electronic Health Record will enable information in the following areas to be stored in a structured database:

- Patient demographics, social, work and family history
- Patient clinical history
- Diagnostic and Investigative information
- Other patient health related information (eg risk factors, screening data, genetic data)
- Therapeutic information and drug history
- Treatment and outcome information

Note: The functional requirements for the Electronic Record for the GPCS as based on the European Commission AIM Project Good European Health Record (GEHR) Architecture and the European Committee for Standardisation (CEN) TC 251 Pre-Standard for the Electronic Healthcare Record Architecture.

[1] GEHR Deliverable 19. GEHR final architecture description. London: Centre for Health Informatics and Multiprofessional Education. Http://www.chime.ucl.ac.uk/Health/GEHR/. 1995

[2] CEN/TC 251 PT1-011. Electronic Healthcare Record Architecture: Final Draft European Prestandard. Brussels: European Committee for Standardisation. ENV 12265, 1995. Http://miginfo.rug.ac.be:8001/ Word0115.doc

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EHR-01	Capability to store the patient demographic data required for operation of the GPCS. Patient demographic data stored must comply with the Australian National Health Data Dictionary (NHDD) Version 5.0 (1996) or later as revised	**H**	
EHR-02	Must store at a minimum the following patient demographic data items listed in Appendix C – Draft Primary Care Minimum Data Set of this report.	**H**	
EHR-03	Patient demographics and an unlimited number of aliases must be capable of being stored in a form that permits the history of all demographics changes to be identified	**H**	
EHR-04	Capability to record patient links to other relevant persons (eg immediate family, other 1st degree relatives, friends, carers, sexual partners) should be coded to enable retrieval of specific groups (eg family, sexual contacts). Relationship and contact details for linked persons should be held in electronic records on the GPCS, even if not patients of the practice.	**M**	**C1**
EHR-05	Capability to accommodate postal or preferred address as well as home address to assist with preservation of privacy if required	**H**	
EHR-06	Capability to store patient related clinical data at the Health Record Item level compliant with European Commission AIM GEHR A2014 Project GEHR Architecture Deliverable 19	**H**	
EHR-07	Capability to flexibly assemble Health Record Items into multi-layered structured collections which enable preservation of clinical context compliant with the GEHR Architecture.	**H**	
EHR-08	Capability to store patient demographic and health related information in relevant media forms including image (both still and moving) , patient photograph, sound, annotated drawings, analogue biosignals (eg ECG, Spirometry) and text	**H**	
EHR-09	Must provide logical linkage between data items (eg image, sound and text) which preserves the clinical context	**H**	
EHR-10	Capability to store diagnostic services data as discrete data items and text at the individual Health Record Item level	**H**	
EHR-11	Capability to support bidirectional interfaces between diagnostic instrumentation and the EHR of the GPCS.	**L**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EHR-12	Must have intrinsic mechanisms that guarantee all entry, update and reporting activity carried out on the patient Electronic Health Record is appropriately authorised and audit trails of activity are recorded.	**H**	
EHR-13	Must have capability to ensure clinical review and acceptance of patient information before commitment to the Electronic Health Record	**H**	
EHR-14	Capability to receive input from appropriate data capture devices eg document scanners, PDA's etc.	**H**	
EHR-15	The EHR must be independent of language used to record the clinical information, applications using the record, the hardware and the computer operating system.	**H**	
EHR-16	The EHR must be structured in such a way that the meaning and context of the information is preserved.	**H**	
EHR-17	The EHR must accommodate both highly structured and informal methods of information recording.	**H**	
EHR-18	The records held in the EHR must be comprehensible to the non-medical reader eg patient, lawyer, auditor	**H**	
EHR-19	The EHR must enable and reflect clinical competence.	**H**	
EHR-20	The EHR must recognise that medical data has complexity, levels of certainty and precision, severity and diversity of data types.	**H**	
EHR-21	The capability to easily accommodate new, unforseen data elements	**H**	
EHR-22	The capability to reflect multiple user defined and user modifiable views of patient data including journal (chronological), encounter, problem, medication, preventive and patient summary	**H**	
EHR-23	Capability to ensure no element of the record can be altered or deleted after committal of information to the record, and to qualify committed transactions only by replacement of data with recording of the previous data, the reason for change and the authorisation for that change	**H**	

Linkages:

All Interactive Systems utilising Patient and Clinical Data
External Information Manager (Appropriate Components as Required)
Desktop Systems Manager (Security / Authorisation)

Constraints / Dependencies:

C1 This function point may required careful consideration of privacy implications.

Functional / Operational Assessment:

Scenarios A-E from Section 6.2

Grouping:	**Computerised Patient Record**
Database:	**PATIENT FINANCIAL RECORD**

Objectives:

To provide a repository for all patient related financial information required for operation of the GPCS

Functional Description Overview:

The Patient Financial Record will enable information in the following areas to be stored in a structured database:

- Basic Patient Demographics required for financial processing (Name, address, Medicare number etc.) or provision of appropriate link to the Electronic Health Record for the necessary information.
- Patient financial classification and status.
- Patient financial history
- Patient procedure and encounter information
- Patient billing and billing history information
- Miscellaneous financial data to support billing in some circumstances (e.g. equipment hire rates, drug costs etc.)

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
FINR-01	Capability to store the patient financial data required for operation of the GPCS. Patient data stored must be comply with the following standards: 1. Health Insurance Commission Medclaims for any potentially transmissable information 2. Appropriate Accounting & Financial Standards Bodies e.g. Institute of Chartered Accountants for other internal financial data	**H**	
FINR-02	Must store at a minimum the following patient financial data items: • The data required, in the format and accuracy required, and level of granularity required, to submit a Medclaims claim in all circumstances • Additional data, in formats and in the detail, required for all reasonable audit purposes by relevant regulators.	**H**	
FINR-03	Capability to store the patient financial data in the detail required to create meaningful relationships between, and reports on, financial data and the related contemporary clinical data.	**H**	
FINR-04	Capability to flexibly assemble financial data into multi-layered structured frameworks (eg chart of accounts) which enable preservation of the financial importance and context	**H**	
FINR-05	Capability to store patient financial and related information in all media forms including image and text	**H**	
FINR-06	Capability to store patient financial information in ways flexible enough to permit splitting of both invoicing and receipting of funds, no matter what the source	**H**	
FINR-07	Must have intrinsic mechanisms that guarantee all entry, update and reporting activity carried out on the patient financial record is appropriately authorised and audit trails of activity are recorded	**H**	

Linkages:

All Interactive Systems utilising Patient Financial Data
External Information Manager (Financial Information Transfer)
Desktop Systems Manager (Security / Authorisation)

Constraints / Dependencies:

Nil

Functional / Operational Assessment:

Scenarios A-E from Section 6.2

Grouping:	**Reference Databases**
Databases:	**ALL - See Below**

Objectives:

The Reference Database Component of the GPCS has as its objective the provision and management of the cross application information resources required for the operation of the GPCS.

