

Commonwealth Department of Health and Family Services

and

IBM Consulting Group

**Clinical & Administrative General Practice Computer
Systems Consultancy**

**GPCS Scope Definition
and
Stakeholder Consultation Report**

Prepared By

IBM Consulting Group Health Practice

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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. Following endorsement of the Charter by the DH&FS in March 1997, Phase Two stakeholder consultation and scope definition of the GPCS commenced.

The GPCS Scope Definition and Stakeholder Consultation Report, which is the major deliverable for Phase Two, provides a robust, grounded framework for development of the functional requirements by ensuring that the functional specification appropriately addresses the stakeholder needs / expectations and relevant issues identified during the stakeholder consultation process conducted as part of Phase Two of this consultancy.

This Report provides recommendations as to the overall scope of General Practice Computing Systems based on:

- a. Assessment of needs and expectations of General Practice and a range of other customers in the context of the major General Practice processes of clinical care delivery and practice administration and support.
- b. Assessment of a broad range of stakeholder issues surrounding the adoption and effective use of the GPCS.

The approach to identifying and documenting the scope of the GPCS involved the following key activities:

- Development of an Issue and Logic Framework for investigation of a broad range of issues surrounding the development, implementation, adoption and use of a GPCS.
- Conduct of a series of one-on-one and group interviews with key stakeholders; documentation of interviews and quality review by interviewees.
- Conduct of a series of Issue Focus Group sessions with a broad range of stakeholders to enable further detailed investigation of key issues and to identify stakeholder expectations of a GPCS; documentation of issue focus group sessions and quality review by participants.
- Analysis of stakeholder consultation findings.
- Development of a conceptual process model for General Practice to provide a suitable framework for identification of stakeholder needs and expectations for the GPCS.
- Identification of GPCS attributes that impact adoption.
- Conduct of Customer Value Management workshops for needs identification and classification; compilation of raw data, documentation of workshops and quality review by participants.
- Analysis of workshop results and GPCS scope.
- Production of GPCS Scope Definition and Stakeholder Consultation Report, with quality review by GP Expert Panel and Project Committees

The IBM Consulting Group's issue based consulting methodology was adopted for the conduct of the stakeholder consultation, fact gathering and analysis of findings. For the conduct of the Customer Value Management workshops and analysis of the data collected, the IBM Consulting Group's Customer Value Management Methodology was adapted to ensure effective capture of the needs and expectations of General Practitioners and a range of other customers with regard to the GPCS.

The major findings of this Report are as follows:

- From the stakeholder interviews, Issue Focus Group and Customer Value Management workshop sessions covered in this Report, there was strong support for a GPCS that had the scope and depth to carry out most or all of the functions identified in this Report effectively. This is consistent with the findings of the scope required by practitioners in the clinical area in our previous Electronic Prescribing and Medicines Information Final Report.
- What will be valued and adopted by practitioners are those applications which simplify and ease the effort in providing quality patient care while ensuring the financial and accounting needs of the practice are fully met. For success in maximising adoption to be achieved, it is also clear that besides basic things such as seamless integration, speed, reliability, ease of use and robustness, the application suite required must cover a very wide range of functions in significant depth.
- Analysis of findings from the stakeholder consultation as detailed in this Report reveals a number of extra-application constraints which will impact the successful implementation and adoption of the GPCS. These constraints include existing policy and legislative barriers, standards and infrastructure issues.
- There exists a number of special issues related to rural and remote practices that the GPCS could assist in addressing. These issues, which include information management and external communications with other service providers and agencies, are discussed further in this Report.

Preface to this Report

This Report consolidates the information gathered from the stakeholder consultation conducted during Phase Two of this consultancy and presents the analysis of key findings from the stakeholder consultation on the recommended scope and issues impacting the successful implementation and adoption of the GPCS.

The final outcomes of the consultative process will be presented in the *Final Report* of the consultancy.

The GPCS Scope Definition and Stakeholder Consultation 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 consultative activities and production and review of documentation.

Section 4.0 describes a conceptual General Practice process model and application linkage map developed to provide a reference framework for identification of practitioner needs and expectations.

Section 5.0 presents the key findings and preliminary conclusions from the analysis of information gathered from stakeholder consultation.

Section 6.0 details the priority needs and expectations of practitioners with regard to the GPCS, identified through the Customer Value Management workshop sessions.

Sections 7.0 provides the recommended scope of the GPCS and presents a functional framework for development of detailed functional requirements by providing the necessary linkage between the needs and expectations of practitioners and the key applications / functional areas.

Finally *Section 8.0* outlines the major implications of the GPCS application scope and details the major constraints impacting the successful implementation and adoption of the GPCS that were identified from the stakeholder consultation and research conducted to date.

The authors of this Report wish to acknowledge the valuable contribution of all the stakeholder consultation participants, the GP Expert Panel, 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*.

Paul Clarke, Senior Consultant
David More, Health Industry Specialist

IBM Consulting Group

Section 1.0 Scope and Objectives of the Report

The purpose of this Report is to provide recommendations as to the overall scope of General Practice Computing Systems based on:

- a. An assessment of General Practice and a range of other customer needs and expectations in the context of the major General Practice processes of clinical care delivery and practice administration and support.
- b. A comprehensive assessment of a broad range of stakeholder issues surrounding the adoption and effective use of the GPCS.

The specific objectives of this Report are to:

- Provide a suitable basis from which to develop detailed user functional requirements.
- Present the outcomes of the Customer Value Management Workshops conducted to determine the basic needs and expectations of the GPCS from the customer perspective.
- Present the key findings from analysis of the data collected from the other stakeholder consultation activities conducted as part of Phase Two of the consultancy (including one-on-one interviews, group interviews and issue focus group sessions).
- Provide an assessment of customer needs within the context of the major General Practice processes of clinical care delivery and practice administration and support.
- Establish a suitable framework which links customer needs and expectations with the technology enablers / applications and functions necessary to meet these needs.
- Present the recommended functional scope of the GPCS with an associated supporting rationale that considers both the outcomes of the Customer Value Management workshops and the analysis of findings from the other stakeholder consultation activities.
- Provide a functional framework for the GPCS that best reflects the customer needs and appropriately supports the development of detailed functional user requirements.
- Provide an overview of the major implications of the GPCS scope including pre-existing constraints that impact the timely and successful development, implementation and use of the GPCS.

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 (IMSG) 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 is a highly desirable feature 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 GPCS Scope Definition Report provides a robust, grounded framework for development of the functional requirements by ensuring that the functional specification appropriately addresses the stakeholder needs and expectations and relevant issues identified during the Customer Value Management workshops and other consultative activities (interviews and issue focus group sessions).

Section 3.0 Consulting Approach and Methodology

This section details the approach adopted for stakeholder consultation and the Customer Value Management workshops conducted as part of Phase Two of this consultancy. In addition, an overview of the Customer Value Management methodology used for the conduct of these workshops and the specific approach adopted for the identification of General Practice needs is described.

3.1 Overview of the Consultation Process

The IBM Consulting Group's issue based consulting methodology was adopted for the conduct of the stakeholder consultation, fact gathering and analysis of findings. As part of this process, an **Issue Framework** (refer to *Figure 3.1* following) was developed and subsequently refined, to provide a suitable basis for conducting the research, fact gathering, stakeholder consultation, and for subsequent analysis and strategy formulation.

In order to appropriately support this issue framework, a logic framework was developed which details the hypotheses, key questions and matrix of data sources used for issue investigation and analysis. It should be noted that the issue and logic frameworks span the factual data collection and analysis across all phases of this consultancy.

For the conduct of the Customer Value Management workshops and analysis of the data collected, the Customer Value Management (CVM) methodology was adapted to understand the needs and expectations of General Practitioners and a range of other customers with regard to the GPCS.

The following approach was adopted to produce this Report which is the major deliverable for Phase Two of this consultancy:

a. *Development of an Issue and Logic Framework for issue investigation and research*

An Issue Framework and supporting Logic Framework was developed to provide a suitable basis for investigation of a broad range of issues surrounding the development, implementation, adoption and effective use of a GPCS.

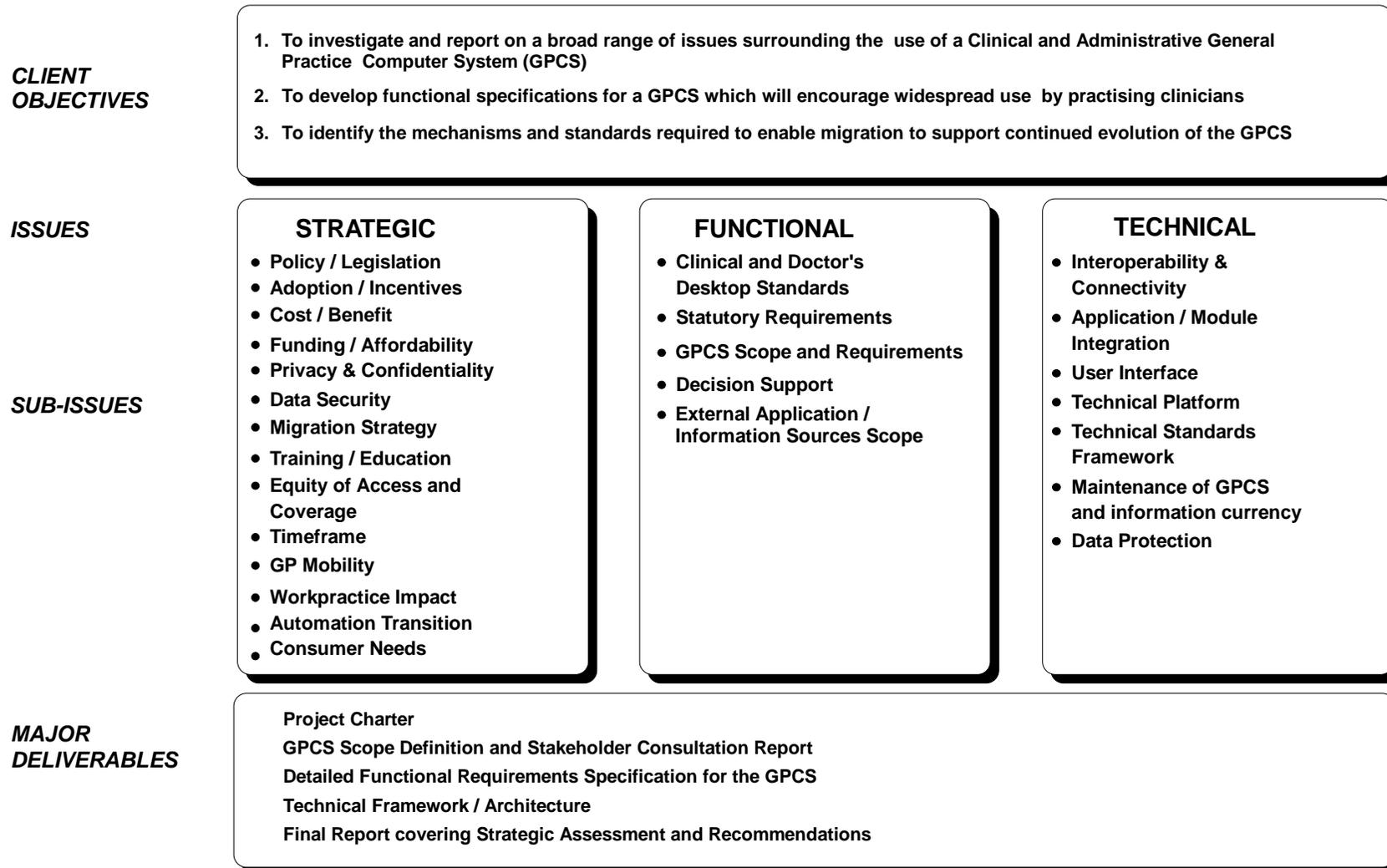
b. *Conduct interviews with key stakeholders*

One-on-one interviews and group interviews were conducted with a substantial number of key stakeholders in Sydney, Canberra, Melbourne and by teleconference. Selection of interviewees was largely based on input from the DH&FS GPB.

c. *Documentation of interviews and quality review by interviewees*

The transcripts of the interviews were produced and sent to interviewees for validation / quality review. The transcripts were appropriately amended as required.

Figure 3.1: Issue Framework for Consultancy



d. Conduct Issue Focus Group Sessions with a broad range of stakeholders

Issue Focus Group Sessions were conducted in Melbourne and Sydney with a broad range of stakeholders to enable further detailed investigation of key issues and to identify stakeholder expectations of a GPCS. In addition, an issue focus group was conducted in Wagga Wagga with rural practitioners to identify specific rural issues and requirements.

e. Documentation of Issue Focus Group Sessions and quality review by participants

The transcripts of the issue focus group sessions were produced and sent to participants for validation / quality review. The transcripts were appropriately amended as required.

f. Analysis of stakeholder consultation findings

A comprehensive analysis of findings from the interviews and issue focus group sessions was conducted.

g. Development of a Conceptual Process Model of General Practice

A process model for General Practice was produced in order to provide a suitable reference framework for identification of practitioner needs and expectations of a GPCS. The model was developed with reference to accepted academic models of General Practice and refined with input from the consultancy GP Expert Panel (refer to *Sections 3.3 and 4.0* following).

h. Identification of GPCS attributes that impact adoption

From the data gathered through the other stakeholder consultation activities (interviews and issue focus group sessions) and research conducted to date, a number of important areas for consideration were identified that were seen as having potential impact on adoption of the GPCS. These areas / attributes of the GPCS were then assessed through the CVM Workshops (Refer to *Section 3.3* following).

i. Conduct of CVM workshops

CVM Workshop sessions, primarily with General Practitioners, were conducted in Melbourne and Sydney to identify and classify needs and expectations. Additional users and stakeholders were represented at these sessions including practice managers, specialists, pathology and the Health Insurance Commission (HIC).

j. Compilation of raw data, documentation of workshops and quality review by participants

The raw needs data was compiled and transcripts of the workshops were produced and sent to participants for validation / quality review. The transcripts were appropriately amended as required.

k. Analysis of workshop results and GPCS scope

Essentially two levels of analysis were conducted to enable the significance of the outcomes of these sessions to be clearly identified. Firstly, the analysis of the results in terms of the various needs / expectations categories was completed to establish the basic requirements of the GPCS. The second level analysis involved consideration of these needs with reference to the General Practice process model and mapping these needs against the applications / technology enablers within a structured functional framework.

Analysis of the scope of the GPCS necessarily involved assessment of the information gathered / key findings from the issue focus groups, interviews and research conducted to date.

l. Production of GPCS Scope Definition and Stakeholder Consultation Report

This step involved production of a draft Report, which following review by the GP Expert Panel and Project Reference Advisory Board, and review and endorsement by the Project Steering Committee, was issued as this final version.

