National eHealth Programme

NHS Greater Glasgow and Clyde

PATIENT MANAGEMENT SYSTEM (PMS)

Full Business Case

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Version and Configuration Management

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The issue of this document requires the approval of the signatories below on behalf of the Project Board.

Name	Title	Signature	Date
Jonathan Best	SRO		

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1. Executive Summary

1.1 Introduction

Attached is the Full Business Case (FBC) for the procurement of a Patient Management System (PMS) solution for NHS Greater Glasgow and Clyde. It explains how the preferred solution was processed through OJEU (EU procurement journal) and describes at a high level how it will be implemented. The benefits, costs and risks of the preferred solution are set out along with details of how the solution will be delivered.

The document has been prepared using the eHealth FBC template.

1.2 Background and Objectives

NHS Greater Glasgow and Clyde (NHSGGC) was created in April 2006 by bringing together the former Divisions in North Glasgow, South Glasgow, Yorkhill and Primary Care and the Clyde part of the former NHS Argyll and Clyde.

The new organisation has formed a single Acute Division and a single Mental Health Partnership with Mental Health community services delivered by Community Health Partnerships/Community Health and Care Partnerships. The legacy organisations all had different Acute hospital systems (Patient Administration Systems [PAS]) and different Mental Health systems in Greater Glasgow and Clyde.

As a consequence, it is very difficult to track Acute patients across NHSGGC if they move between North and South Glasgow or Clyde and within Clyde. A similar issue exists between Clyde and Greater Glasgow for Mental Health in-patients. In addition to this, a number of the contracts for existing systems were approaching their expiry date.

NHSGGC agreed to become a lead player in a consortium of Health Boards to procure a suite of Patient Management Systems with an emphasis on clinical functionality as well as administrative functionality.

In conjunction with the Clinical Portal, in use in Ambulatory Care Hospitals, the PMS is pivotal to the transformation of Acute services to underpin the delivery of the Board's Acute Services Review.

The objective of the procurement was to identify an affordable solution which:

- enables patient tracking across NHSGGC through single system working
- enables better management of resources including beds and emergency department patient flow
- enables improved tracking of hospital acquired infection rates
- provides real-time operational clinical and management reporting to support the achievement of targets and encourages efficiency
- provides a set of clinical support tools for use by all clinical staff
- provides equivalent clinical functionality across all of NHSGGC including the ability to order diagnostic tests, and review results and images etc
- enables pathway measurement for 18 Weeks Referral to Treatment
- supports single system for Mental Health in-patients across Greater Glasgow and Clyde

1.3 Preferred Option

The preferred option is a full integrated suite of systems (TrakCare) from InterSystems. In the first instance NHSGGC would procure:

- core Patient Administration (Acute and Mental Health) System
- integrated Order Communications
- Clinical Support Tools
- Accident and Emergency
- Maternity

A business case for a fully integrated Neonatal system will be developed at a later date.

1.4 Procurement Process

There has been a very robust procurement process. Five Health Boards accepted a Commission Brief from the National eHealth Strategy Board to procure a suite of systems through a framework contract signed by NHS National Services Scotland (NSS) on behalf of NHSScotland. The consortium set up the governance committees, the senior of which (the Consortium Management Group) was chaired by Robert Calderwood, Chief Executive of NHSGGC and reporting to it a Programme Board chaired by Alan Lawrie, Director, South Lanarkshire CHP. The procurement was a full OJEU/Competitive Dialogue and the consortium was supported by Pinsent Masons (legal experts in this type of OJEU) and NSS for procurement support. The process also included two external Office for Governance and Commerce (OGC) Gateway Reviews in line with best practice.

The procurement process identified a clear winner in InterSystems. The key reasons for this were:

- well-established and proven fully integrated product with high degree of clinical and operational functionality
- already established in Scotland
- lowest risk implementation
- affordable

1.5 Commercials

The contractual terms and conditions that have been agreed are commensurate with the need for NHSScotland to have a contract that mitigates risk and provides an incentive for successful delivery.