Functional Description Overview:

The Reference Database Manager provides the look up and maintenance services for the following databases

- Practice Configuration Database
- Clinical and Other Code Lists
- Diagnostic Services Databases
- Health Services Directory Database
- Organisations and External Providers Database
- Government Sourced Reference Databases
- Local Operational Databases

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
RDBM-01	Capability to record the provenance and currency of all data within the system	**H**	
RDBM-02	Capability to provide to the GPCS all the information required to define the configuration of the practice (Staff List, Rooms / Facilities List, Credentials and Accreditation Lists)	**H**	
RDBM-03	Capability to provide to the GPCS information from an essentially unlimited number of code databases (e.g. ICPC+, ICD10, Drug Codes)	**H**	
RDBM-04	Capability to provide to the GPCS all the appropriate reference ordering information, specimen and patient preparation guidelines to enable ordering of diagnostic (pathology and radiology) tests / procedures from different diagnostic services providers	**H**	
RDBM-05	Capability to provide Health Services Directory information to the GPCS	**H**	
RDBM-06	Capability to provide Organisations and External Providers information to the GPCS	**H**	
RDBM-07	Capability to provide to the GPCS information held in Government produced reference databases (e.g. PB Schedule, MB Schedule, Australian Medicines Handbook),	**H**	**C1**
RDBM-08	Capability to provide to the GPCS information held in local specialised databases (e.g. Practice Formulary etc)	**H**	

Linkages:

Desktop System Manager (Reference Database Management)
Patient Selection and Task Management
All Interactive and Event Driven Application Areas

Constraints / Dependencies:

C1 – Some of these sources may not be available electronically for a considerable period of time (eg the AMH)

Functional Operation Assessment:

Scenarios A-D from Section 6.2

Manager Grouping:	**Reporting Manager**
Manager:	**CLINICAL SUMMARY REPORT GENERATION**

Manager Objectives:

The objective of the Clinical Summary Report Manager is to produce relevant clinical summaries in appropriate formats for use by the patient or other clinicians.

Functional Description Overview:

The Clinical Summary Report Manager utilises an approach similar to the Forms Manager to produce a range of practitioner defined clinical summaries for different purposes. The summaries are intended for use when the patient is travelling or needing to have care away from a home practice and as a resource for those who may need to provide urgent care for the patient or receive information related to a referral.

The clinical summary contains:

- Patient Demographic Details
- Patient Allergies
- Key Significant Elements of Patient History
- Current Problems and Illnesses
- Current Treatments

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
CSUM-01	Capability to produce a formatted patient clinical summary from data held in the Electronic Health Record in printed form.	**H**	
CSUM-02	Capability to prepare the clinical summary information in a standard form suitable for storing on a Smart-Card or other electronic form.	**L**	
CSUM-03	Capability to use a range of user -defined templates for production of the clinical summary, depending on the purpose of the summary.	**H**	
CSUM-04	Capability to prepare the clinical summary information in a standard form suitable for making available to other authorised healthcare providers on request.	**H**	
CSUM-05	Capability to download Clinical Summary record to portable computer for use during delivery of care at an external site.	**H**	
CSUM-06	Capability to store free-text and coded data on a summary record.	**M**	

Manager Grouping:	**Reporting Manager**
Manager:	**AD-HOC and ROUTINE CLINICAL MANAGEMENT REPORTING**

Manager Objectives:

The Ad-Hoc Clinical Reporting Manager has as its objective the provision of easy to construct, robust interpretable reports from the information held in the Electronic Patient Record.

Functional Description Overview:

The Ad-Hoc Clinical Reporting Manager provides the following functionality:

- Access to a Data Dictionary with Data Descriptions covering all the data held in the system.
- A Screen-based Report Designer with the capability to interactively modify the resultant reports
- A library of pre-designed screens to act as templates for development of new reports
- Report Creation on Screen, to Printers, to a file, to the External Information Manager and to HTML.

Reports may be defined to cover all areas of reporting including

- Clinical Data Analysis
- Clinical Audit Reporting
- Clinical Research
- Public Health Reporting
- Accreditation Reporting
- Statutory Reporting

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
ADHO-01	Provision of a range of templates for ad-hoc reports from the Electronic Health Record which can be easily modified by the practitioner to meet a broad range of reporting needs	**H**	
ADHO-02	Provision of a structured user accessible data dictionary with data descriptions to enable end user ad-hoc reporting	**H**	
ADHO-03	Capability to flexibly aggregate data elements and the user defined business rules for their calculation into defined 'reporting objects' which can then be used for ad-hoc reporting by end users.	**M**	
ADHO-04	Capability to produce reports on screen, on paper, to a file or in HTML.	**H**	
ADHO-05	Capability to produce reports in graphics format.	**H**	
ADHO-06	Capability to define reports required for all forms of statutory and public health reporting within the ad-hoc clinical report manager and to produce those reports in any desired format or transmit them, with appropriate security to the appropriate agency.	**H**	
ADHO-07	Capability to draw on information held in other databases (e.g. Patient Financial Record) when required.	**H**	

Manager Grouping:	**Reporting Manager**
Manager:	**ADMINISTRATION / PRACTICE MANAGEMENT REPORTING**

Manager Objectives:

The Administration / Practice Manager Reporting System has as its objective the provision of easy to construct, robust interpretable reports from the information held in the Patient Financial Record and other financial and administrative databases.