Detailed transcripts of all stakeholder consultation conducted during Phase Two of this consultancy are included in *Attachment A-1* of this Report.

3.2 Customer Value Management Methodology

Customer Value Management (CVM) is a business improvement approach which focuses on designing business systems around the needs and expectations of customers. It achieves this by identifying the needs and expectations of customers at the point at which they interact with a product or service offered by an organisation.

To ensure that the identification of customer needs and expectations does not end up as a “wish list” of nice to have features, it is necessary to prioritise needs according to the behaviours they drive. Needs are categorised into three broad groupings:

1. Basic Needs

These consist of needs that customers expect as minimum or base level requirement. For example in banking, accurate bank account statements are considered basic needs. Basic needs drive customer satisfaction to a degree however they plateau at a certain level (refer to *Figure 3.2* following). If basic needs are not met, customers will likely leave and move to a competitor, or other alternative, which can satisfy their requirements.

2. Satisfiers

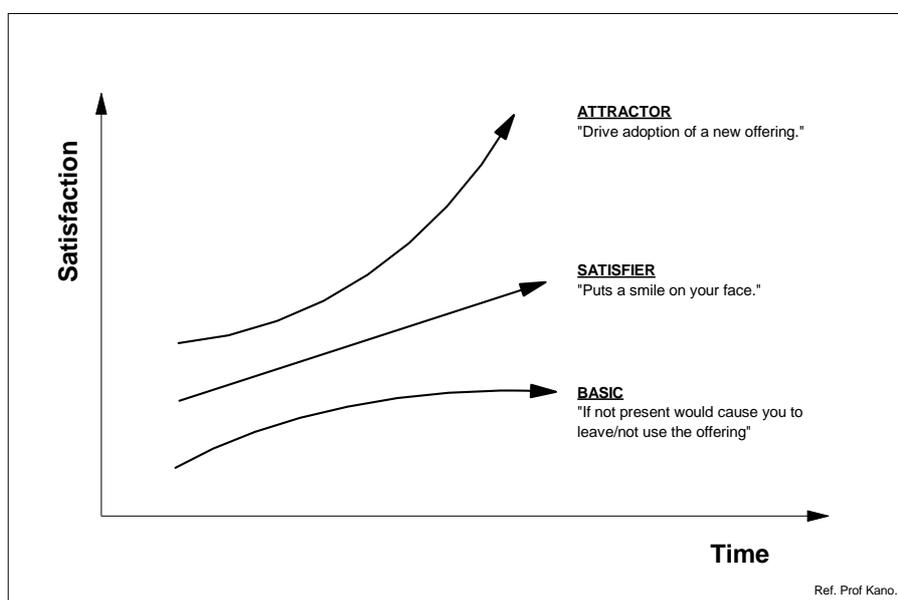
These are needs which if met, will put a smile on the customers face however will not drive buying or usage behaviour. In other words, satisfiers will neither attract customers nor cause them to leave. In the context of this Report, satisfiers will neither increase or decrease adoption of the GPCS.

3. Attractors

These are needs which if satisfied, will attract new customers to adopt the offering and in the context of the GPCS, will drive adoption.

The prioritisation of needs is conducted according to their category. It is essential that Basic needs are satisfied first to ensure retention of customers. Once Basic needs are supported then a combination of Attractors and Satisfiers may be introduced to encourage adoption of the offering and increase customer satisfaction.

Figure 3.2: Hierarchy of Customer Needs (Kano Model)



3.3 Approach to Identification of General Practice Needs

As mentioned above, in conducting the CVM workshops it was necessary to establish a framework to systematically guide the identification of needs. The framework established comprised the General Practice Process Model combined with a number of other areas for consideration. As described in *Section 4.0* following, the General Practice Process Model includes two major processes in addition to a number of practice support processes and activities:

- Clinical Care Delivery Process
- Practice Administration Process
- Practice Support Processes and Activities, which include:
 - ◇ Evaluation / Ongoing Monitoring and Review / Customer Satisfaction Management
 - ◇ Manage and Organise Practice

A number of other important areas for consideration / attributes of the GPCS were included in the framework used for needs identification:

- *Patient Needs and Perceptions* – the attributes of the GPCS seen as important by practitioners in the care of their patients
- *Continuity of Care* – information sharing between multiple and different health care providers
- *Work Practice Impact* – the acceptability to practitioners of the change that may be required to implement the GPCS
- *Mobility* – practitioner mobility between multiple locations and practices
- *Security, Privacy and Confidentiality* – with particular regard to patient / personal data and data transmission
- *Technology and System Support* – the acceptability of technical aspects of the systems support for practitioners including maintenance, back-up, reliability and data protection
- *User Interface* – those attributes which are important for practitioners to encourage adoption and effective use of the GPCS

Detailed descriptions of these other areas for consideration / attributes of the GPCS are provided in *Attachment A-1: Stakeholder Consultation Transcripts* (in the CVM Workshop Session Transcripts section).

To facilitate understanding of the needs categories described above, as well as the behaviours they would drive, the “Basic” category was divided into the following sub-categories:

- **“Showstopper”**
A single need which if not satisfied would cause GPs to not use the system.
- **“Sandfly”**
A single need which on its own is merely a nuisance and would not cause GPs to stop using the system. However if many such needs were unsupported, they would coalesce into a Showstopper.

It must be stressed that as detailed quantitative research was not included in the scope of this study, the results do not have statistical validity. However, as qualitative data, the results provide a rich insight into the needs and expectations of GPs with regard to the GPCS. This insight was further enhanced through our understanding of how the workshop participants believed their behaviour would be affected if the specific needs / expectations were either excluded or included in the GPCS functionality.

Section 4.0 General Practice Processes

4.1 General Practice Conceptual Process Model

As an integral part of the approach used to develop the Functional Specification and Technical Architecture for General Practice Computer Systems, the IBM Consulting Group has looked at models and views of general practice relevant to the Australian setting in order to create a process model directed towards the information management of General Practice (Figure 4.1 following).

The essence of General Practice, its multiple definitions emphasising its comprehensiveness, continuity, community focus, broad-based diagnostic, management and anticipatory / preventive processes as described by *Murtagh, McWhinney, RACGP, Shires and Hennon*, together with analysis of its activities (*Anderson, Bridges-Webb, Chancellor*), and the different community perceptions of its roles (*Commonwealth Department of Health and Family Services*) have all been brought together, with review by the GP Expert Panel, for the purposes of producing a model which explains the support of these by the co-ordination of information.

The principle objective of this model is to ensure that the developed specifications and architectures operationally represent the underlying activities of General Practice. It provides the basis for mapping of application functionality to its processes.

The process model identifies two main streams of activity and sets of underlying support activities which contribute to the overall delivery of General Practice. These main processes, 'administrative' and 'clinical' are however interlinked and dependent, and form part of a wider set of processes of care based on practice exposure, in depth knowledge of patients, families, communities, risk factors, and prioritisations.

The General Practice assessment and clinical decision process is one of adaptive problem solving, the precision of which becomes modified by problem relevance and non-obvious agendas. The ongoing management is also variable and can itself merge with the assessment processes. There is a tension between holistic patient-centred management and the diagnostic, disease-centred approach, and yet both are used in varying degrees in pro-active care, illness management. The information handling in the GPCS must support the practitioner in this environment, and at the same time serve the multiple and varied clients of general practice.

In the conceptual General Practice model presented here there are seen to be two major processes:

1. The Clinical Care Delivery Process

This process is recognised as having overlapping components of:

- Illness assessment and prioritisation (*Assess*)
- Illness differentiation, clinical problem solving and diagnosis (*Diagnose / Interpret*)
- *Patient Management* (overlapping the above with surveillance, treatment planning and treatment delivery).

- *Patient Broad Knowledge-base* - Maintenance and enhancement of broad, observation-based, patient, family, social, occupational, and clinical knowledge gained over a long duration.

These processes include evaluation, ongoing pro-active monitoring and review, patient education, behaviour modification, and patient satisfaction management.

2. The Practice Administration / Management Process

This process involves those activities that support the doctor in delivery of patient care and in ongoing care and maintenance of the practice. They recognise the in-office resource management of general practice, and the differing funding sources which apply to un-triaged, un-referred but partly capitated situations in a personal and organisational client base, of a very wide service range.

These activities include billing, patient scheduling, reporting, financial management etc as well as the necessary effort to organise and manage the total operation.

4.2 Process and Application Linkage

In developing the conceptual process model, analysis of the technology enablers required to support the major clinical and administrative business processes of General Practice resulted in the development of an application / function map against these processes.

Figure 4.2 following establishes the links between the two major processes (clinical care delivery and practice administration and management) and the applications involved in their support and delivery.

The specific applications that comprise the General Practice Computing Systems are addressed in the *Functional Requirements Specification* in further detail.

References:

1. Murtagh JE. *General Practice*. Sydney: McGraw-Hill, 1994.
2. McWhinney IR. *A Textbook of Family Medicine*. Oxford: Oxford University Press, 1989.
3. Andersen NA, Bridges-Webb C, Chancellor AHB. *General Practice in Australia*, Sydney: Sydney University Press, 1986.
4. Shires DB, Hennan B. *Family Medicine - A Guidebook for Practitioners of the Art*. Mc Graw Hill, 1980.
5. General Practice Branch, Commonwealth Department of Health and Family Services, Canberra: *General Practice in Australia:1996*.

Figure 4.1: Conceptual General Practice Process Model

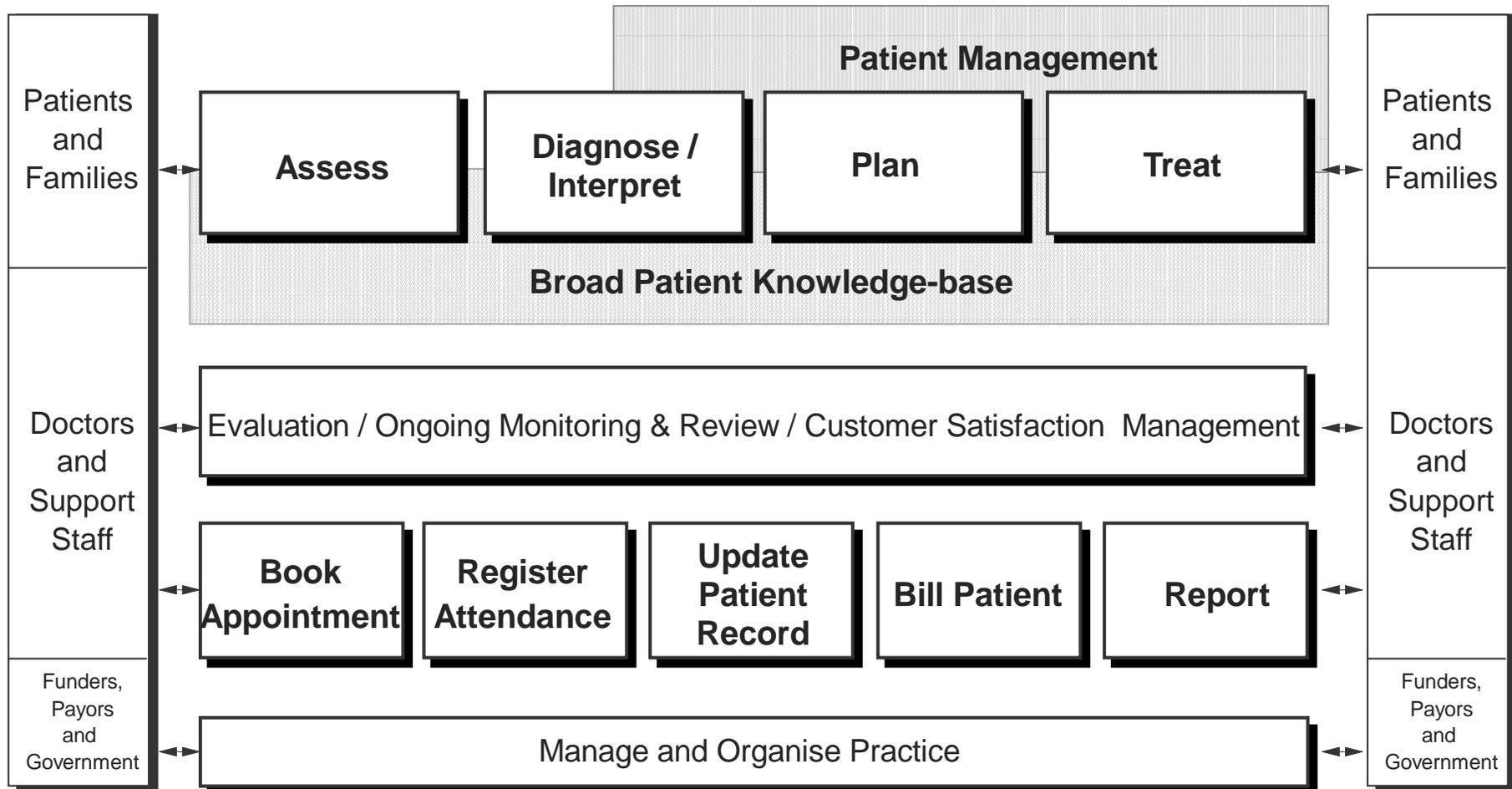
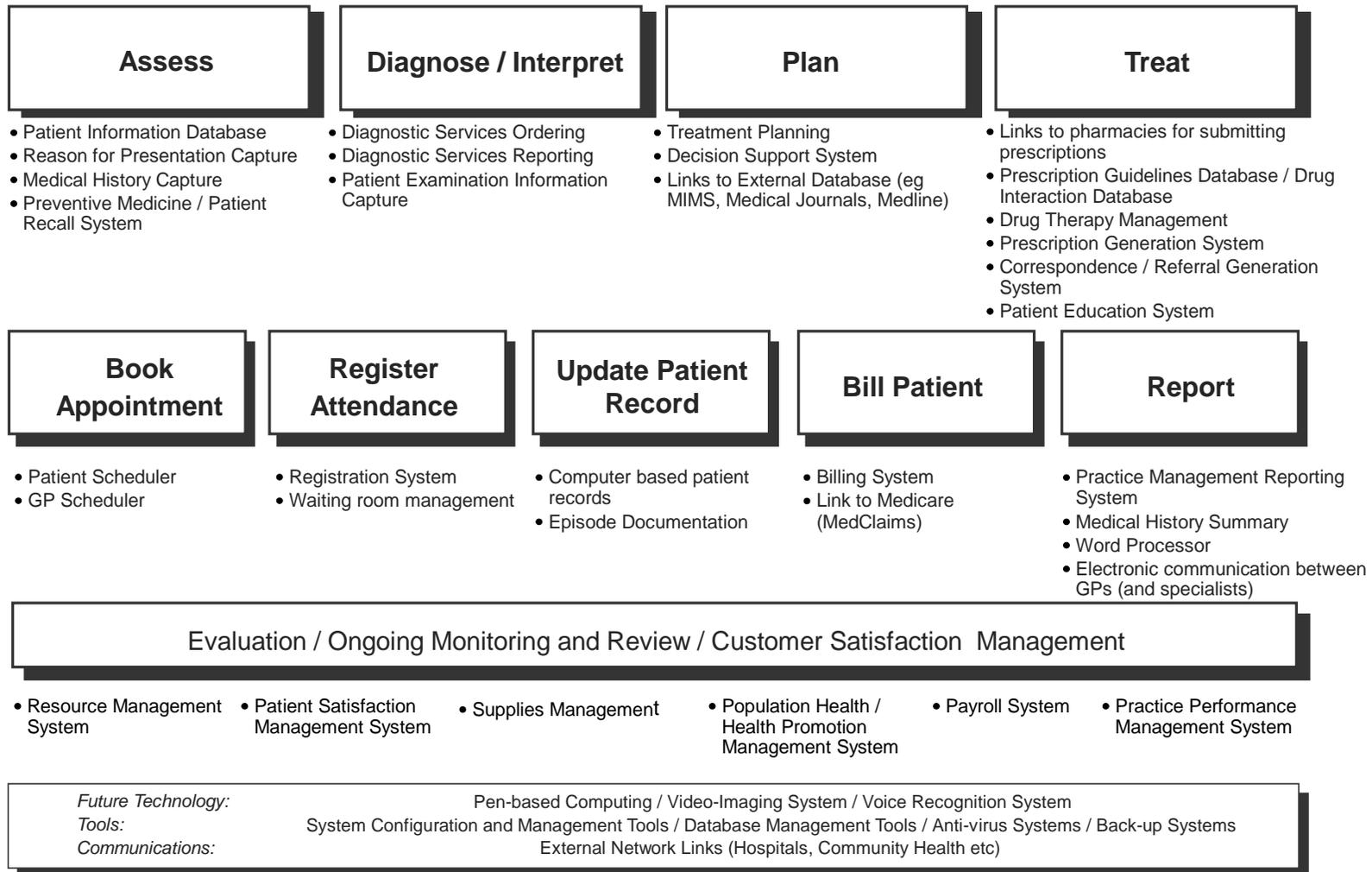