This Business Case presents the service drivers, together with the financial and economic case for adoption of a new PMS and associated change management activities.

Further discussions with InterSystems are underway to facilitate signing a contract by the end of January 2010, allowing the commencement of implementation thereafter.

From a benefits perspective, extensive work has been undertaken to asses the potential of the selected solution. NHSGGC expects to realise benefits under a

number of broad headings which will directly contribute to delivery of patient services that are efficient, effective, timely and safe. Benefits have been quantified as:

- qualitative, where services will be improved through the achievement of better outcomes; and
- quantitative, where cash or time releasing savings are able to be achieved.

In summary:

- the current contract status and the shortcomings identified in the current systems dictated that there is no feasible “do nothing” option for NHSGGC
- the selected supplier solution is financially viable, offering a saving on current cash flows over the life of the contract
- the selected supplier requires NHSGGC to make a lesser investment non-recurrently than the other supplier options
- a process of identifying benefits is in place and the delivery of these benefits will be a specific focus and will be strongly performance managed during the implementation stage of the programme and beyond
- Scottish Government investment together with non-recurring local investment has been used to underpin the change activities that will be essential to a successful implementation
- programme risks have been identified and will be appropriately managed through the implementation governance arrangements that have been established to oversee the work programme

The Board is asked to approve the Full Business Case to allow NHSGGC to proceed to the establishment of a call-off contract with InterSystems Corporation in early 2010.

2. Introduction

Purpose

The key purpose of this document is to explain how the preferred option that has emerged, via the PMS Procurement Programme, would be implemented. The benefits, costs and risks of the preferred solution are set out along with details of how the solution will be delivered. The document describes a very robust procurement process supported by very strong governance arrangements.

The document has been prepared using the eHealth FBC template.

Background

In September 2006 the NHSScotland eHealth Strategy Board agreed that a national approach should be taken to procurement of Secondary (Acute and Mental Health)and Community Hospital Patient Administration Systems (PAS). A critical driver for this decision was that all but one of the existing commercial PAS contracts are due to expire between 2008 and 2010.

To help clarify the way forward, a consultation exercise was undertaken with each NHS Board to understand their current IT systems and their future requirements. Following this, it was agreed to widen the scope of the project to ensure inclusion of other desirable patient management functionality, such as order communications (eg the electronic ordering of diagnostic tests). The term Patient Management System (PMS) was adopted to describe this broader solution.

The eHealth Strategy Board requested that an Outline Business Case (OBC) be developed to examine the options in more detail prior to a decision being taken for any procurement exercise.

The OBC was produced and submitted for approval to the eHealth Strategy Board on 28 June 2007. Following consideration of the OBC, the eHealth Strategy Board gave approval for:

- the document to be circulated for wider consultation to the NHS Boards;
- the project to move forward to the requirement definition stage and further refinement of the OBC, so that any decision to proceed to procurement would be based on the best available analysis; and
- production of an Output Based Specification (OBS) which would allow NHS Scotland to provide suppliers with sufficiently detailed information.

The OBS defines the requirements for the national PMS system and possible service solutions, and identifies constraints in terms of compliance with national standards for interoperability, interfacing, national/clinical coding, information governance and security.

A consortium of NHS Boards was formed with a view to leading the procurement stage of PMS, while recognising the need to sign a framework contract that all NHS Boards in Scotland can adopt. This consortium consisted of NHS Greater Glasgow and Clyde, NHS Lanarkshire, NHS Grampian, NHS Ayrshire and Arran and NHS Borders. .

At the eHealth Strategy Board meeting, on 9 January 2008, it was agreed that the PMS work could progress to procurement, subject to confirmation of satisfactory arrangements being put in place to enable NSS to sign the PMS contract on behalf of NHS Scotland.