Functional Description Overview:

The Administration / Practice Manager Reporting System provides practice management, financial and administrative reports for

- Internal Practice Management
- External Practice Reporting
- Accreditation Reporting
- Practice Support Professionals (Accountants, Auditors etc)

This provides ad-hoc and routine reporting across all databases in the system.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
ADMR-01	Provision of a range of sample ad-hoc reports from the Patient Financial Record and other financial and administrative databases which can be easily modified by the practitioner to meet a broad range of reporting needs	**H**	
ADMR-02	Provision of a structured user accessible data dictionary with data descriptions to enable end user ad-hoc reporting	**H**	
ADMR-03	Capability to flexibly aggregate data elements and the user defined business rules for their calculation into defined 'reporting objects' which can then be used for ad-hoc reporting by end users.	**M**	
ADMR-04	Capability to produce reports on screen, on paper, to a file or in HTML.	**H**	
ADMR-05	Capability to produce reports in graphics format.	**H**	
ADMR-06	Capability to define reports required for all forms of statutory and public health reporting within the practice / admin report manager and to produce those reports in any desired format or transmit them, with appropriate security to the appropriate agency.	**H**	
ADMR-07	Capability to draw on information held in other databases (eg Electronic Health Record) when required.	**H**	

Manager Grouping:	**Reporting Manager**
Manager:	**LINKAGE WITH OFFICE AUTOMATION TOOLS**

Manager Objectives:

The OA Link Manager is to ensure all Reports and Information produced by the GPCS can be, after refining, included in other reports and documentation produced by the practice.

Functional Description Overview:

The OA Link Manager manages the export of raw and report data from the GPCS to a broad range on office automation tools.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
LAUT-01	Capability to export all report data generated by the GPCS to industry standard office automation products in industry standard formats for further manipulation and processing.	**H**	

Linkages:

The Electronic Health Record
The Patient Financial Record
Reference Databases
Patient Selection and Task Management
Databases contained in other Interactive GPCS Modules (eg Payroll, Financials, Patient Scheduling etc)

Constraints / Dependencies:

Nil

Functional Operational Assessment:

Scenarios A and E from Section 6.2

Manager Grouping:	**Documents / Forms Manager**
Manager:	**FORMS GENERATION**

Manager Objectives:

The objective of the Forms Generation Manager is to provide a standardised tool for forms creation for the GPCS.

Functional Description Overview:

The Forms Generation Manager has the capability to, on request, extract information from the patient record and place that data in the correct locations on the form template, provide the practitioner with the opportunity to update, review and modify the form and then transmit that form (electronically or on paper) to the intended recipient. The application will also preserve a full record of the completed and authorised form in the patient database.

The forms covered include (not exhaustively):

- Diagnostic Services and other Clinical Ordering
- Prescriptions
- Clinical Referral
- Statutory / Regulatory Reporting (eg Cancer Notification, Adverse Drug Reaction Reports etc)
- Third Party and Worker's Compensation
- Government Agencies
- Patient Drug Information
- Private Health Insurance
- Certificates
- Staff References

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
FGEN-01	Capability to gather the required information from the relevant GPCS database(s) for any form template and place this data in the form ready for completion by the practitioner.	**H**	
FGEN-02	The system must come with a library of easily modified standard templates produced with industry standard word processing and graphics tools.	**H**	
FGEN-03	Capability to efficiently design / generate new form templates and modify existing system standard templates to suit individual practitioner needs	**H**	
FGEN-04	Capability to simply add free text to a form where ever this is appropriate or text boxes ready for handwritten completion.	**H**	
FGEN-05	Capability to electronically sign documents prior to electronic transmission.	**H**	
FGEN-06	Capability to create and manage a list of all the data elements available for inclusion in printed and electronic forms.	**H**	
FGEN-07	Capability to record the data and template used to create a form, rather than simply storing the completed form	**H**	
FGEN-08	Capability to ensure that user-defined forms comply with the minimum data sets required for the forms use and that there is appropriate validation, error checking and flagging of problems before a form is printed or transmitted.	**H**	
FGEN-09	Capability to utilise plain paper in the production of all forms	**H**	
FGEN-10	Capability to define sub-templates (containing images, maps etc) for inclusion in final documents.	**H**	

Linkages:

The Electronic Health Record
The Patient Financial Record
Reference Databases
Patient Selection and Task Management
All Interactive GPCS Modules

Constraints / Dependencies:

Nil

Functional Test Scenario(s):

Scenarios A,B,C and E from Section 6.2

Manager Grouping:	**Documents / Forms Manager**
Manager:	**DOCUMENT MANAGEMENT**

Manager Objectives:

The objective of the Documents Manager is to optimise the ways documents are handled by the practitioner and practice. The scope of this application includes both written and electronic documents.

Functional Description Overview:

This Manager maintains a database of electronic documents and an index of all documents (including scanned documents), and provides text searching support.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DOCM-01	Capability to capture documents in the system by scanning, local generation or electronic reception	**H**	
DOCM-02	Capability to index by content, type, subject, date of receipt and patient ID all documents and to provide full text searching on all electronic documents	**H**	
DOCM-03	Capability to employ third party text searching and retrieval engines on documents and scanned document indexes, and produce reports on results of searches	**H**	
DOCM-04	Capability to store the location and filing codes of paper based patient records and documents (eg journal articles, referral letters) to permit easy retrieval and management of archived, transient and regular patient records / documents	**H**	
DOCM-05	Capability to assist with archiving paper records based on the date of patient last encounter	**H**	

Linkages:

Patient Selection and Task Management

Constraints / Dependencies:

Nil

Functional Operational Assessment:

Nil

Manager Grouping:	**External Information Manager**
Manager:	**DIAGNOSTIC SERVICES COMMUNICATION**

Manager Objectives:

The objective of the Diagnostic Services Communication Manager is to effect the transmission of diagnostic orders and receipt of diagnostic test results.

Functional Description Overview:

The Diagnostic Services Communication Manager transmits formatted reviewed request information to the External Communications Manager and accepts decoded results from the External Communications Manager and, after review, places the information in the Electronic Health Record.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EDIA-01	Capability to prepare for transmission in standardised format completed practitioner reviewed and approved orders.	**H**	**C1**
EDIA-02	Capability to receive and record results from diagnostic service providers, and hold in suspense prior to authorised review and commitment to the Electronic Health Record	**H**	**C1**
EDIA-03	Capability to ensure the practitioner is alerted, via the diagnostic test manager, of the arrival of results and to specifically flag any result which is reported to be urgent or abnormal by the transmitting service provider (if the capability is not fully provided within the decision support in the installed GPCS).	**H**	

Constraints / Dependencies:

C1 – This constraint is related to the current lack of a secure, private network infrastructure for the transmission and reception of sensitive clinical information.