Figure 4.2: Application Linkage to providing General Practice Services



Section 5.0 Analysis of Stakeholder Consultation Findings

5.1 Introduction

A summary of the key findings and preliminary conclusions resulting from the Stakeholder Consultation Process is presented in *Section 5.2* below. The findings and conclusions have been grouped according to the Issue Framework (refer to *Section 3.1*) and are the result of a detailed analysis of the key issues surrounding and impacting on the development, adoption and use of a GPCS.

This analysis is based on information derived from extensive consultation with a broad range of stakeholders involving interviews, Issue Focus Group sessions and research on GPCS applications and standards development conducted to date. This analysis will be further updated for the *Final Report* after the GPCS research and JAD workshops have concluded.

Sections 5.3 and 5.4 present an analysis of the overall relative ranking of the major issues and the GPCS application scope identified by the Issue Focus Groups.

Finally *Section 5.5* provides a summary of the major issues for rural General Practice impacting the adoption and use of the GPCS as identified by the Rural Issue Focus Group and other consultation with rural GPs conducted during Phase Two.

5.2 Key Findings and Preliminary Conclusions

Policy / Legislation

- There are a number of policy and legislative barriers impeding delivery and adoption of the GPCS. These include:
 - a. Lack of harmonisation of relevant state and federal Government legislation regarding electronic signatures for prescribing (Drug and Poisons Acts, Evidence Act) and transmission to pharmacists of the completed prescription.
 - b. Inconsistent privacy and confidentiality legislation and policies at the state and federal Government levels covering access to patient records and sharing of patient information between health professionals across the public and private health sectors.
 - c. Absence of legislation and coherent Government policy with regard to data ownership, data protection and encryption.
 - d. No clear Government policy regarding a national clinical data and disease coding standard for primary care use.
 - e. Lack of clear mechanisms to manage the potential separation between the image creator and reporter in the telemedicine situation.

Adoption of General Practice Computing

- Despite the lack of overall consensus on the best way to increase adoption and the evident pockets of resistance, adoption of computers by quite significant numbers of practitioners is slowly happening.

- The resistance to adoption appears to be largely based on:
 - a. Fear, uncertainty and doubt regarding technology
 - b. Concerns with privacy and security
 - c. Concerns with initial and recurrent costs
- Adoption of computers is being positively impacted by the decrease in cost and improved ease of use of computers over the past 18 months.
- There appears to be an increased use of computers by practitioners with anecdotal, published and software industry reports suggesting a substantial increase in Electronic Prescribing and Internet use in the GP community over the past 12 months and around 50% of practices currently using administrative / billing systems.
- Electronic mail adoption by practitioners appears to be significant.
- There is general agreement amongst most practitioners that a substantial Government funding contribution is still required, however the perception that full funding of computer initiatives is required appears to have lessened considerably.
- There is no clear consensus on the level or mechanisms for funding, however payment linked to data provision is generally seen as not being a problem as long as the practitioners autonomy is not compromised.
- Adoption will be accelerated by systems which work well and provide significant and easily realised benefit.
- Recurrent costs for support and training are recognised as being significant and will be an issue until a reasonable strategy for the overall funding of GP automation is developed.
- On balance little appears to have changed since the previous Electronic Prescribing consultancy.

Cost / Benefit

- The major costs for General Practice computerisation are consistent with those identified with the previous Electronic Prescribing consultancy.
- Costs are significant with major components being:
 - ◊ Workstation(s) (approximately \$5,000-\$7,000 per workstation)
 - ◊ Training
 - ◊ Infrastructure / support costs
- There is wide recognition that the major beneficiaries of General Practice computerisation are the Government and the patient, with the practitioner having to bear often a significant initial cost.

- Consistent with the previous Electronic Prescribing consultancy, the lack of alignment between costs and benefits is still clearly recognised. The cost / benefit imbalance for practitioners is viewed as significant and impacting adoption.
- Prescribing benefits and patient recall benefits are generally agreed amongst GPs. Practitioners that are presently using Electronic Prescribing and patient recall / reminder systems have identified significant benefit and have indicated further benefits for them will flow as the systems improve. Major benefits of these systems include improved efficiency in repeat prescribing, increased accuracy and legibility of scripts and improved quality of care delivery to patients through support of quality use of medicine and improved preventive medicine and patient surveillance capability.
- External linkages to other practitioners and service providers such as pathologists is vital to achievement of significant benefit by GPs (and service providers).
- Practitioners recognise the benefit of easy access to information.
- Internet access is viewed as potentially valuable to both GPs and patients.
- The most significant immediate benefits of Internet and email access identified by practitioners are the capability for efficient communication / sharing of information between practitioners and other service providers, and access to current and relevant medical information for delivery of patient care and research purposes.
- Benefits from the use of computers are being identified by practitioners which are not realisable in the current policy environment. Examples include the electronic transmission of clinical data and prescriptions and the lack of Government policy regarding equality of access and provision of communications infrastructure to remote / rural locations which is impeding nation wide Internet and e-mail access for practitioners.

Funding / Affordability

- There is recognition that the Government needs to contribute to the funding of information technology for GPs.
- The level and mix of funding is yet to be agreed and both Government initiative and a Policy framework are needed.
- Where the benefits of information technology can be demonstrated and are significant, GPs are prepared to absorb the costs of adoption within the financial context of the practice.
- The Government move towards the provision of funds based on health outcomes will require significant additional technology to be used in General Practice.

Privacy and Confidentiality

- The emerging need for efficient and effective information sharing for co-ordinated / managed care has opened a “can of worms” of associated issues that will need to be addressed including:

- a. Data transmission control and security
 - b. Differential access to segments of records depending on purpose of access
 - c. Increased public insecurity about who is getting what information (lack of transparency of information flows)
 - d. Lack of uniform Australian standards for security and encryption for data transmission
 - e. No current data protection standards for health information
- With regard to privacy and confidentiality issues surrounding the use of computers by GPs and information sharing through network connection to other practitioners, agencies, services providers, little appears to have changed since the previous Electronic Prescribing consultancy. There is still a need to appropriately address the issues identified in this previous consultancy, which include concerns regarding network security, message authentication approaches, transparency of information flows, reliability of data transmission, database creation, integrity, control and audit.
 - Lack of transparency of who has access to what information is causing anxiety amongst patients.
 - There is no Australian code of practice or consistent / harmonised privacy legislation governing access to, and sharing of, information for health professionals covering both the public and private health sectors.
 - What the proposed GPCS is being architected to be capable of with regard to network connected information interchange is currently unregulated.
 - System designers / implementers have to responsibly interpret relevant community and General Practice needs in the areas of privacy and confidentiality, and data protection, back up and security.
 - There is potential for abuse of all forms of data including aggregation of de-personalised / de-identified data for commercial or other reasons. Patient consent should be sought for use of de-identified patient data and should be appropriately recorded by the GPCS.
 - There is a duty of care for the GP to use the most up to date information for all reference sources.
 - The user of the system has the responsibility to use the system ethically and responsibly to minimise risk to patient.
 - For the purpose of ensuring that individual patient privacy and confidentiality is achieved and compliant with existing privacy legislation and relevant Australian Standards, the GPCS should enable comprehensive management of access to, and recording of, information for individual patients through an appropriate security / authorisation schema with full audit trail capability.
 - Potentially sensitive family information should only be recorded in relative's records with the full consent of the disclosing party (patient).

Migration Strategy

- There needs to be confidence that there will be no loss of data or functionality when migrating to an updated system.
- There needs to be an option for updating module by module.
- A significant design assumption for the GPCS is that the operating platform(s) will be highly scaleable and mainstream.
- Information transfer should comply with an agreed standard (and minimise data loss and re-entry) when migrating from and between systems.

Education / Training / Support

- Skilled professional training is required, and should not be delivered by the system salesmen or system developers.
- The scope of education / training required and potential providers of training include:
 - ◇ Computer literacy / awareness and background training – Colleges (RACGP / AMA), Divisions (of General Practice)
 - ◇ Business / Practice management education – Colleges
 - ◇ Product application training - Vendor
 - ◇ Clinical protocols education – Colleges, Divisions
 - ◇ System support and maintenance training (operations training including backups, security etc.) – Vendor, third party or Divisions
- There is agreement that someone in the practice should be trained in system support and maintenance (and possibly be specifically remunerated by the practice for those skills).
- A level of funding from the Government will be required and funds channelled through Divisions and Colleges for training and education of GPs may be a most effective option to increase adoption.
- There is significant risk of misuse of systems that can be damaging both personally and commercially unless proper training and education is undertaken.
- There appears to be agreement that the Divisions, Colleges, HIC and Universities have a significant role to play in satisfying the training and education needs of GPs for effective use of GPCS.
- The more sophisticated computer users noted that networking a system added considerable education, training and support requirements with associated costs.

Equity and Governance

- There is currently no Government policy to equalise communications access nation-wide.

- Rural practitioners experience higher costs due to both their higher usage of communications services and the siting of service providers at a distance that often requires STD charges to be incurred.
- Rural practice usage of computer technology and the Internet appears to be ahead of metropolitan practices largely because of the importance of communication, community links and distance to rural doctors.
- Electronic mail is recognised as having significant benefits in all practices, but especially rural practices.
- There does not appear to be equitable investment in the rural sector in advanced communications technology. Further to this, co-ordinated state and federal Government investment in computer and communications technology infrastructure in the health sector to enable co-ordinated / managed care across primary, secondary and tertiary care providers is not evident.
- Better phone lines and more equitable access to the Internet is needed for rural doctors.

Timeframe

- There is wide agreement that GPs should be using computers as soon as possible.
- Ideally 80-90% of GPs should be using clinically useful applications by the Year 2000.
- There is a significant risk that delays in adoption of the GPCS by practitioners will occur unless the following issues are appropriately addressed:
 - a. The software industry does not produce systems that deliver clear benefits to the practitioner.
 - b. Delays in delivering systems by the software industry.
 - c. Government policy inaction (e.g. infrastructure, privacy, standards) not addressed.
 - d. Delays from Government in taking appropriate steps to facilitate early implementation / adoption of systems (e.g. certification / evaluation of systems, funding)

Mobility

- There is strong evidence that mobility both within practices and external to practices will be required and that this will be a major challenge for the software industry to produce systems that optimally support practitioner mobility across a myriad of practice permutations.
- It will be difficult to reliably maintain computerised patient records unless mobility issues are addressed.
- Data integrity, the ability to extract subsets of patient data / records and synchronisation of computerised patient records are critical requirements that need to be addressed for effective support of mobile practitioners.

- Data mobility between systems using an import / export facility or equivalent is required to enable data to be shared, patient mobility and to effectively cater for specialists.

Workpractice Impact

- The GPCS is viewed by many GPs as enabling the practitioners to regain some of their lost central role as the hub of patient care delivery.
- Better practice population management will be possible with the GPCS.
- There is a significant change management issue associated with implementation of the GPCS. Enhanced practice efficiency and staff downsizing need to be carefully planned and managed.
- There is broad acceptance that the GPCS will enable more efficient practice management for medium to large practices e.g. reduced front desk costs, reduced duplication, reduced data entry, more efficient and cost-effective access to, and handling of electronic pathology results.
- The GPCS is widely seen as potentially enabling better quality of patient care delivery.
- Increased access to information will improve the quality of the practice dramatically, by providing reminder and recall systems, legible prescriptions etc.
- It does not appear that there will be a fundamental transition in the way doctors practice due to introduction of a GPCS.
- The style of consultation adopted when using the computer needs to consider the impact it may have on the doctor-patient interaction.
- There is an opportunity for more involvement and responsibility of the patient in their care enabled by the sharing of clinical information on the computer. This will underpin the forming of a valuable partnership between the GP and patient.
- The GPCS will facilitate deployment of MIS functions to provide management information data regarding practice operations e.g. cash flow, patient waiting time, customer satisfaction, and hence improve the capability for better practice management.
- There is an emerging trend of increased use of telemedicine and video imaging.

Automation Transition

- Individual practices need to develop a suitable strategy to migrate from non-automated to computerised records systems. This will vary from practice to practice and needs to be carefully planned and managed.

- It is recognised that transition to a GPCS will require appropriate levels of training for all practice staff.