Manager Grouping:	**External Information Manager**
Manager:	**HOSPITAL INFORMATION INTERCHANGE**

Manager Objectives:

The Hospital Information Interchange Manager aims to ensure a smooth flow of information between Hospitals and the practitioners working in the field.

Functional Description Overview:

This Manager covers the following functions:

- Automated receiving of patient related event information including admission and discharge notification, out-patient and emergency visits.
- Automated receiving of patient discharge summary reports from hospitals
- Practitioner interactive access to a hospital provided server of patient clinical information and hospital services information (eg clinic closures, new service availability etc)
- Interactive booking of patient hospital encounters for investigation and treatment
- Access to discharge planning and waiting list information.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EHOS-01	Capability to receive patient discharge summary reports, and following authorised review, commit to the Electronic Health Record and alert the practitioner of their arrival.	**H**	**C1**
EHOS-02	Capability to effect secure interactive information interchange between the practitioner and the selected hospital provided server to obtain patient clinical information subject to patient agreement to the provision of practitioner access.	**H**	**C1,C2**
EHOS-03	Capability to effect secure interactive information interchange between the practitioner and the selected hospital provided server to obtain hospital services information.	**M**	**C1,C2**
EHOS-04	Capability to provide secure interactive patient scheduling and bookings for hospital services (eg outpatient visits etc) where the hospital can support this function.	**L**	**C1,C2**
EHOS-05	Capability to prepare for transmission of patient clinical summary reports to the selected hospital, subject to patient agreement	**H**	**C1**

Constraints / Dependencies:

C1 – This constraint is related to the current lack of a secure, private network infrastructure for the transmission and reception of sensitive clinical information.

C2 – This constraint reflects current policy restraints and lack of Hospital infrastructure.

Manager Grouping:	**External Information Manager**
Manager:	**FINANCIAL INFORMATION TRANSFER**

Manager Objectives:

The Financial Information Transfer Manager has as its objective the transmission and receipt of financial and related patient data from the Health Insurance Commission (HIC) and other health service funders.

Functional Description Overview:

This Manager has the capability to transmit claims information from the GPCS to payers and to receive information from the payers for later use by the Practice Performance Manager.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EFIT-01	Capability to seamlessly integrate with the HIC MedClaims and successor systems.	**H**	**C1**
EFIT-02	Capability to prepare for transmission of financial and patient related data to selected health service funders.	**H**	**C1**
EFIT-03	Capability to receive electronic reports and summary information from all payers and store in the Practice Performance Management System Database for management review.	**L**	**C1**
EFIT-04	Capability to support EFTPOS and credit card transactions for patient billing payment	**H**	**C1**
EFIT-05	Capability to support EFT for payment of staff and other appropriate purposes.	**H**	**C1**
EFIT-06	Capability to support electronic reconciliation information from payers and banks.	**H**	**C1**

Constraints / Dependencies:

C1 – This constraint is related to the current lack of a secure, private network infrastructure for the transmission and reception of sensitive clinical and financial information.

Manager Grouping:	**External Information Manager**
Manager:	**INTER-PRACTIONER COMMUNICATION**

Manager Objectives:

The objective of the Inter-practitioner Communication Manager is to optimise the bi-directional flow of information between all health care practitioners

Functional Description Overview:

This Manager facilitates communication between the practitioner and the following groups:

- Other GPs
- Specialists
- Divisions of General Practice
- Community Health providers
- Other Health care providers (eg physiotherapists, dieticians, podiatrists, junior hospital medical staff, alternative practitioners etc)

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
IPCO-01	Capability to support transmission and reception of electronic mail, electronic mail attachments into a suspense area..	**H**	**C1**
IPCO-02	Capability to support transmission and reception of multi-media and telemedicine information / images into a suspense area	**H**	**C1**
IPCO-03	Capability to alert the practitioner of the arrival of messages from the above sources	**H**	
IPCO-04	Capability to manually attach received data into patient specific Electronic Health Records after review	**H**	
IPCO-05	Capability to manually commit the received data after review into the documents database managed by the Documents Manager	**H**	
IPCO-06	Capability to support Internet bulletin board and newsgroup access and use.	**H**	

Constraints / Dependencies:

C1 – This constraint is related to the current lack of a secure, private network infrastructure for the transmission and reception of sensitive clinical information.

Manager Grouping:	**External Information Manager**
Manager:	**OTHER EXTERNAL INFORMATION EXCHANGE**

Manager Objectives:

The objective of this Manager is to facilitate the transmission and reception of data between all other external organisations and individuals that are relevant to the practitioner in the delivery of patient health care.

Functional Description Overview:

This Manager facilitates communication between the practitioner and the following groups:

- Patients (with appropriate agreement and controls)
- State and Federal Health Departments
- CME Status
- Public Health Agencies
- Pharmacists
- Suppliers

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EOEX-01	Capability to support the transmission and reception of electronic information in all relevant forms (including electronic mail, electronic mail attachments and multi-media where appropriate)	**H**	**C1**
EOEX-02	Capability to alert practitioner of the arrival of messages from the above sources	**H**	**C1**
EOEX-03	Capability to support EDI transactions between the GPCS and suppliers	**L**	**C1**

Linkages – For All External Information Managers:

Electronic Health Record
Patient Financial Record
Patient Selection and Task Selection Manager
Forms Manager
All managers needing data transfer in and out of the GPCS.

Constraints / Dependencies:

C1 – This constraint is related to the current lack of a secure, private network infrastructure for the transmission and reception of sensitive clinical and financial information.

Functional / Operational Assessment:

Scenario C from Section 6.2

Manager Grouping:	**Desktop Systems Manager**
Manager:	**DESKTOP SYSTEMS SETUP**

Manager Objectives:

The Desktop Systems Manager aims to provide the GPCS with straightforward mechanisms for the set-up and configuration of the overall GPCS system.

Functional Description Overview:

The Desktop Systems Manager facilitates the initial configuration and maintenance of the overall configuration of the GPCS, through the management of the set-up database used by the GPCS.

Among the databases which need to managed are:

- The Practice Set-Up Database
- The Module Definition / Communication Database

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DSET-01	Provision of uncomplicated processes for capture and storage of essential configuration data to enable configuration of the system	**H**	
DSET-02	Provision of easily used tools to permit easy addition or deletion of modules to / from the GPCS system.	**H**	
DSET-03	Capability to simply store all configuration data in one location so that the system can be rapidly restored if required.	**H**	
DSET-04	Capability to personalise overall user interface and system behaviour to suit individual users (eg. initial entry screens, major screen flows and layouts etc) by use of configuration files (e.g. .ini files) or messaging. (The intent of this is to provide a central point for storage and retrieval of setup and configuration information for use by multiple vendors)	**H**	

Manager Grouping:	**Desktop Systems Manager**
Manager:	**SOFTWARE CURRENCY MAINTENANCE**

Manager Objectives:

The Software Currency Manager has as its objective ensuring that all the software used on the GPCS is as current as possible.

Functional Description Overview:

The software currency manager manages a database which records details of all software in use by the GPCS and maintains a record of the provenance, age and modification of that software.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
SWCU-01	Capability to record, in detail, the software and all its sub-components in use within the GPCS	**H**	
SWCU-02	Capability to fully prevent unexpected effects of module updates through proper segmentation of the system modules and shared supporting code.	**H**	
SWCU-03	Capability to fully un-install a module, if, after application to the system, it is found to have deleterious effects, and to return to the state of the previously operational system.	**H**	
SWCU-04	Capability to audit all software on the system, and identify the origin, version and date of each module and supporting module in use.	**H**	
SWCU-05	Capability to obtain and install software updates from a range of appropriate sources including CD-ROM, Diskette, an Intranet or Virtual Private Network or the Internet.	**H**	
SWCU-06	Provision of an equivalent of the function “Live Update” provided by some commercial software developers (e.g. Symantec Inc) for Internet based maintenance of GPCS currency.	**H**	
SWCU-07	Capability to alert the user that a vendor determined time interval for the software has been exceeded and that a new version should be sought.	**H**	

Manager Grouping:	**Desktop Systems Manager**
Manager:	**EXTERNAL INFORMATION CURRENCY MAINTENANCE**

Manager Objectives:

The External Information Currency Manager has as its objective ensuring that all information used on the GPCS is as current as possible

Functional Description Overview:

The External Information Currency Manager manages a database which records details of all information that has been imported into the GPCS for reference and educational purposes and maintains a record the provenance, age and modification of that data.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
EICU-01	Capability to record the provenance of each data set used in the GPCS and to assign to each data set a date by which a newer or updated version needs to be obtained - with a desktop alert being linked to expiry of a data set's currency.	**H**	
EICU-02	Capability to apply new data from all the usual possible sources of validated data (eg diskette, Internet CD-ROM).	**H**	
EICU-03	Capability to record the steps required to obtain an updated version of the data-set (eg electronic update, obtain and load new disk etc) within the information database.	**H**	
EICU-04	Capability to automate the process of obtaining updated information for data-sets which are known to be updated at regular intervals.	**H**	
EICU-05	Capability, for an approved and authorised information provider, to inform the GPCS of the availability of an information update, and to initiate its retrieval and installation at an appropriate time.	**H**	
EICU-06	Capability to have an escalated set of warnings over an appropriate period if requests for action to obtain GPCS updates are not complied with for data which may have a significant impact on patient wellbeing.	**H**	

Manager Grouping:	**Desktop Systems Manager**
Manager:	**DATA INTEGRITY MANAGEMENT**

Manager Objectives:

The Data Integrity Manager of the GPCS is to preserve the data integrity of all data held in the GPCS.

Functional Description Overview:

The Data Integrity Manager of the GPCS utilises modern predictive technology to ensure optimum hardware reliability and reliable transaction processing technology to ensure that all transactions made by the GPCS are completed correctly with virtually no possibility of error or data corruption.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DINT-01	Capability to tightly integrate with the operating system to capture predictive maintenance data from all hardware devices and warn the user of the possibility of imminent system failure.	**H**	
DINT-02	Capability to communicate with an uninterruptable power supply to warn the user of loss of mains power while preserving data integrity and allowing a controlled shut-down of system.	**H**	
DINT-03	The GPCS must employ a transaction processor capable of effective control and management of all information commitment, check pointing of the database , database roll back and roll forward.	**H**	
DINT-04	The capability to run data integrity checks and schedule fix-ups on all databases within the GPCS.	**H**	
DINT-05	The capability to capture individual transactions to separate media from the main operating environment.	**H**	
DINT-06	The GPCS must allow records to be merged, even if they have been held on different hardware configurations and on different operating system	**H**	
DINT-07	Merging of records must remain consistent even if different copies have been edited at different times by different clinicians	**H**	
DINT-08	Capability to link and merge the same patient's records on the same vendor's system at different locations	**H**	
DINT-09	Automatic recognition and notification of duplicate patient records, or an attempt to create a duplicate record, on the GPCS	**H**	
DINT-10	Merged patient records must retain the order in which transactions were physically added to a record, even though logically they will appear in chronological order. This will enable any user to prove the information which was available to them at any time at any time in the past, since it will always be possible to reconstruct the record as it was on that occasion	**H**	

Manager Grouping:	**Desktop Systems Manager**
Manager:	**DESKTOP SECURITY / AUTHORISATION**

Manager Objectives:

The Desktop Security / Authorisation Manager aims to ensure that only known, authorised users can access the GPCS either locally or remotely.

Functional Description Overview:

The Desktop Security / Authorisation Manager has the following functions:

- Control of access to all elements of the GPCS depending on the users authorised access status
- Manages the regular update of access passwords
- Manages the security of external access to the GPCS
- Provides an ‘electronic signature’ capability for the system.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DSEC-01	Must have the capability to provide an hierarchical security authorisation scheme that permits access control of the GPCS at a screen, menu, patient record, Health Record Item, Health Record Item Collection (e.g. patient summary), function and individual data element (e.g. Health Record Item) level by an individual user or group of users.	**H**	**C1**
DSEC-02	Must provide a link between the practice member list and security authorisation to ensure no former staff can access the system	**H**	
DSEC-03	Must provide for enforced automatic password change at a regular user defined time interval, and to prevent password reuse for a significant period (5 password changes at a minimum).	**H**	
DSEC-04	Must have the capability to one-way encrypt passwords to ensure no possibility of accidental password access or sharing.	**H**	
DSEC-05	Must have the capability to ensure there is only one instance of the user logon name and password in use at any one time within the system.	**H**	
DSEC-06	Must have the capability to ensure user passwords are never displayed on or reported from the system.	**H**	
DSEC-07	The system must not disclose the component of login that caused login failure	**H**	
DSEC-08	Must have the capability to provide user defined time-out on all screens to ensure that after a defined period of inactivity a password must be entered for further access to be provided to the system.	**H**	
DSEC-09	Must have the capability to force user to change password on first use of the system to ensure only the user knows their logon password.	**H**	
DSEC-10	Must have the capability to provide user identification through the use of a user logon name and password for each user on the system and to ensure all access to the system is by way of the use of a user logon name and password.	**H**	
DSEC-11	Must have the capability to automatically disable an account (as identified by logon) for 15 minutes for a repeated password failure to prevent automated guessing of the passwords on both local and network/dial-in accesses	**H**	