Consumer Needs

- There is potential for the patient-doctor relationship and the overall quality of patient care to improve through introduction of the approaches embodied in co-ordinated / managed care.
- Adequate security and privacy of patient information is essential.
- There is a patient perception of increased confidence and feeling of safety in a doctor which has the latest, up to date information.
- Less duplication of tests with better inter-provider co-ordination and more linkages with other health care providers is important for patients. This may be further supported through deployment of such technologies as enterprise wide scheduling systems and telemedicine.
- General Practice computerisation will enable improved quality and delivery of patient education and customer service.
- A key differentiator between practices is the importance placed on customer service and sensitivity to the way a patient feels during their encounter with the practice. This does not appear to be handled well today. Automation that enables monitoring of waiting times, provides assistance with patient data collection and management (e.g. scanning of Medicare Card) and dynamic rescheduling of appointments, is not in common use throughout the General Practice community and could enable the measurement of parameters valuable in understanding patient satisfaction.

Desktop Standards

- There currently appears to be no specific GPCS desktop standards.
- There is, however a broad collection of international technical, data protection, security and informatics standards that have potential relevance to the GPCS.
- There is a need to develop and then maintain a General Practice Data Set to provide consistency in data collection and reporting, and support a high level of interoperability between GPCS applications. This data set should be consistent with, and complementary to, the existing National Health Data Dictionary.
- There exists a range of de-facto industry standards that should be considered for GPCS development and implementation including the Windows user interface.
- There is currently significant effort being made to develop useful guidelines for the adoption of HL7 as an Australia inter-health agency messaging standard. This effort is being co-ordinated through the Standards Australia IT/14 Working Group initiatives.

Government / Statutory Requirements

- There are a number of Commonwealth and State Acts that cover medical practice and their related financial aspects and these would equally apply to a GPCS.
- It is highly probable that in the future there will be greater emphasis on public health reporting and more requests for information from all sectors of the health care delivery system.

Decision Support

- It was recognised that the provision of a sophisticated decision support capability is highly desirable.
- Basic decision support in areas such as prescribing is seen as mandatory.
- Sophisticated decision support providing an active desktop where event-driven actions are taken and advisory information is continuously made available is seen as being the optimum outcome.
- There is recognition of the value of clinical guidelines and protocols as long as they are able to be modified locally and remain as guidelines only.
- There is a need for multiple levels / layers of decision support with the GP able to tailor and control the scope of the decision support provided.
- There was a widely held view that the creation of an electronic medical record has most of its value in the range of decision support and scheduling capability it can enable.

External Application / Information Sources Scope

- All clinically useful information including databases, guidelines and protocols will be accessed by practitioners when available via CD ROM, electronic mail or the Internet.

Interoperability and Connectivity

- Highly interoperable modular desktop applications should be based on industry standard, scaleable mainstream operating platforms.

User Interface

- The user interface needs to be easy to use and learn, quick, intuitive reliable and easily tailored / personalised for individual practitioners.
- Pen based Personal Digital Assistants (PDAs) and voice recognition systems will be useful in the future.

- The user interface should have a consistent layout, easy access and navigation.
- The user interface should be based on existing international industry standards.

Maintenance of GPCS and Information Currency

- Software and information resource updates need to be distributed through both CD ROMs and the Internet so all users will have access.
- Information currency must be maintained through provision of regular / periodic updates in order to satisfy practitioner legal obligations regarding the use of the latest and up to date information.

5.3 Issue Focus Group Priority Ranking of Issues

The purpose of this section is to present the findings from analysis of the relative ranking of the major issues determined by each of the Issue Focus Groups.

The process for issue selection and discussion adopted for the Issue Focus Group sessions enabled the individual participant identification and group ranking of the major issues surrounding adoption. For each Issue Focus Group, summary tables of the key issues identified and their relative ranking are included in the detailed documentation of these sessions (refer to *Attachment A-1: Stakeholder Consultation Transcripts* of this Report).

The following *Table 5.1* provides an overall list and relative ranking of the most significant major issues identified by all three Issue Focus Groups.

Table 5.1: Overall Priority Ranking of the Most Significant Major Issues Identified by the Issue Focus Groups

Issue	Overall Ranking	Session Relative Ranking
Decision Support: <ul style="list-style-type: none"> • Quality knowledge-base / external information • Access to / and value of clinical records • Expert Systems 	<i>Very High</i>	SYD – Very High MELB – Very High WAGGA – High
Connectivity / Integration into Health System: <ul style="list-style-type: none"> • External links to hospitals • Integration of clinical data; data transfer • Linkages to pathology, radiology and other external service providers 	<i>Very High</i>	SYD – Very High MELB – Medium WAGGA – Very High
Usability / Utility / User Interface: <ul style="list-style-type: none"> • Time, training, utilisation • Flexibility, easy to use • Clinical utility • Ease of data entry • Consistency 	<i>Very High</i>	SYD – Very High MELB – Low WAGGA – Very High
Standards Framework: <ul style="list-style-type: none"> • Technical / interoperability standards • Data transmission / communications standards • Patient demographics • Compatibility / Modularity 	<i>High</i>	SYD – High MELB – Very High WAGGA – High
Costs / Benefits: <ul style="list-style-type: none"> • Defining benefits • Costs including resources and technical support • Who benefits – pays • Affordability 	<i>High</i>	SYD – High MELB – Very High WAGGA – Medium
Privacy / Confidentiality: <ul style="list-style-type: none"> • Patient control / privacy of personal information • Data protection / security • Patient and commercial confidentiality 	<i>High</i>	SYD – Medium MELB – High WAGGA – High
Information Management: <ul style="list-style-type: none"> • Management of patient data • Clinical record management 	<i>Medium</i>	SYD – Medium MELB – Not identified as a major issue WAGGA – Very High
Support and Training <ul style="list-style-type: none"> • Training • Level of technical support 	<i>Medium</i>	SYD – Not identified as a major issue MELB – Very High WAGGA – Medium

Note: IFG Ranking Scores: 1-3 = VERY HIGH; 4-6 = HIGH; 7-10 = MEDIUM, >10 = LOW

5.4 GPCS Scope Requirements identified through Stakeholder Consultation

An important element of the stakeholder consultation approach was to accurately capture the expectations and objectives of the GPCS from the stakeholder's perspective. The information obtained from this investigation has enabled identification of key aspects of the GPCS.

The following represents a broadly prioritised list of the GPCS application scope requirements that were identified through a combination of stakeholder interviews, group interviews and a series of Issue Focus Group sessions.

- Decision Support – All applications, Multi-layered
- Patient Recall / Reminder System
- Internet and Electronic Mail Access
- External Communication Links to:
 - ◊ Other GPs
 - ◊ Hospitals
 - ◊ Specialists
 - ◊ Other Service Providers
 - ◊ Pathology / Radiology
 - ◊ Health Insurance Commission
- Electronic Transmission and Receipt of Diagnostic Test Orders and Results
- Electronic Prescribing and Medication Management
- Integrated Patient Billing / Accounting System
- Comprehensive Electronic Medical Record
- Forms Management
- Clinical Guidelines and Treatment Protocols
- Practice Performance Management
- Automated Referral Letter Generation
- Practice Population Management Support
- Patient Education Management
- GP Clinical Research
- Clinical Audit of Outcomes
- Integration with Industry Standard Office Automation Tools
- Optical Scanning Support (Journals, Results etc)
- CME Management
- Voice Recognition Support
- Pen Based Technology Support

5.5 Major Rural GP Issues impacting the use of computers in Rural Practice

There are two main points to be made regarding rural GP issues that impact widespread adoption and use of computers by rural practitioners:

1. *Rural GP issues are largely similar and overlap with city based / metropolitan practitioner issues*

Overall, the issue set was essentially the same for rural GPs and city based GPs, with the notable exceptions of:

- Equity of access and cost to telecommunications.
- Provision of technical support services to rural practices given the geographical locations and distances involved.

2. *The emphasis and relative importance of these issues is different between rural practitioners and city based / metropolitan practitioners.*

This may largely be accounted for by the more fundamental differences between rural doctors and city based doctors which were identified during the Rural Issue Focus Group session:

- Procedural, hospital access and workflow differences are significant
- Levels of management decision greater and more complex for rural GPs
- Rural doctors have a lot more diversity of income sources
- Rural doctors are more integrated into the community
- Rural doctors know their patients very well
- Patients have a lot of trust in their rural GP
- Team medicine in rural areas is essential

The issues detailed below were identified through consultation with rural GPs and the Rural Issue Focus Group session:

Equity of Access

- Equitable access to, and the cost of, telecommunications services were seen as significant issues for rural GPs. Services. This appears to be largely dependent on Government policy and telecommunications infrastructure investment and service provision. (Refer to *Section 5.2* above).

Information Management

- Effective management of clinical data from multiple sources was seen as vital.

- It was recognised that there is an incremental complexity to information management as the practice becomes networked / linked to external information sources, health care organisations and other health service providers.
- Management of comprehensive electronic patient records was seen as having a high impact on rural practices.

External Links

- Effective linkage with local hospitals to enable information sharing, access to pathology results etc was seen as important.
- Reliable electronic mail links to other practitioners and service providers was viewed as highly beneficial.

Usability / User Interface

- As per the city based GPs, a consistent, easy to learn, easy to use user interface was seen as mandatory, given the acute time constraints that rural GPs work under.
- Consistency and ease of use of the system was seen as particularly important for locums which often work in multiple practices.
- Use of pen-based notepad technology (e.g. PDAs) was viewed as useful in enabling the GP to easily enter and carry patient information to remote locations and enable uploading and downloading of information to / from the practice computer where network connection is available.

Compatibility / Modularity

- The ability of the rural GPs to select GPCS applications from different vendors in a “plug and play” desktop environment was viewed as highly desirable.
- There was recognition of the need for system compatibility and modularity to be underpinned by appropriate technical standards that ensure that the level of functional interoperation required can in fact be achieved.

Decision Support

- Consistent with the views expressed by other stakeholders, rural GPs see user configurable, multi-level decision support across a wide range of functions as a fundamental component of the GPCS.

Privacy / Confidentiality

- Rural GPs largely share the same concerns regarding privacy and confidentiality of patient information, detailed in *Section 5.2* above.

Costs / Benefits

- Costs, particularly support, training and communications costs were seen to be significant for rural practices.
- The benefits to be derived from use of a GPCS were seen as being essentially no different to city based practitioners, except possibly in the provision of more up to date information to assist in patient care delivery.

Support and Training

- System support and training was seen as occurring more easily in city based practices, given the high number of practices located within relatively small geographical areas.
- Vendor support for rural practices was predominantly seen as inadequate and accentuated by the long distances involved.
- Support for larger rural practices is largely provided in-house.

Section 6.0 Analysis of Customer Value Findings

6.1 Assessment Background

Using the CVM Methodology outlined above (refer to *Section 3.2*), the needs and expectations for GPCS functionality were categorised into four priority areas as detailed in *Table 6.1* below. The fundamental rationale behind this categorisation was to ensure that those needs / expectations which have a major influence on usage and adoption, are addressed as a matter of priority.

Essentially, *Basic* needs (Showstoppers) must be addressed first. If these are not catered for, customers will not use, or cease to use the offering. Once the Basics are addressed, *Attractors* serve to drive adoption further by attracting customers to the offering.

This rationale has been applied to the needs and expectations of GPs in relation to the GPCS as shown in the table below.

Table 6.1: Rationale for Categorisation of Needs

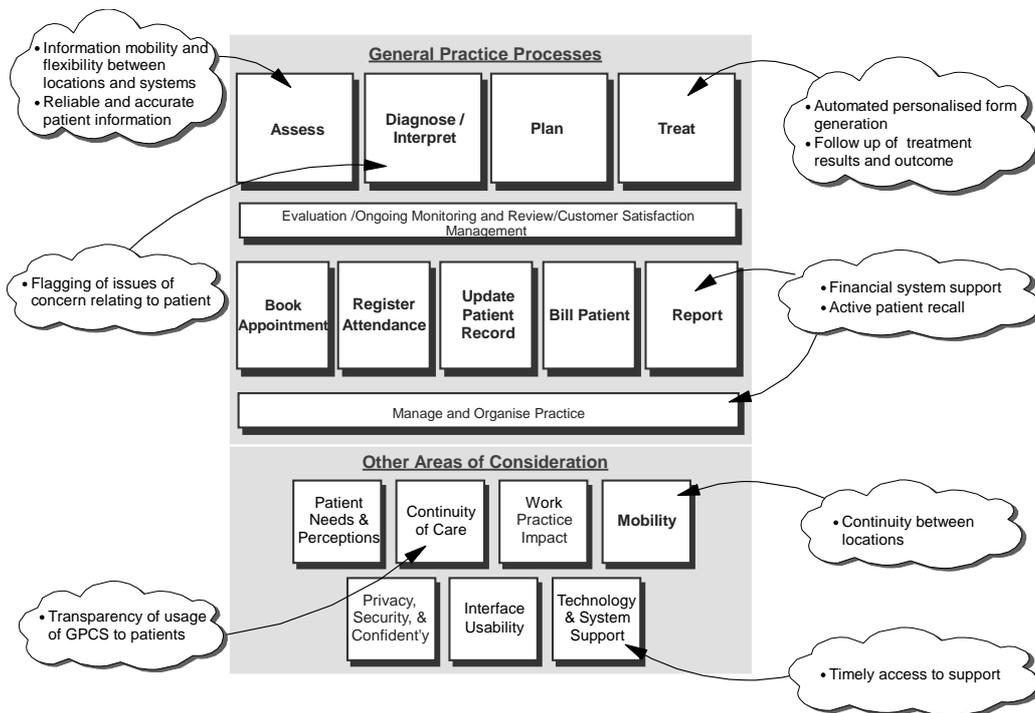
Needs Ranking	Interpretation
<p><u>Priority 1</u> “Combined Showstoppers & Attractors”</p>	<p>Needs which were rated as both a Showstopper if the GPCS functionality did not cater for them and an Attractor if the functionality was offered. Clearly these need are of the highest priority for inclusion into the GPCS. Without them GPs will not adopt or use the system. If included in the functionality they would serve to encourage usage of the system.</p>
<p><u>Priority 2</u> “Other Showstoppers”</p>	<p>Those needs / expectations rated purely as Showstoppers if not included in the GPCS. These needs of themselves would prevent adoption of the GPCS if not included.</p>
<p><u>Priority 3</u> “Other Attractors”</p>	<p>Those needs / expectations rated purely as Attractors if they were to be included in the GPCS. If excluded from the GPCS they were not considered Showstoppers.</p>
<p><u>Priority 4</u> “Sandflies”</p>	<p>Those needs / expectations rated as Sandflies which if combined with a significant number of other Sandflies could form a Showstopper and block usage and adoption of the GPCS.</p>

6.2 Presentation of Priority Groups

This section presents the needs and expectation of the GPCS in priority order. These priorities have been taken into account to establish the recommended functionality of the various release of the GPCS.

6.2.1 Priority 1: “Combined Showstoppers & Attractors”

In total 10 needs / expectations fell into this category. These have been mapped onto the General Practice Process framework to aid understanding of the areas in which they have impact.

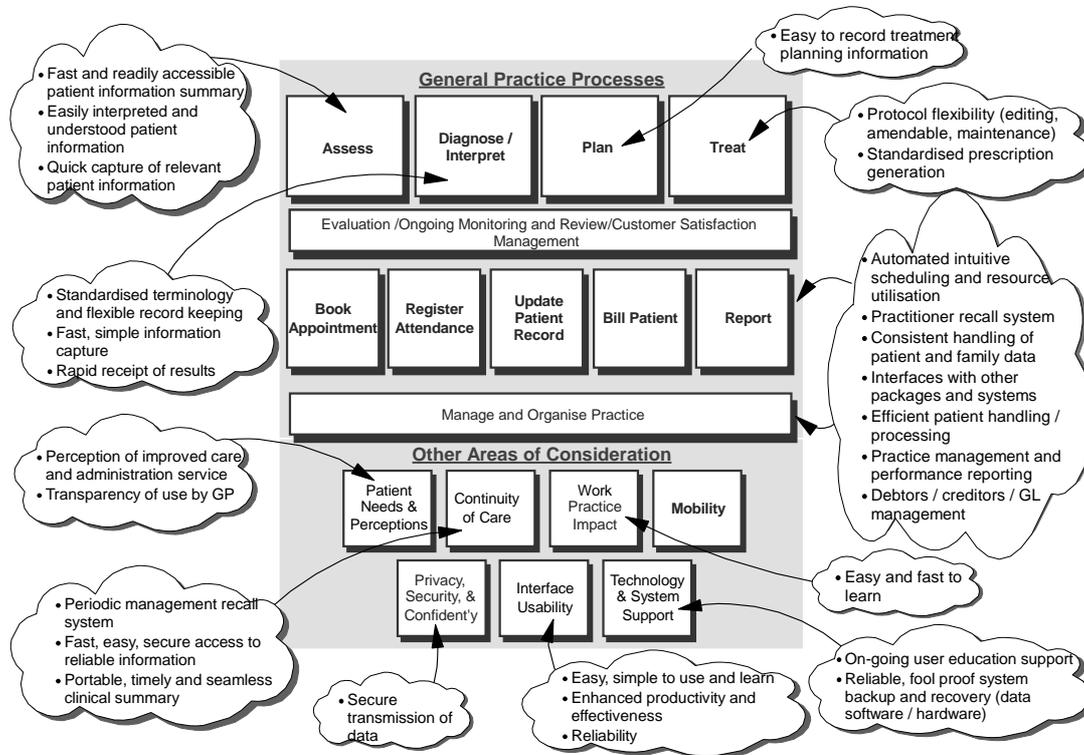


Area	Need/ Expectation	Attributes
Practice Administration & Support	Financial system support	<ul style="list-style-type: none"> • Must run debtors for all classes of clients with reports and audit trails (corporate, patients split away from family) • Practice performance (financial MIS) • Appropriate billing system • Creditors and debtors general ledger • The heart of all practice management systems • Improved links to third parties (HIC, Insurers, Other) • Medclaims system • Linked appointments and billing systems to ensure all patients seen are billed • Needs to have billing ability with Medicare item number, etc. • Manages “record storage and retrieval” • Manual and automated records (know what information is where) • Prepares medical and financial information • Integrated billing and accounting/inventory data
Practice Administration & Support	Active patient recall	<ul style="list-style-type: none"> • Patient recall system to “bleep when turned on” eg. any medication follow up

Area	Need/ Expectation	Attributes
Assess	Information, mobility and flexibility between locations and systems	<ul style="list-style-type: none"> • Transportability of data • Interchangeable basic patient demographics (based on standard for industry) • Regulation of standard information specification • Flexible delivery of information eg. surgery consult home visits
Assess	Reliable and accurate patient information	<ul style="list-style-type: none"> • Data reliability
Continuity of care	Transparency of usage of GPCS to patients	<ul style="list-style-type: none"> • Need desktop system that does not dominate the consultation process • Transparency to patient • Should not inhibit consultation • Patient should know what the GP is doing on the system
Diagnose	Flagging of issues of concern relating to patient	<ul style="list-style-type: none"> • Non receipt, abnormal, and reminders
Mobility	Continuity between locations	<ul style="list-style-type: none"> • Need continuity between locations • Information in main system must be able to be taken away from it is a portable system with updated information • Easy sequestration of components of record (when practitioner leaves: ownership of data) • Need off-site (home visit) capabilities • Laptop system allowing downloading of patient information to server • System allowing GP to work from home • In the longer term need full mobility (priority is to get system) • Prescriptions sent direct from practice site to pharmacy • On-site billing • Networking capabilities within and between practices
Technology and systems support	Timely access to support	<ul style="list-style-type: none"> • Timely access to support and remote access fixing from support desk needs to be well funded-should not be begging for a favour • Need after hours technical support • Support arrangements must be realistic and fundable • Someone in-house (GP or staff) should be trained to do most troubleshooting and minor repairs/upgrades • Needs third party support for software/hardware • On-line support can also be delivered by a machine not a person • Somebody must take responsibility for support
Treatment	Automated personalised form generation	<ul style="list-style-type: none"> • Processing output of "forms" in standard way • Guidance of third party forms and paper • Common form (standard size and paper weight) • Simplification of administrative activities ("form filling") • Accurate and quick printing of relevant forms/leaflets • Write work cover certificates and other certificate forms
Treatment	Follow up of treatment results and outcome	<ul style="list-style-type: none"> • System prompts to measure how treatment went

6.2.2 Priority 2: “Other Showstoppers”

In total 28 needs / expectations fell into this category. These have been mapped onto the General Practice Process framework to aid understanding of the areas in which they have impact.



Area	Need/ Expectation	Attributes
Practice Administration & Support	Automated intuitive scheduling and resource utilisation	<ul style="list-style-type: none"> Appointment system on front desk and GP desktop Flexible appointment system linked to surveillance and prompts Appointments system that is easy to use and learn Appointment system that tracks patients that consistently cancel or do not show up Resource management Assume that patient registration, booking of appointment and billing is included
Practice Administration & Support	Practitioner recall system	<ul style="list-style-type: none"> Recall system for practitioners (eg. Pap smears) A more intuitive recall system across patient records (eg. Women by age category, do not send letters for Pap smears for women with hysterectomy)
Practice Administration & Support	Consistent handling of patient and family data	<ul style="list-style-type: none"> Guarantee of demographic data integrity Can be imported and exported Consistent handling of family data, third party data, demographics (eg. children who have left home and have their own Medicare card) Audit trail for electronic patient records Legally acceptable evidence
Practice Administration & Support	Interfaces with other packages and systems	<ul style="list-style-type: none"> Ability to use other non-medical record functions / applications at will (eg. Excel for graphics) Transportability of patient records across systems ie. Multiuser GUI based Still uses existing systems

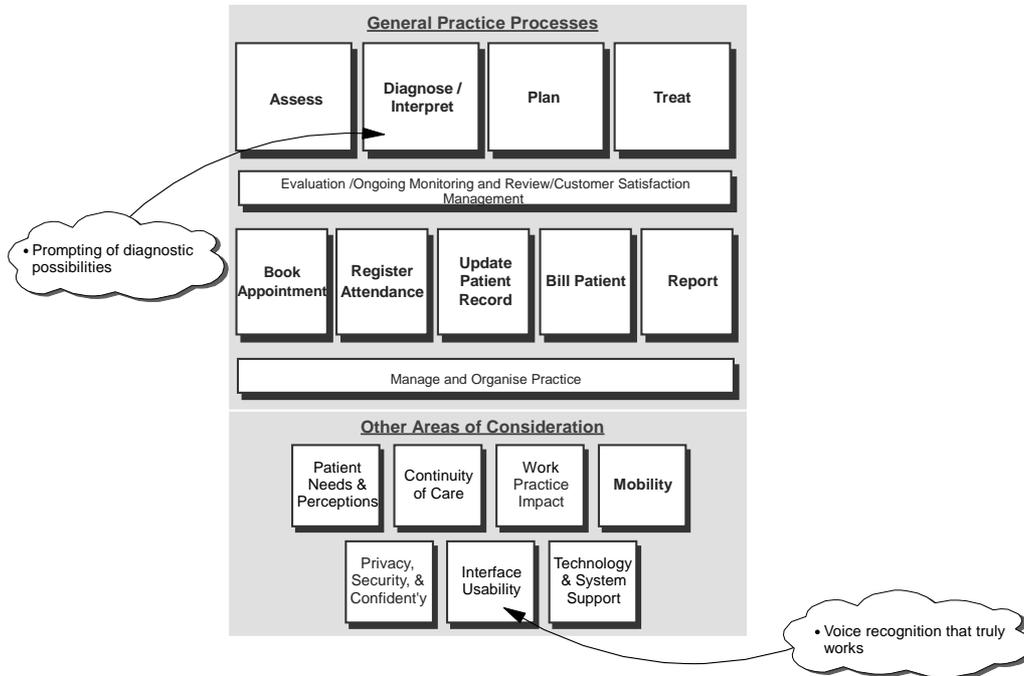
Area	Need/ Expectation	Attributes
Practice Administration & Support	Efficient patient handling / processing	<ul style="list-style-type: none"> • Smooth and efficient patient handling • Clear screens with unambiguous categories and consistency among screens • Basic patient information available for scripting expose essential demographics to clinical module
Practice Administration & Support	Practice management and performance reporting	<ul style="list-style-type: none"> • Reporting tool offering flexibility according to practice needs including patient demographics • Practice management including auditing or patient satisfaction and business performance • Evaluation of practice performance: financially and for customer flow thoughts • Assistance with monitoring practice profitability • Reports generation: summary, demographics, expenses, income • Standard set of common reports preloaded with templates that can be modified • System must have good interrogation engines for practice management • Patient information recall • Gathering statistical data
Practice Administration & Support	Debtors / creditors / GL management	<ul style="list-style-type: none"> • Quick access to calculated data such as total billed for “day or period”, deposits, outgoings, etc. • Billing management information • Handle practice billing and debts payments
Assess	Fast and readily accessible patient information summary	<ul style="list-style-type: none"> • Easy access to patient history • Quick accessibility of patient summary • Fast/immediate access to patient history • Simple, quick, reliable access to patient past history (patient information assumed) • Need for patient history database to have <u>hyperlinks</u> to other areas eg. Investigations
Assess	Easily interpreted and understood patient information	<ul style="list-style-type: none"> • Easily understood and readily interpreted • Fast access to immediately relevant components of past history, allergies, etc • Patient summary is fully delivered quickly and simply • Easy access to medication • Easily interpreted information • Patient information should include current treatment, drug dosage, and family history • Readily interpreted
Assess	Quick capture of relevant patient information	<ul style="list-style-type: none"> • Cannot alter medical records (audit trail) • Possible diagnosis in light of what is presented • When more information available ie. blood test etc., then the system should allow for increase or decrease likelihood of correct diagnosis • Expect to be able to add details to previous consultation eg. results of investigation • Easy recording of the encounter and new elements of history (update) • Quick capture of reason of encounter
Continuity of care	Periodic management recall system	<ul style="list-style-type: none"> • Surveillance and recall for periodic management (automated reminder system) • Identify urgent next steps and how communication is to happen • Automated patient notification (eg. letters)

Area	Need/Expectation	Attributes
Continuity of care	Fast, easy, secure access to reliable information	<ul style="list-style-type: none"> Summarised information for fast and easy reference Fast access to organised clinical history Patient information easily gets into the system eg. GP is able to enter all patient record Data captured as progress notes then summarised Information from outside GP office is in a form which can be incorporated into computerised record All data transmitted via modem to be guaranteed secure (confidential) Easy to use, uniform, prerecorded "ideal" format
Continuity of care	Portable, timely and seamless clinical summary	<ul style="list-style-type: none"> Ready 24 hour access to hospital systems from GP computer to obtain information, discharge letter, all laboratory results, etc Timely notification of the patient's admission and discharge Information plan following patient Prompt reports from other agencies that correctly identify patients
Diagnose	Standardised terminology and flexible record keeping	<ul style="list-style-type: none"> Agreed standards of record keeping of patient data Standards in terminology and information exchange Australian coding for encounter Standardised fast access to result database Structured data in records for reporting and decision support
Diagnose	Fast, simple information capture	<ul style="list-style-type: none"> User friendly, fast information capture Variety of media for record keeping Storage of video/still data image ie. photo of skin cancer Easy to record diagnosis and findings of examination Easy, fast, self-logging investigation ordering (natural workflow) Diagnostic decision making systems which respond to input ie. formal structured "boxes" and free text or "thinking notes" Ease of examination capture with cross reference to previous similar episodes "Free form" patient examination findings
Diagnose	Rapid receipt of results	<ul style="list-style-type: none"> Rapid receipt of results
Patient Needs	Perception of improved care and administration service	<ul style="list-style-type: none"> System must improve GP ability to treat patients Efficient billing Better data organising and sharing GP able to use the system in patient management Ability to make next appointment during consultation (GP does it) Need/expect instant access to tests/results Efficiency, reliability, and timeliness in scheduling, receiving results, booking appointments Immediate specialist answers, convenience to patient
Patient Needs	Transparency of use by GP	<ul style="list-style-type: none"> GP looks patient in the eyes and not into the computer
Planning	Easy to record treatment planning information	<ul style="list-style-type: none"> Easy to record
Security, confidentiality, and privacy	Secure transmission of data	<ul style="list-style-type: none"> System to allow secure e-mail Patient information should be encrypted to prevent unauthorised access
Technology and systems support	Ongoing user education support	<ul style="list-style-type: none"> Need ongoing educational support Educate staff in basic level of support ("basic self help") Need on site of nearby (roving) technicians for ongoing education and service Educate GP on the risks inherent in using technologies (especially in regards to data integrity, protection and recovery)

Area	Need/ Expectation	Attributes
Technology and systems support	Reliable, fool proof system backup and recovery (data, software / hardware)	<ul style="list-style-type: none"> • Support must be on tap by phone immediately (hardware: same day on site) • Routine (eg. once per week) and remote backup • Foolproof system recovery as a standard • System has to be continuously backed up • Relevant information to be archived and hardcopy kept in patient file • System support/recoverability based on degree of importance ranked by: vital functions, valuable functions, helpful functions • If hardware / software fails, it must be replaceable eg. Before next consultation • Offsite data storage backup
Treatment	Protocol flexibility (Editing, amendable, maintenance)	<ul style="list-style-type: none"> • Protocol flexibility, editing, amenability, maintenance
Treatment	Standardised prescription generation	<ul style="list-style-type: none"> • Need to generate prescriptions and investigation request forms • Standardisation of prescribed medications • Storing of substance information according to a standardised code • Identify other prescribed medicines • Centralised prescription database at divisional and national level • Form completion • Automated prescription writing • Script generation taking into account allergy interactions • Prompting if adverse drug or other incompatible treatments occurs (with reference to medication history)
Interface Usability	Easy, simple to use and learn	<ul style="list-style-type: none"> • Consistently intuitive • Naturalness, ease of use • Intuitive • Easy to learn • Expect ease of use and small learning curve to facilitate acceptance by non-technology interested GP • Ease of use • Do not expect to be at expert level on day one • Graduated introduction of interface (eg. tutor, workshops) • Should not require help-it's intuitive • Graduated modules-wizards help you as you progress
Interface Usability	Enhanced productivity and effectiveness	<ul style="list-style-type: none"> • Workflow efficiency is number one • Intuitive about GPs way of working and how decisions are made • Intuitive-follows way GP consult and make decision as closely as possible • Easy and fast workflow • Pre-loaded information • Fast take up • Replaces the pen • Requires minimal typing
Interface Usability	Reliability	<ul style="list-style-type: none"> • Reliability and robustness
Workpractice Impact	Easy and fast to learn	<ul style="list-style-type: none"> • Short learning curve • Has to be easy for GP to learn and operate efficiently • Training and fixing unscheduled stoppages (biggest impact on extra time required) • Minimise effort required to acquire computer skills

6.2.3 Priority 3: “Other Attractors”

In total 2 needs / expectations fell into this category. These have been mapped onto the General Practice Process framework to aid understanding of the areas in which they have impact.