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
DSEC-12	Must have the capability to capture and store system security setup and access control data (including communication encryption configuration) in a security / authorisation database which is accessible to a limited number of authorised users and retain an audit trail of all transactions against this data.	**H**	
DSEC-13	Must have the capability to have a user defined number of trusted staff permitted to establish new (and remove old) access accounts within the GPCS.	**H**	
DSEC-14	Must have the capability to block the use of easily guessable password and to insist on passwords of at least 6 characters containing at least one special alphanumeric character (number, punctuation etc)	**H**	
DSEC-15	Must have the capability to utilise electronic patient and staff recognition systems such as fingerprint recognition when readily available.	**H**	
DSEC-16	Must have the capability to securely store an individual electronic signature for use by the authorised individual.	**H**	

Manager Grouping:	**Desktop Systems Manager**
Manager:	**SYSTEMS BACK UP AND MAINTENANCE**

Manager Objectives:

The System Backup and Maintenance Manager has the objective of preventing any data loss from the GPCS over the total period of its operation.

Functional Description Overview:

The System Backup and Maintenance Manager provides the system backup, test restore and data protection services for the GPCS.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
SBUM-01	Capability to provide a software configuration of a full operational system in which it is possible to make on-line backup of the entire operational system which can be easily restored to operation on entirely new and separate hardware in less than one-working day.	**H**	
SBUM-02	Capability to implement backup / restore strategies which, despite a single medium failure, will not result in more than one day of work being lost even with simultaneous hardware failure. (Note: for large practices this may need to be tightened)	**H**	
SBUM-03	Capability to archive data from the GPCS in permanent media in such a way that, if necessary it can later be restored to the active database.	**H**	
SBUM-04	Capability to automate the running of timed backups at intervals suitable for practice operation and data-protection	**H**	
SBUM-05	Capability to manually initiate system backup if required.	**H**	
SBUM-06	Capability to undertake test restores of the backup data.	**H**	

Manager Grouping:	**Desktop Systems Manager**
Manager:	**REFERENCE DATABASE MANAGEMENT**

Manager Objectives:

The objective of the Reference Data Base Manager is to ensure reliable management and control of the system's reference databases.

Functional Description Overview:

The Reference Data Base Manager has the functions of creating, loading and maintaining the currency and accuracy of the GPCS Reference Databases.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
RDBM-01	Capability to receive data in all standard data format for loading into reference databases	**H**	
RDBM-02	Capability to use the Data Currency functions of the GPCS to ensure the data used is up-to-date	**H**	
RDBM-03	Capability to query each data source re its provenance, age and next due date of update	**H**	

Manager Grouping:	**Desktop Systems Manager**
Manager:	**MOBILE COMPUTING DATA MANAGEMENT**

Manager Objectives:

The Mobile Computing Data Manager has as its objective to optimally enable provision of computing support to the practitioner when not at the usual office based work-station.

Functional Description Overview:

The Mobile Computing Data Manager provides functionality including:

- Transparent error free synchronisation of patient and financial data between mobile and fixed environments as required.
- Provision of all key decision support for the practitioner when operating away from base office location.
- The ability to take the data from a selected subset of patients from the base system for use while mobile.
- The ability to exploit available communication links while mobile to minimise degree of de-synchronisation

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
MOBC-01	Capability to, on demand, when connected to the host system, synchronise the data held on mobile and fixed system.	**H**	
MOBC-02	Capability to selectively replicate a subset of the GPCS's critical functions and decision support for use in the mobile environment, with the version of software tied to the fixed system.	**H**	
MOBC-03	Capability for the GPCS Mobile Client to connect to the Host System via Modem, Internet or Virtual Private Network to re-synchronise with fixed system.	**H**	
MOBC-04	Capability to selectively obtain and update a patient list (and associated data) while mobile using any suitable secure technology (e.g. mobile phone, Internet, satellite etc)	**H**	
MOBC-05	Capability to operate as a full GPCS Client where a suitable connection is available.	**H**	

Linkages:

The Desktop System Manager, by definition is linked to all other areas of the system for system management and maintenance purposes.

Constraints / Dependencies:

C1 It is recognised that meeting the security requirements will require careful technical design of the data architectures to be used in the system.

Functional / Operational Assessment:

Not Applicable.

Manager Grouping:	**External Communications**
Manager:	**COMMUNICATIONS MESSAGE EXCHANGE PROTOCOLS**

Manager Objectives:

The objective of the Message Exchange Protocols is to provide fast, effective, reliable, standards based, confidential and secure links to the external computer world from the GPCS and to provide the basic levels of encoding and decoding of the information sent in standard message formats.

Functional Description Overview:

At a functional level, the Message Exchange Manager is responsible for encoding and decoding messages to be communicated on the transport layer in the recognised standard formats and for provision of the basic level of encryption and decryption used by the GPCS for secure data transmission and reception.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
COMP-01	Capability to provide the basic levels of message formatting and message decoding required for the operation of recognised inter-application message standards such as: • HL7 • MEDIX (P1157) • NCPDP	**H**	**C1**
COMP-02	Capability to support the current HL7 standard for inter-system communication and message transmission in the pathology sector.	**H**	**C1**
COMP-03	Capability to provide secure and confidential links between the GPCS and the external network world using the recommendations emerging from the ASTM (E31.12,17,20) and their Australian successors	**H**	
COMP-04	Capability to use the ACR/NEMA DICOM Standard for Image Transmission and Receipt.	**H**	
COMP-05	Capability to use the IEEE Medical Information Bus standard for Point of Care Instrument Connections to the GPCS	**H**	
COMP-06	Capability to send part or all of a patient record to a referred clinician	**H**	
COMP-07	Transfer of a record, or part of it, must only be comprised of exchanging whole transactions. Although a receiving record will sort these into chronological order, it must always be possible to reconstruct the record as it was at any time.	**H**	
COMP-08	Capability to receive the integrated record back from the referred clinician following the referral encounter	**H**	

Manager Grouping:	**External Communications**
Manager:	**NETWORK COMMUNICATIONS PROTOCOLS**

Manager Objectives:

The objective of the Network Communications Protocols is to provide fast, effective, reliable, standards based links to the external computer world from the GPCS.

Functional Description Overview:

The functional role of the Network Communications Protocols is to enable network traffic to flow to and from the GPCS, and to provide the reliable base transport layer on which the more complex layers of communication may be undertaken.

Functional Requirements:

Requirement Identifier	Requirement Description	Priority (H / M / L)	Constraint
NCOM-01	Capability to support TCP/IP as the standard network protocol.	**H**	
NCOM-02	Capability to support other required transport protocols (eg for EDI and EFTPOS) on the same platform, using the same basic connections.	**H**	
NCOM-03	Capability to support X.400 network protocols (eg for MedClaims)	**H**	
NCOM-04	Capability to support multiple, simultaneous users concurrently on network links	**H**	

Linkages:

External Information Manager
The Network World

Constraints / Dependencies:

C1. While there has been a range of standards considered in this area over the last few years, it has now become clear that the HL7 (Version 2.2 or later) is to be strongly preferred.

Functional / Operational Assessment:

Scenario C from Section 6.2

Appendix D: DRAFT Primary Care Minimum Demographic Data Set

Introduction

The purpose of this data set is to detail a core set of patient and provider demographics that are required to underpin a base level of interoperability between GPCS applications.

As discussed in *Section 7.4* of this Report, development and maintenance of a full primary care data set covering all other aspects of primary care in addition to demographics will be vital to ensure maximum interoperability can be achieved.

Basis of Demographic Data Definitions

This data set does not provide the detailed definition of data elements specified, but identifies where definition needs to be made, and refers to existing standards or appropriate reference sources from which data definitions may be derived.

The following sources for data definition have been used:

1. The *National Health Data Dictionary Version 5.0* data element definitions have been used where a definition exists.

2. The *Client Data Standards Working Group* (of Australia Post, Australian Bureau of Statistics, Australian Taxation Office, Department of Employment, Education, Youth Affairs, Department of Immigration and Multicultural Affairs, Department of Social Security, and the Health Insurance Commission) preliminary recommendations referred to in the table following as the *CDSWG Proposal.*

It should be noted that the CDSWG Proposal recommendations are for fixed length fields, which except for codes fixed in length by definition, would need to be modified to variable length strings, denoted as 'ST' in this draft data set.

In addition, where standards would be expected to exist (e.g. Social Security, Health Insurance Commission) these are noted as candidate sources of data definitions.

Referenced Documentation

In developing this data set, reference has also been made to the following documents:

- RACGP Entry Standards for General Practice 1996
- Health Level Seven (HL-7) Version 2.2 Standard
- Primary and Community Health Services National Information Model (*PACHSNIM Project*, Lead Agency-NSW Health Department)
- Community Health Information Management Enterprise (*CHIME Project*-- alliance of the NSW, ACT, SA and Queensland Health Departments)
- GP Minimum Data set produced by the Information Management Committee of the RNZCGP (supported and published by the New Zealand Ministry of Health)

- MIQUEST HQL Data Dictionary Prepared for and in consultation with the UK NHS Collection of Health Data from *General Practice National Project*, Clinical Information Consultancy (© Crown Copyright 1992 - 1997).

Data Set Conventions Used

Organisation

The basic type: *person* is first defined. This could be a patient, provider, referrer, referee, person responsible for account, personal third party etc. This *person* type would be embedded with type-specific additional data in the definition of a specific type such as included here for *patient*, and *provider.*

The separate fields describing address could similarly be grouped into an overall *address* or *locator* entity which could be used more simply in its multiple occurrences. Similarly telephone, fax, email etc could be grouped into a *communication mode* entity.

Changes, Aliases

A set of data elements describing an entity such as a patient would form one of any number of descriptors for the entity and therefore also have usage start date and current or usage end date properties, thus allowing aliases, histories of changes etc. The Patient Identifiers (PIDs) - PID Internal and PID Global Unique, would not however change, but would associate with other PIDs to accommodate re-separable mergers. These PIDs constitute the link for multiple demographic pages which then form a time-based complete demographic record for a person.

Data types

ST denotes *string* and is understood to be of variable length. This string is assumed to be alphanumeric unless otherwise restricted.

Missing or *not recorded* are represented as empty strings.

Numeric is coded data as defined in other referenced specifications and must have an entry for *not recorded*, e.g. as in the NHDD for *sex*, but in the case of *Aboriginality*, it requires extension of the code to the NHDD definition.

For fixed length alphanumeric fields (defined in other referenced specifications) *missing* or *not recorded* should be represented as in the referenced specification or if not catered for there, by *space* characters.

Additional Demographic Data

Patient Ethnicity Data

Inclusion of race was requested by a number of GPs as a necessary demographic, however this could be difficult to ascertain and needs further discussion with the relevant stakeholders. Time sequences and durations living in Australia or in different cultural and other environments would be useful, but complex to record accurately.

Third Party Payer Details

It is recommended that careful consideration being given during implementation to storing other third party payer details with appropriate identifiers (e.g. Health Funds, WorkCover etc) in addition to Medicare details.

Person Demographics:

(base type for Patient, Provider, Employee, Referring Practitioner etc)

Descriptor	Type	Australian Definition	Comments
PID Internal	ST String-alpha numeric	NHDD P2 cf HL-7 2.2 PID-3	allocated by GPCS demographic manager. Used across co-operating GPCS Component Objects. Could be context dependent e.g. patient, provider etc. The only constant for a person.
Usage Start Date	ST 10 characters DD MM YYYY	NHDD P5	Applies to all non-PID demographic data
Usage End Date	ST 10 characters DD MM YYYY	NHDD P5	Applies to all non-PID demographic data Empty (spaces) for current if still in usage date
Main name	ST String-alpha numeric	**proposed here** cf HL-7 2.2 PID-5 referenced only. AS4212-1944 2.4 modified **CDSWG proposal** modified to ST	Use for one-name person Never empty. Convert to upper case for matching and searching
Name Title	ST	**CDSWG proposal** AS4212-1994 2.1 Abbreviations from Australian Post Mailing Standard.	Values: Ms, Mr, Sir, Dr, Prof etc
Name Type Code	3 alphabetic characters	**CDSWG proposal**	Values: LGL: legal, TRI: tribal, MDN: maiden, NAB: name at birth (select prioritised according to CDSWG standard if non-unique)
Forenames / Initials	ST String-alpha numeric	**proposed here** cf HL-7 2.2 PID-5 referenced only.	Empty for some names
Name Suffix	ST	AS4212-1944 clause 2.5 Orders, Decorations etc modified to ST	Values: BA, MP, MB BS, FRACGP etc
Sex	numeric	NHDD P4	Values:1 1=Male, 2=Female, 3=Indeterminate, 4= Not stated / Inadequately described