Area	Need/ Expectation	Attributes
Diagnose	Prompting of diagnostic possibilities	<ul style="list-style-type: none"> • Suggested diagnosis from symptoms, etc. • Would expect a system to “clue me” if asked i.e. hot key and further to propose alternative tests which may be appropriate • Software should suggest a list of relevant investigations to aid diagnosis • Software should be able to suggest a list of different diagnoses on basis of data entered
Interface Usability	Voice recognition that truly works	<ul style="list-style-type: none"> • Voice recognition that truly works

6.2.4 Priority 4: “Sandflies”

In total 30 needs / expectations fell into this category. As these are high in number and lower in relative order of priority, they have listed in *Appendix C*.

It is strongly recommended that these needs be addressed when deciding on final partitioning of functionality into releases. The intended scope of a given system release should assess how many “Sandfly” needs will not be addressed. Multiple unaddressed needs in this category could form a “Showstopper” causing poor adoption and usage of the system.

6.2.5 Other Needs

There were a total of 58 needs / expectations categorised as Satisfiers. Of this total only 3 needs / expectations were purely Satisfiers (detailed in the table below) with the rest being combined Satisfiers / Showstoppers or Satisfiers / Sandflies (which have been covered as part of the Priority 2 and 4 groups described above).

Area	Need/ Expectation	Attributes
Planning	Reference to local conditions and treatment plan effectiveness	<ul style="list-style-type: none"> Number of patients seen with same condition and information on treatment effectiveness Localised information on commonly occurring conditions Global perspective Journals, picture based
Mobility	Entry of data from non-IT sites	<ul style="list-style-type: none"> Entry of data from other sites where IT is not available and it must be easy and mobile
Practice Administration & Support	Practice marketing and patient loyalty development	<ul style="list-style-type: none"> Assistance with practice marketing, loyalty development eg direct marketing

6.3 Relative Ranking of General Practice Process Needs

This section presents a list in order of relative importance of those needs relating to both the Clinical Care Delivery Process and the Administration and Practice Support Process. While all needs were considered important, the approach used was designed to identify only the top few needs of high importance. Note, a relative ranking of needs relating to “Other Areas of Consideration” are not included.

Rank	Need/ Expectation	Attributes	Area	Priority Category
1	Reliability	<ul style="list-style-type: none"> Reliability and robustness 	Interface Usability	Showstopper
2	Follow up of treatment results and outcome	<ul style="list-style-type: none"> System prompts to measure how treatment went 	Treatment	Combined Showstopper & Attractor
3	Fast and readily accessible patient information summary	<ul style="list-style-type: none"> Easy access to patient history Quick accessibility of patient summary Fast/immediate access to patient history Simple, quick, reliable access to patient past history (patient information assumed) Need for patient history database to have <u>hyperlinks</u> to other areas eg. Investigations 	Assess	Showstopper
4	Voice recognition that truly works	<ul style="list-style-type: none"> Voice recognition that truly works 	Interface Usability	Attractor
5	Interfaces with other packages and systems	<ul style="list-style-type: none"> Ability to use other non medical record functions at will (eg. Excel for graphics) Transportability of patient records across systems ie. Multiuser GUI based Still uses existing systems 	Admin & Practice Support	Showstopper

Rank	Need/ Expectation	Attributes	Area	Priority Category
6	Enhanced productivity and effectiveness	<ul style="list-style-type: none"> • Workflow efficiency is number one • Intuitive about GPs way of working and how decisions are made • Intuitive-follows way GP consult and make decision as closely as possible • Easy and fast workflow • Pre-loaded information • Fast take up • Replaces the pen • Requires minimal typing 	Interface Usability	Showstopper
7	Financial system support	<ul style="list-style-type: none"> • Must run debtors for all classes of clients with reports and audit trails (corporate, patients split away from family) • Practice performance (financial MIS) • Appropriate billing system • Creditors and debtors general ledger • The heart of all practice management systems • Improved links to third parties (HIC, Insurers, Other) • Medclaims system • Linked appointments and billing systems to ensure all patients seen are billed • Needs to have billing ability with Medicare item number, etc. • Manages “record storage and retrieval” • Manual and automated records (know what information is where) • Prepares medical and financial information • Integrated billing and accounting/inventory data 	Admin & Practice Support	Combined Showstopper & Attractor
8	Prompting of diagnostic possibilities	<ul style="list-style-type: none"> • Suggested diagnosis from symptoms, etc. • Would expect a system to “clue me” if asked ie. hot key and further to propose alternative tests which may be appropriate • Software should suggest a list of relevant investigation to aid diagnosis • Software should be able to suggest a list of different diagnoses on basis of data entered 	Diagnose	Attractor
9	Automated personalised form generation	<ul style="list-style-type: none"> • Processing output of “forms” in standard way • Guidance of third party forms and paper • Common form (standard size and paper weight) • Simplification of administrative activities (“form filling”) • Accurate and quick printing of relevant forms/leaflets • Write work cover certificates and other certificate forms 	Treatment	Combined Showstopper & Attractor
10	Standardised storage of results and trends	<ul style="list-style-type: none"> • Standardised storage of results information (in text form) • Incorporation of incoming data (eg. letters, results. etc.) • Time-based storage of numerical trend relevant data with treatment data (eg. flow data) 	Treatment	Sandfly

Rank	Need/ Expectation	Attributes	Area	Priority Category
11	Easy, simple to use	<ul style="list-style-type: none"> • Consistently intuitive • Naturalness ease of use • Intuitive • Easy to learn • Expect ease of use and small learning curve to facilitate acceptance by non-technology interested GP • Ease of use • Do not expect to be expert level on day 1 • Graduated introduction of interface (eg. tutor, workshops) • Should not require help-it's intuitive • Graduated modules-wizards help you as you progress 	Interface Usability	Showstopper
12	Immediate access to service ordering	<ul style="list-style-type: none"> • Immediate access to available services • Ease of diagnostic service ordering (direct link to providers) • Quick electronic ordering/reception of changes to tests independent of systems 	Diagnose	Sandfly
13	Protocol flexibility (Editing, amendable, maintenance)	<ul style="list-style-type: none"> • Protocol flexibility, editing, amenability, maintenance 	Treatment	Showstopper
14	Easily interpreted and understood patient information	<ul style="list-style-type: none"> • Easily understood and readily interpreted • Fast access to immediately relevant components of past history, allergies, etc • Patient summary is fully delivered quickly and simply • Easy access to medication • Easily interpreted information • Patient information should include current treatment, drug dosage, and family history • Readily interpreted 	Assess	Showstopper
15	Information. mobility and flexibility between locations and systems	<ul style="list-style-type: none"> • Transportability of data • Interchangeable basic patient demographics (based on standard for industry) • Regulation of standard information specification • Flexible delivery of information eg. surgery consult home units 	Assess	Combined Showstopper & Attractor
16	Quick capture of relevant patient information	<ul style="list-style-type: none"> • Cannot alter medical records (audit trail) • Possible diagnosis in light of what is presented • When more information available ie. Blood test etc., then the system should allow for increase or decrease likelihood of correct diagnosis • Expect to be able to add details to previous consultation eg. results of investigation • Easy recording of the encounter and new elements of history (update) • Quick capture of reason of encounter 	Assess	Showstopper
17	Reliable and accurate patient information	<ul style="list-style-type: none"> • Data reliability 	Assess	Combined Showstopper & Attractor

6.4 Summary of Results

The combined results from the Melbourne and Sydney workshops have been analysed by grouping the needs and expectations according to how the participants rated them. The following table represents the number of needs / expectations by category.

Quantitative Overview of Results				
Combined Showstoppers & Attractors	Other Showstoppers	Sandflies	Satisfiers	Other Attractors
10	28	30	58	2

Where there was an even number of votes cast between a Showstopper and Sandfly the result was taken to be a Showstopper. Similarly, where there were even votes between a Satisfier and Attractor the result was taken to be an Attractor.

Satisfiers were by far the highest category of needs identified, however, with the exception of three needs / expectations that can be categorised as purely Satisfiers, most of these needs were in fact combined Satisfiers / Showstoppers (30) and Satisfiers / Sandflies (25). The combined Satisfiers / Showstoppers represent basic requirements of a GPCS.

The Satisfiers have been excluded from this detailed analysis as a priority group, since due to their very nature they will not, by themselves, influence behaviour sufficiently to encourage or discourage use of the system. It must however be noted that these needs should be reviewed for inclusion in the system wherever possible. Further to this, it should also be recognised that whereas Satisfiers do not significantly affect system adoption or usage, they should facilitate increased user satisfaction.

Needs and expectations rated as either “Would Not Matter” or “Indifferent” (refer to *Attachment A-1: Stakeholder Consultation Transcripts - CVM Workshop Session Documentation*) indicate that their presence or absence from the system would not affect usage or adoption of the GPCS. They have therefore been disregarded from this analysis.

6.5 Conclusions

Level 1 to 3 priority needs spanned all areas of General Practice Processes under consideration, indicating that a complex set of interdependencies exist between the needs and expectations General Practitioners have of the GPCS . This implies that consideration of functionality to implement across releases of the system should err on the side of supporting all high priority needs rather than a partial implementation.

Given the approach outlined above it should be recognised that the listing of needs categorised as “Sandflies” (refer to *Appendix C*) be considered when deciding on final partitioning of functionality into releases. The intended scope of a given system release should assess how many “Sandfly” needs will not be addressed. Multiple unaddressed needs in this category could form a “Showstopper” causing poor adoption and usage of the system.

The ranking of relative order of importance identified “Reliability and robustness” of the system as by far the most important need to be satisfied. This need was categorised as a Showstopper and therefore with its highest priority ranking, must receive due attention as a major design point of the GPCS.

Several high importance needs were classified as Combined Showstoppers and Attractors. Such needs by their very nature must be included in the system as a matter of priority. Not only will these encourage adoption and usage of the system, they must also be included to prevent GPs from not using the system. These high importance needs included:

- Follow up of treatment results and outcome
- Financial system support
- Automated personalised form generation
- Information mobility and flexibility between locations and systems
- Reliable and accurate patient information
- Active patient recall

Information related needs also rated highly in the most importance items. These needs related to speed, accessibility, standardisation, understandability, simplified capture, reliability and accuracy of information.

Two needs classified as Sandflies rated in the highest importance items. These of these particular needs should be considered as due to there relative importance, they are likely to provide a significant degree of “nuisance value” or dissatisfaction if excluded from functionality. These needs were:

- Standardised storage of results and trends
- Immediate access to service ordering.

It will be necessary to ensure that all priority needs are appropriately addressed across the entire spectrum of the analysis and not solely focussed on individual areas such as Clinical Care Delivery Process, Mobility, Interface Usability.

Section 7.0 Recommended Scope of the GPCS and Rationale

7.1 Introduction

The outcome of the Customer Value Management workshops is entirely consistent with what would have been expected when a range of reasonably experienced General Practitioners were asked to identify those attributes of a General Practice Computing System that would optimally meet their needs and expectations for such systems in the short to medium term.

In summary, as presented in detail in *Section 6.0*, what will be valued and adopted are those applications which simplify and ease the effort in providing quality care while ensuring the financial, accounting and management needs of the practice are fully met.

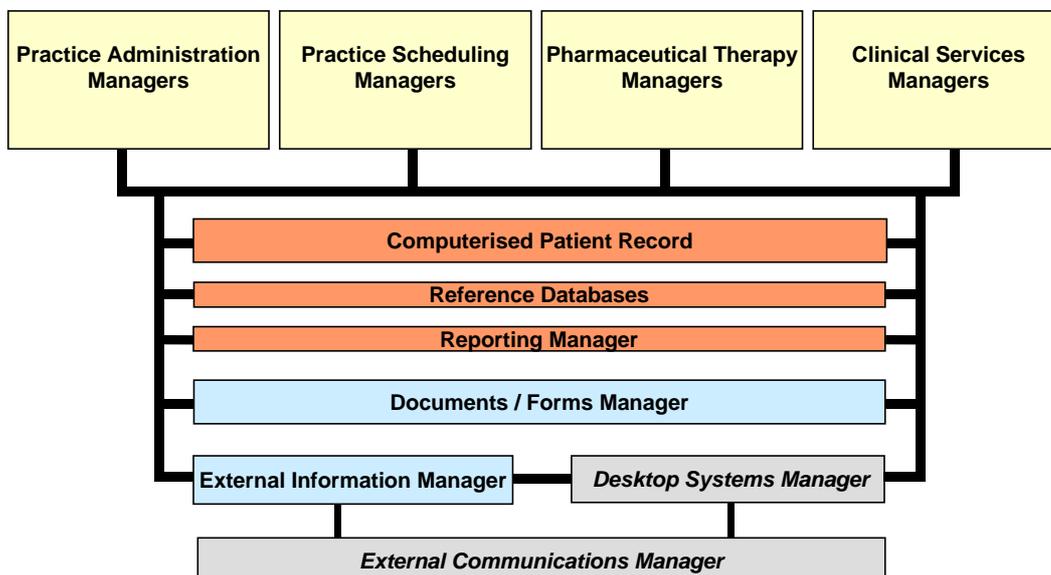
In this section the linkages are established between the needs and requirements of the practitioners and the applications that can meet these needs. To provide a bridge to the other components of the project, the process model based application linkages (refer to *Figure 4.2*) have been remapped to a functional framework for the GPCS which will support both development of the full specification and the technical architecture.