Descriptor	Type	Australian Definition	Comments
Date of Birth	ST 10 characters DD MM YYYY	NHDD P5	
Date of Birth Estimation Range	numeric	**proposed here**	Values: in days. 0=precise. Intended for DOB where not accurately known. E.g. '2' (2 days), '365', '1825' (5 years) etc
Address-Lines For Postal Address	ST repeating	**proposed here** cf HL-7 2.2 PID-11 referenced only.	Repeating for lines. No embedded blank strings
Address-State for Postal Address	numeric	NHDD P1 (part)	Values: 1-9 for the State identifier part
Address-Postcode for Postal Address	numeric	Australia Post	
Address -Country for Postal Address	alphanumeric 4 digit ST	NHDD P6 =ASCCSS ABS Catalogue no 1269.0	Australian Standard Classification of Countries for Social Statistics (ASCCSS) 4 digit (individual country) level.
Address Notes	ST	**proposed here**	Description of Address issues
Telephones Home	ST repeating	**proposed here** cf HL-7 2.2 PID-13 referenced only.	
Telephones Work	ST repeating	**proposed here** cf HL-7 2.2 PID-14 referenced only.	
Telephones Mobile	ST repeating	**proposed here**	
Fax Home	ST	**proposed here**	
Fax Work	ST	**proposed here**	
Email Address Home	ST	**proposed here**	
Email Address Work	ST	**proposed here**	
Pager No	ST	**proposed here**	
Communication Notes	ST	**proposed here**	Description of access issues

Patient Demographics:

Descriptor	Type	Australian Definition	Comments
PERSON as defined above **Extra Properties for Patient:**			
PID Global Unique --capability	ST String--alpha numeric	**widely proposed and opposed**	Patient unique identifier currently non-existent to be used across the health system.
Relationship to Practice	Numeric	**proposed here**	Proposed values: 0: Not recorded 1: Active Patient 2: Discharged from Practice 3: Lost from follow-up 4: Deceased
Address-Lines for Clinical communications	ST repeating	**proposed here** cf HL-7 2.2 PID-11 referenced only.	Repeating for lines. No empty lines. 3 lines recommended (needs to be agreed)
Address-State for Clinical communications	Numeric	NHDD P1 (part)	Values: 1-9 for State identifier part
Address-Postcode for Clinical communications	Numeric	Australia Post	
Address -Country for Clinical communications	Alphanumeric 4 digit ST	NHDD P6 =ASCCSS ABS Catalogue no 1269.0	Australian Standard Classification of Countries for Social Statistics (ASCCSS) 4 digit (individual country) level.
Address-Lines for Clinical Interventions (visits, deliveries)	ST repeating	**proposed here** cf HL-7 2.2 PID-11 referenced only.	Repeating for lines. No empty lines. 3 lines recommended (needs to be agreed)
Address-State for Clinical Interventions (visits, deliveries)	Numeric	NHDD P1 (part)	Values: 1-9 for State identifier part
Address-Postcode for Clinical Interventions (visits, deliveries)	Numeric	Australia Post	
Address -Country for Clinical Interventions (visits, deliveries)	Alphanumeric 4 digit ST	NHDD P6 =ASCCSS ABS Catalogue no 1269.0	Australian Standard Classification of Countries for Social Statistics (ASCCSS) 4 digit (individual country)

Descriptor	Type	Australian Definition	Comments
			level.
Usual Practitioner	Practitioner	**proposed here**	Assumes only one preferred practitioner
Practitioner Preference --Notes	ST	**proposed here**	Free typed: issues regarding provider preference
Marital Status	Numeric	NHDD P8	NHDD Values: 1-6 Should be expanded to include 'unstated' e.g. 0=unstated / not specified
Employer	ST	**proposed here**	Free typed
Country of Birth	Alphanumeric 4 digit ST	NHDD P6 =ASCCSS ABS Catalogue no 1269.0	Australian Standard Classification of Countries for Social Statistics (ASCCSS) 4 digit (individual country) level.
Preferred language	Numeric 2 digit	NHDD P11	Values: 00-99
Language spoken at Home	Numeric 2 digit	NHDD P11	Values: 00-99
Religion	ST / ABS Code	**proposed here**	cf RACGP Health Summary Use ABS Codes. Need to include a value for 'unspecified'
Aboriginality	Numeric	**proposed enhancement here** NHDD P7	1=Aboriginal or Torres Strait Islander, 2=Other Should be enhanced to include: 3=unrecorded
Medicare No	ST	HIC	
Medicare No expiration date	ST 10 digits	**proposed here**	
Veterans Affairs No	ST	Dept of Veterans Affairs	
Veterans Affairs eligibility	ST	**proposed here**	This field is used to describe the eligibility
PHB No	ST	Dept of Social Security	
HCC No	ST	Dept of Social Security	
Insurance Status	alphanumeric	NHDD P19	Values: e.g. 1a=insured with health fund / basic table only 1b=insured with health fund/ basic table plus supplementary
Occupation Description	ST	**proposed here**	cf RACGP Health Summary

Descriptor	Type	Australian Definition	Comments
Occupation Code	2 digit numeric	NHDD P15 =Australian Standard Classification of Occupations	

Provider Demographics:

Descriptor	Type	Australian Definition	Comments
PERSON as defined above **Extra Properties for Provider:**			
Provider No	alphanumeric	HIC	
Prescriber No	alphanumeric	HIC/PBB	
Type of Provider	3 digit alphanumeric	HIC code if available **proposed here**	Values: 000-999 Providers to be coded include: GP, GP/VR, GP/FRACGP, Specialist Proposed extension for specialist type and allied health professionals