It should be noted that analysis of findings from the stakeholder consultation as detailed in the *Section 5.0*, reveals the need for the GPCS to have a rich set of applications and functionality covering a wide range of clinical and administrative functions. This is entirely consistent with the outcomes of the Customer Value Management workshops which are further analysed in this section and *Section 8.0* following.

7.2 Overview of Functional Framework

The following diagram (*Figure 7.1*) provides a high level functional architecture for the full GPCS and a suitable framework for future enhancements of the GPCS.

Figure 7.1: GPCS Functional Framework



As the Functional Framework illustrates there are 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.

A detailed presentation of the functional framework including application components, interoperation principles and assumptions will be provided in *the GPCS Functional Requirements Specification Report* (the major deliverable of Phase Three of this consultancy.

7.3 GPCS Scope Definition

An assessment of customer needs in the context of the GPCS functional framework clearly reveals the place and importance of each of the application manager collections. This assessment, detailed below, provides valuable insight into the required scope of the GPCS.

The **Practice Administration Managers** include patient selection and task management, patient registration, general financial management, billing and financial performance management as well as the less high volume areas of supply, inventory, and payroll management.

The major theme to emerge from the assessment of this area of applications was the need for much improved management and reporting tools to understand properly how the practice is performing on a day to day basis. This requirement came from both CVM sessions as being of very high priority. The implication of this requirement is that integrated full function general financial and patient billing, supported by adequate systems in all other areas is one of the keys to success.

The **Practice Scheduling Managers** bring together all areas of the GPCS involved in scheduling (patients, staff and resources) and includes the preventive medicine scheduling and patient recall / reminder management system.

As with financial management, effective system performance in this area was considered vital. It was also felt that the importance of such systems would increase over the next few years with the increased emphasis from all levels of Government on preventative services.

Effective management of patient throughput and avoidance of excessive waiting times were seen as critical to practice success in an increasingly competitive environment. Also seen as critical was effective resource utilisation management in addition to flexible management of patient reminders and recalls for whatever reason.

The **Pharmaceutical Therapy Managers** bring together a range of applications 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.

It was widely agreed that the use of a computer during prescribing could be of benefit to all those involved (doctor, pharmacist and patient) and that there were now a few systems which carried out this function well enough for many to see this area as being reason enough to

acquire a computer for the doctors desk. From all perspectives it is clear that these functions are mandatory components of the GPCS.

The **Clinical Services Managers** are the applications 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 key insight that emerged from all the workshops was that capture of clinical data for its own sake was onerous and despite having some intrinsic value it would not be undertaken unless capture of information was highly efficient, simple and led to a range of significant and worthwhile downstream benefits.

There was consensus that effective patient recall, advisory and reminder systems, and efficient inclusion of clinical data in referral and ordering documents, driven from a well designed patient record and with multiple levels of decision support was just the reason to have such data capture be initiated.

Further to this, there was broad agreement of the following needs:

- ◇ Electronic transmission and receipt of diagnostic test orders and results (and in particular Pathology test orders and results).
- ◇ Comprehensive clinical management reporting using a highly flexible and user-friendly reporting tool.
- ◇ Effective patient education management support underpinned by access to reliable, accurate and up-to-date medical and patient information.
- ◇ Optimised treatment planning through access to a knowledge-base of treatment protocols, therapeutic guidelines etc with decision support.

Taken as a whole these four manager collections (application groupings) provide the patient transaction capability of the system, and are supported by the system management, database, communication and reporting functions to provide the total functional picture.

While most of the infrastructure areas of the GPCS are what would be anticipated in a functional framework of the type shown above, five other areas require further elaboration because of the impact they were seen to have on adoption and use of the GPCS:

1. The **External Information Managers** are envisaged to be the intelligent applications that understand the world outside the system and can obtain, format, deliver or transmit appropriately authorised information to and from the system to and from the appropriate destination(s).

This area of functionality was considered to be an essential component of a successful GPCS and was highlighted as a set of functions which would especially have benefit in rural and remote practice. It is important to recognise that the requirement for linkage to external service providers, practitioners and databases is primarily being driven from the perceived and growing need to share / interchange information.

It is further recognised that the transparency of the process for information interchange along with the requirement for appropriate controls and measures governing authorised access, security and protection of data transmission and storage are fundamental requirements that will need to exist within a complex State and Federal Government policy and legislative framework.

2. The **Document & Forms Manager** is a small but critically important area which manages the formatting and production of forms of all type as well as managing the various templates and documents required for operation of the system.

General Practitioners expressed considerable frustration at the range of sizes, shapes and printer friendliness of the forms required of General Practice. The need for an intelligent, automated personalised form generation system was seen as important by practitioners. It was recognised that this whole area (forms generation) was one of considerable inefficiency and that a system, combined with a range of other extra-application changes, could make a major difference.

3. The **Reporting Manager** is envisaged to be an intelligent application that enables highly flexibly routine and ad-hoc reports to be easily compiled from both patient financial and clinical data stored in electronic records and a range of other practice administrative and financial databases.

This Manager supports report generation for the purpose of generating patient clinical summaries, clinical data analysis, clinical audit reporting, clinical research, accreditation reporting, statutory reporting, internal and external practice management reporting.

There was broad agreement that a highly flexible and tailorable report generation tool was required to enable effective practice management and performance reporting and a wide range of clinical reporting needs to be adequately addressed.

4. The **Computerised Patient Record** provides both a repository for all patient related health information and a repository of patient related financial information required for operation of the GPCS.

A comprehensive electronic medical record was seen as fundamental to ensure optimal delivery of quality patient care and effective practice administration. In addition, the need for a comprehensive patient financial record was clearly recognised and seen to underpin the requirements for integrated patient billing / account management and practice performance management and reporting.

5. The **Desktop Systems Manager** provides comprehensive systems management support for the GPCS, including GPCS configuration management, information and software currency maintenance, data integrity management, reference database management, system security and authorisation management, systems back-up and maintenance, and mobile computing data management.

A number of key points emerged from the stakeholder consultation / workshops that relate to systems management of the GPCS:

- ◇ Reliable, automated back-up and recovery of data, software and hardware is a critical requirement.
- ◇ Data integrity is vital.
- ◇ Access to current information (and known to be current) is important for effective patient care delivery.
- ◇ The GPCS must be able to support the practitioners across multiple locations and enable synchronisation of data between mobile computing and practice environments.

In addition to the above mentioned Managers, the GPCS supporting infrastructure layer also includes Reference Databases and External Communications functionality:

The **Reference Databases** provide and manage cross-application information resources required for the operation of the GPCS. These resources include databases covering practice configuration, clinical and other codes, diagnostic services, health services directory, local operations, and government sourced reference databases (e.g. PBS, MBS).

The **External Communications Manager** provides the message exchange protocols and network communications protocols to enable fast, effective, reliable, standards based, confidential and secure links to the external computer world from the GPCS. In addition, this Manager provides the basic levels of encoding and decoding of the information sent / received in standard message formats.

7.4 GPCS Major Attributes

From the interviews, issue focus group sessions and workshops conducted to date, analysis of the needs and expectations of practitioners in other GPCS related areas has revealed a number of key attributes that have an impact on both the utility of the GPCS and its ultimate adoption by practitioners:

Patient Needs and Perceptions

Stakeholder consultation identified the need for the GPCS to support improved patient care delivery and patient administration. Realisation of this need was seen as requiring highly customer focused patient management and care delivery systems that enable patient authorised information sharing between service providers and include efficient and effective appointment booking and scheduling, patient registration, billing, access to relevant clinical history, test results, specialist clinical reports and up-to-date medical information.

Security, Privacy and Confidentiality

Essentially, it was recognised that the GPCS must provide an appropriate level of data security and protection, and must support variable access to patient data by authorised personnel with appropriate audit trails of information access and update.

Technology and System Support

The key point to be made here from a functional perspective is the recognition of the need for on-line support in some form and the need for reliable and foolproof backup and recovery of data, software and hardware. Further to this, the need for ongoing user education support was recognised as a fundamental requirement.

Practitioner Mobility

It was clearly evident that practitioner mobility and the nature of General Practice creates an additional layer of complexity and dimension to the automation of General Practice and delivery of patient care.

Given the multiple permutations of General Practice in terms of the broad categories covered (including solo, group and multidisciplinary practices), the multiple practice locations, geographic considerations (ie rural based practices versus metropolitan practices), and the recognised mobility of practitioner between practice and non-practice locations (eg, home visits, nursing homes, hospitals), practitioner mobility was seen as an important requirement that needs to be managed well by the GPCS across this range of complexity.

The ability to access, share / interchange data between locations and systems was seen as fundamental.

User Interface

The main point to be made here is that there was universal agreement that the user interface needs to be fast, consistent, reliable, easy, simple to learn and use, and must enhance productivity and effectiveness. In addition the support of variable data input methods was considered to be highly valuable.

Continuity of Care

Connectivity to the external world through a network enabled GPCS which supports information interchange between the GP and other service providers, government agencies and other organisations, was viewed as a fundamental attribute of the system to be delivered.

This external linkage was particularly viewed as important by rural practitioners, highly valuing communications with hospitals and pathology providers. There was broad consensus of the need for fast, secure (patient authorised) access to, and sharing of, reliable patient information across the broad spectrum of service providers to enable better quality patient care to be delivered.

Workpractice Impact

The key points made by stakeholders were that implementation of the GPCS will have an impact on work practices within the practice, that change will have to be carefully planned and managed, and that appropriate training / education of practice staff will be vital. From a functional perspective, there was clear recognition that the system needs to be easy, intuitive and fast to learn.

Further to this, improving the efficiency and streamlining of the patient scheduling process was seen as one of a number of important areas where work practice changes could benefit patient and practice management.

7.5 Concluding Comments

In summary, from the stakeholder interviews, issue focus group and customer value management workshop sessions, there was support for a GPCS that had the breadth and scope illustrated above, and the depth to carry out most or all of the functions effectively. This is consistent with the findings of the scope required by practitioners in the clinical area in our previous Electronic Prescribing and Medicines Information Final Report.

From research concurrent to the development of this Report, the overall outcome of Phase Two of this consultancy is also supported by the directions being taken in deployment of decision support in projects such as Prodigy and the functionality and embedded connectivity being incorporated in primary care systems worldwide. Further details and analysis of these trends will be included in the research component of the *Final Report* of this consultancy.

Section 8.0 Implications and Proposed Next Steps

8.1 Introduction

As presented in detail in the previous sections, what will be valued and adopted by practitioners are those applications which simplify and ease the effort in providing quality patient care while ensuring the financial and accounting needs of the practice are fully met. For success in maximising adoption to be achieved, it is also clear that besides basic things such as seamless integration, speed, reliability, ease of use and robustness, the application suite required must cover a very wide range of functions to a significant depth.

8.2 Implications of Application Requirements and Linkages

Careful consideration of the findings in this Report reveals that the breadth and depth of requirements, elicited during the CVM workshops and identified through other extensive stakeholder consultation activities, require a sophisticated and comprehensive set of application functions, encompassing virtually all areas explored in *Section 7.0*.

There is, however, a much more important implication of the findings documented in this Report.

Consideration of those attributes and functions of a GPCS that could be successfully implemented, reveals a number of significant constraints and dependencies impacting the implementation and adoption of the GPCS. These constraints include the following extra-application requirements and issues that need to be promptly and appropriately addressed:

1. **A secure network infrastructure** on which the GPCS can be based and which can provide the network services required for the GPCS to operate.
2. **Development and / or acquisition of appropriate knowledge resources** (guidelines, protocols, formularies etc).
3. **Development of appropriate communications Standards** which will enable communication between the GPCS and Pathology, Radiology and other providers to be delivered.
4. **Development of Standards for data protection, security and encryption** which will achieve public confidence.
5. **Development of a comprehensive General Practice minimum data set** which is consistent and complementary to the National Health Data Dictionary and which will maximise the interoperability between GPCS applications and external applications.

6. **Resolution and harmonisation of legislative and policy barriers** to the effective use of a GPCS. These barriers currently include:
 - Approach to funding the GPCS
 - Harmonisation of the various State and Federal Government Health Acts and Regulations, Drug and Poisons Acts and Evidence Act with regard to enabling electronic signatures
 - Current gaps and inconsistencies in privacy legislation and lack of a national code of practice for health professionals in the Health Sector.
 - Data ownership
 - Clinical Data and Disease Coding

7. **Resolution of issues related to forms production and management** which are beyond the control of the individual practitioner.

While the software industry and developers can take the emerging specification and begin to work towards it, without concerted planning and investment in the other areas identified above it is unlikely that any substantial benefit will be achieved.

8.3 Proposed Next Steps

The context of this Report is essentially a baseline from which the development of the required functional specification and technical architecture for the GPCS can proceed. Already a preliminary framework for the functional specification has been developed and the scope of the specification has been identified. With the insights obtained since commencing this consultancy, it is clear that the specification required will need to encompass a very broad range of applications and that the distinction between a core and enhanced system is relatively unimportant.

During the development of the functional requirements specification, it will clearly be important to note carefully the external, non-application based issues which will impact the success of the specification and encourage the Department and the Information Management Steering Committee (IMSG) to start promptly addressing these issues if very protracted delay in realising working GPCS systems is to be avoided.

Appendix A: Workshop Participants and Key Contributors

Interviews / Group Interview Participants

Name	Organisation / Position	Location
Dr Peter Adkins	RACGP National Information Management Committee (Chairman), GP	Teleconference
Dr Patrick Bolton	Divisions Information Management Sub-committee (Chairman), GP	Sydney
Mr Ross Davey	MSIA (President)	Melbourne
Dr Rachel David	DH&FS Minister's Office, GP Ministerial Advisor	Canberra
Dr Sam Heard	General Practitioner & Director of GP Unit, NT Clinical School	Teleconference
Prof Michael Kidd	IMSG (Chairman), GP	Sydney
Dr Andrew Magennis	RACGP National Practice Management and Services Committee (Chairman)	Melbourne & Teleconference
Mr Peter Moore	Department of Industry, Science and Tourism	Canberra
Ms Deborah O'Connor	Consumer Health Forum (Policy Representative)	Melbourne
Ms Prue Power	AMA, IM&T Strategic Plan	Canberra
Ms Anne Read	AAPM (Victorian President), Practice Administrator	Melbourne
<i>DH&FS Group Interview</i> - Mr Peter Broadhead - Mr Patrick Colmer - Dr David Graham - Ms Simone Gregor - Dr Ian Heath	- Policy Strategy Group - General Practice Branch - Pharmaceutical Benefits Branch - General Practice Branch - Information Services Division	Canberra
<i>General Practice Branch Group Interview</i> - Ms Jean Gifford - Dr Rosemary Knight - Ms Bronwyn Nicholas - Ms Margaret Norrington - Ms Fran Parker - Dr Rob Pegram	General Practice Branch	Canberra
<i>HIC Group 1 Interview</i> - Dr Andrew Parkes - Ms Jackie Wood	Health Insurance Commission, - Professional Review & Education - Government Programs	Canberra
<i>HIC Group 2 Interview</i> - Mr Gil Buerdlmayer - Mr David Num	Health Insurance Commission, Electronic Commerce	Teleconference
<i>Privacy Commissioner Group Interview</i> - Mr Brant Pridmore - Ms Roslyn vanVliet	Privacy Commissioner	Sydney
<i>Rural GP Group Interview</i> - Dr Digby Hoyal - Dr Mark Robinson	RDAAs (President), Rural GP RDAAs (Secretary), Rural GP	Teleconference

Issue Focus Group Participants

Name	Organisation	Location
Mr Ken Bennetts	MIT / Manager, Radiology Department, Preston & Northcote Community Hospital	Melbourne
Ms Jan Chapman	Department of Health and Family Services Pharmaceutical Benefits Branch	Melbourne
Mr Patrick Colmer	Department of Health and Family Services, General Practice Branch	Sydney
Dr Michael Crampton	General Practitioner & RACGP	Sydney
Dr Rob Currie	Division Representative & General Practitioner	Melbourne
Mr Ross Davey	MSIA (President)	Melbourne
Dr Paul Day	Practice Administrator & General Practitioner	Melbourne
Mr Chris Haigh	Telstra (Manager - Strategic Development)	Sydney
Dr Henry Hancock	RDAA & General Practitioner	Wagga Wagga
Ms Sue Healey	Consumer Health Forum	Melbourne
Dr Noel Hickson	General Practitioner	Sydney
Dr Gerard Flaherty	General Practitioner & GP Expert Panel	Sydney
Dr Malcolm Ireland	General Practitioner & GP Expert Panel	Sydney
Mrs Heather Johnson	Consumer Health Forum	Sydney
Dr Ian Kammerman	General Practitioner	Wagga Wagga
Dr Peter Keith	General Practitioner	Wagga Wagga
Dr Teng Liaw	General Practitioner & GP Expert Panel	Melbourne
Dr Alan Lloyd	Pathologist, Douglass Hanly Moir Pathology	Sydney
Dr Peter MacIsaac	Division Representative & General Practitioner	Melbourne
Dr Ian McCorkindale	General Practitioner	Wagga Wagga
Dr Ken Mackey	RDAA & General Practitioner	Wagga Wagga
Mr Steven Marty	PSA Representative	Melbourne
Dr Elizabeth Millard	General Practitioner, Locum	Wagga Wagga
Dr Graeme Miller	Clinical Coding Specialist, Medical Director FMRU (Sydney University)	Sydney
Dr Joe P Molony	Paediatrician	Wagga Wagga
Dr Harry Nespolon	Australian Medical Association	Sydney
Dr Peter Purches	Specialist Physician	Wagga Wagga
Mr Brant Pridmore	Privacy Commissioner (Senior Policy Officer)	Sydney
Dr David Rowed	General Practitioner & GP Expert Panel	Sydney Melbourne Wagga Wagga
Dr Ken Sikaras	Pathologist, Gribbles Pathology	Melbourne
Dr Stewart Sloggett	Information Management Committee, RACGP (Chairman) & General Practitioner	Sydney
Dr Mark Smith	General Practitioner	Wagga Wagga
Dr Ian Sullivan	General Practitioner	Wagga Wagga
Mr Ai Tran	Health Insurance Commission, (Manager, Business and Development Branch)	Melbourne
Dr John vanDyck	General Practitioner	Wagga Wagga
Ms Roslyn Van Vliet	Privacy Commissioner	Sydney
Dr Ming Wang	Radiologist	Sydney

Customer Value Management Workshop Participants

Name	Position	Location
Dr Tony Andrew	General Practitioner	Sydney
Dr Frank Barbagallo	General Practitioner	Melbourne
Dr Joe Cacek	General Practitioner	Melbourne
Dr Paul Day	General Practitioner / Practice Administrator	Melbourne
Dr Noel Hickson	General Practitioner	Sydney
Dr Martyn Hood	General Practitioner	Sydney
Dr Malcolm Ireland	General Practitioner & GP Expert Panel	Sydney
Dr Igor Jakubowicz	General Practitioner	Melbourne
Dr David James	Specialist Physician	Melbourne
Dr Veronique Lajoie	General Practitioner	Sydney
Dr John Lee	General Practitioner	Melbourne
Dr Teng Liaw	General Practitioner & GP Expert Panel	Melbourne
Dr Marcia Manning	General Practitioner	Sydney
Dr Patrick McNaught	Specialist Physician	Sydney
Dr Ranjit Rasalam	General Practitioner	Melbourne
Dr Michael Robinson	Pathologist & Executive Director, Sullivan & Nicolaidis Pathology	Melbourne
Dr David Rowed	General Practitioner & GP Expert Panel	Sydney Melbourne
Mr Scott Shaw	Practice Administrator	Melbourne
Dr Ana Singer	General Practitioner	Sydney
Mr Ai Tran	Health Insurance Commission, (Manager, Business and Development Branch)	Sydney

Project Steering Committee Members

Name	Organisation
Mr Patrick Colmer (Chairman)	DH&FS - General Practice Branch
Dr Peter Adkins	RACGP National Information Management Committee
Ms Jean Gifford	DH&FS - General Practice Branch
Ms Heather Grain	IMSG
Dr David Graham	DH&FS - Pharmaceutical Benefits Branch
Professor Michael Kidd	IMSG
Mr David Num	Health Insurance Commission
Mr Alan Whitfield	DH&FS - Information Services Division

Reference Advisory Board Members

Name	Organisation
<i>(All PSC Members Listed Above - Mr Patrick Colmer - Chairman)</i>	
Mr Simon Bryant	Department of Communications and the Arts
Mr Joe Christensen	Australian Institute of Health and Welfare
Mr Ross Davey	Medical Software Industry Association
Mr Peter Harlow	DH&FS - Health Services and Outcomes Branch
Ms Sue Healy	Consumer Health Forum
Dr Tony Jenkins	Divisions Information Management Subcommittee
Ms Pru Power	Australian Medical Association
Mr Peter Treseder	Standards Australia
Mr Peter Williams	NSW Health Department

Appendix B: IBM Consulting Group Team

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

Kellyanne Chu, Associate Consultant

Paul Clarke, Senior Consultant (Engagement Manager)

Mark Krajnc, Senior Consultant

August Lembong, Consultant

David More, Health Industry Specialist

David Rowed, General Practice IT Consultant; Chairman, GP Expert Panel

Phillip Wing, General Manager, IBM Consulting Group

Appendix C: CVM Analysis – Priority Group 4 Needs

In total 30 needs / expectations fell into this category. It is strongly recommended that the listing below be considered when deciding on final partitioning of functionality into releases. The intended scope of a given system release should assess how many “Sandfly” needs will not be addressed. Multiple unaddressed needs in this category could form a “Showstopper” causing poor adoption and usage of the system.

Area	Need/ Expectation	Attributes
Practice Administration & Support	Practice marketing and patient loyalty development	<ul style="list-style-type: none"> Assistance with practice marketing, loyalty development eg. direct marketing
Practice Administration & Support	Clinical performance monitoring around outcome measures	<ul style="list-style-type: none"> Capacity for modifiable outcome measures from patient management (eg. is his treatment working?)
Continuity of care	All or none usage of system	<ul style="list-style-type: none"> For a system to be successfully adopted by the practice, it would need to be learnt by computer unfriendly / computer phobic doctors quickly and simply System is not a hybrid eg. some automated help and others half manual Progress notes as well as summary are in the system
Continuity of care	Know who to contact	<ul style="list-style-type: none"> Access to allied HACC service/waiting times/contact persons for care of elderly or disabled
Diagnose	Prompting of diagnostic possibilities	<ul style="list-style-type: none"> Suggested diagnosis from symptoms, etc. Would expect a system to “clue me” if asked ie. hot key and further to propose alternative tests which may be appropriate Software should suggest a list of relevant investigations to aid diagnosis Software should be able to suggest a list of different diagnoses on basis of data entered
Diagnose	Protection of diagnostic intellectual capital	<ul style="list-style-type: none"> Decision support systems have proprietary ownership by specialty enterprises (eg Pathology)
Diagnose	Immediate access to service ordering	<ul style="list-style-type: none"> Immediate access to available services Ease of diagnostic service ordering (direct link to providers) Quick electronic ordering/reception of changes to tests independent of systems
Mobility	Remote access to information regardless of location and time	<ul style="list-style-type: none"> Medical records available after hours for the GP System must be accessible from off site Information held in a GPs file should be accessible by selected other agencies Patients expect GP to have access to their medical records when requested
Mobility	Equitable care across locations	<ul style="list-style-type: none"> Gives equality of “quality” to non-ambulant patients eg. during drug treatment / prescribing (these points are orphaned at the moment) Provide patients information where the GP is located
Mobility	Entry of data from non-IT sites	<ul style="list-style-type: none"> Entry of data from other sites where IT is not available and it must be easy and Mobile

GPCS Scope Definition & Stakeholder Consultation Report

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Area	Need/ Expectation	Attributes
Patient Needs	Patient information and education	<ul style="list-style-type: none"> Ability to surf the Internet with guidance from the GP in order to obtain information eg. Illness Ways to help patients take control of their own health care Inventory of reputable Web sites Advantages of printed out scripts and notes eg. for education Information delivered in a way that suits the individuals (leaflet, Web Sites, verbal and graphic displays Access to patient information leaflets Internet style full information Patient expectations will be governed by indirect forces and general marketing of IT use in General Practice
Patient Needs	Patient feedback and validation of information recorded	<ul style="list-style-type: none"> Patient should be able to see the screen the GP is using to check the information and obtain visual feedback of the results The patient records are safe from prying eyes System must not interfere with the GP communication and should enhance it Screen is visible to patients and doctors at the same time
Patient Needs	Know my history	<ul style="list-style-type: none"> Medical history of patient can be easily recalled
Patient Needs	Patient follow-up - wellness check	<ul style="list-style-type: none"> Follow up on patient medical condition
Planning	Provision of suggested treatment options protocols	<ul style="list-style-type: none"> Once diagnosis is made, a treatment flow chart should be available Simple decision support Simple treatment protocols (for routing procedures eg immunisation for hepatitis B) General decision support linked to patient history record system Access to therapeutic guidelines Assist with difficult treatment planning Intelligent knowledge base (algorithms, probabilities (prompts to seek specialisation) Prompting with plan ideas and alternatives
Planning	Provide appropriate treatment education information	<ul style="list-style-type: none"> Ability to interact with patient and treatment plan ie. teaching session incorporated in plan Ability to provide a written "Easy Management Plan" to give to patient (personalised)
Planning	Reference to local conditions and treatment education information	<ul style="list-style-type: none"> Number of patients seen with same condition and information on treatment effectiveness Localised information on commonly occurring conditions Global perspective Journals, picture based
Security, confidentiality, and privacy	Audit trail of information access	<ul style="list-style-type: none"> The owner of the system has an audit trail of who has used each patient record Patients must give GP consent to update their files Patients must know which GP accessed their file
Security, confidentiality, and privacy	Varying information access to authorised parties	<ul style="list-style-type: none"> Patient and GP information must be stored securely-no unauthorised access Different levels of security must be set (eg. GP, receptionist, accountant) Need consent of data to be available to other parties Access only by authorised people The system must preclude access to patient data which the GP does not intend Patient control over information, release where identifiable Flexibility to grade sub-components of the record for different types of distribution Option that "Doctor confidential" information must remain so if requested by the patient (maybe a subset of patient information) No external access to data

GPCS Scope Definition & Stakeholder Consultation Report

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Area	Need/Expectation	Attributes
Security, confidentiality, and privacy	Privacy measures are clearly understood and practised	<ul style="list-style-type: none"> Care not to let excessive worry about privacy interfering with clinical management Privacy issues to be clear to patients so they do not withhold or distort information to the GP Data transfer must ensure goes to the correct place only The system should also be set up to preclude access to anyone as per the patient's wish
Treatment	Standardised storage of results and trends	<ul style="list-style-type: none"> Standardised storage of results information (in text form) Incorporation of incoming data (eg. letters, results. etc.) Time-based storage of numerical trends of relevant treatment data (eg. Flow data)
Treatment	Automated and personalised referrals	<ul style="list-style-type: none"> To be able to capture essential patient data for "specialist" referral Need to incorporate a summary of patients history into body of a referral letter
Treatment	Patient education	<ul style="list-style-type: none"> Checklists Recall when to come back Drug information
Treatment	Automated GP prompting	<ul style="list-style-type: none"> Reminder Checks Additional follow-ups
Interface Usability	Variable data input methods	<ul style="list-style-type: none"> System diversity in data input methods eg. pen recognition, keyboard, scanner & OCR Able to be used with different ways eg. pen, keyboard, voice, other.
Interface Usability	Tailorable	<ul style="list-style-type: none"> If access is fast, should be able to tailor for different users (novice users, learners, expert users) Access tailored to type of users
Interface Usability	Consistent Interface	<ul style="list-style-type: none"> Consistency of interface across functions
Workpractice Impact	Saves time, and enables increased patient consultation time and quality	<ul style="list-style-type: none"> Reduction in time wasted in forms handling through IT information retrieval System must not take more time to use - should make time available for non IT tasks Must improve efficiency of front office Must free up time to allow better GP patient interaction Better time management: frees up time for GP Improved quality of care (not just quantity) Replace repetitive tasks (automate activities such as form preparation and prescription) Saves time for the GP Must avoid information overload Slowdown in consultation will need to be balanced by visible benefits
Workpractice Impact	Streamlining and scheduling patient handling process	<ul style="list-style-type: none"> Able to organise who sees GP for what eg. streamline scheduling
Workpractice Impact	Extend scope of services	<ul style="list-style-type: none"> Extend the scope of General Practice Provide new services eg. store images Standardisation of practices allows analysis of trends in treatment and care Minimise time required to book specialist consultants

Attachment A-1: Stakeholder Consultation Transcripts