The Commissioning Brief was formally issued to the PMS Consortium Management Group at its first meeting in January 2008. The PMS Consortium issued a PMS Procurement Commissioning Brief Response in February 2008 that was subsequently approved by the eHealth Programme Board.

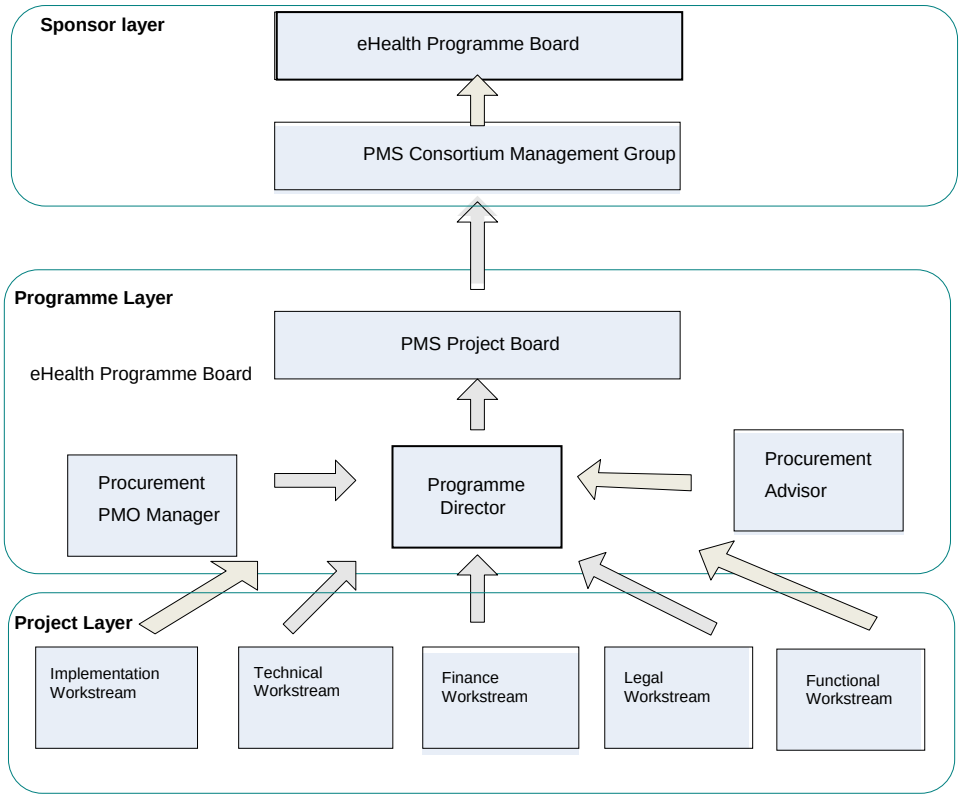
The outcome of the Consortium Led PMS Procurement project is a framework contract for a single solution or suite of solutions with associated services accessible to all NHS Scotland Boards by call off. The framework contract includes Northern Ireland for the OJEU Notice, and partner organisations such as hospices if appropriate. The target date for a framework contract to be in place is January 2010.

From a local perspective, within NHSGGC there is a legacy of multiple PAS systems from a number of different vendors, many with limited functionality and the end of their natural life and usefulness. Crucially, these systems were designed to support a business model that is now redundant. The modernisation and transformation programme demands a single PMS which can support the increasingly complex patient journey in Acute and Mental Health settings as well as enabling the adherence to national targets such as 18 week Referral to Treatment. These drivers along with the impending expiration of the current PAS contracts would have required NHS GGC to embark on a local procurement initiative to replace these systems. As a consortium member, NHSGGC has been able to achieve the expected benefits from a consortium procurement approach. In fact, the consortium approach combined with the Competitive Dialogue procedure has resulted in a contract price which is less than half of the costs identified in the PMS Outline Business Case. It is anticipated that the collaborative model will continue to provide benefits by combining forces for certain activities during the implementation phase.

PMS FBC Project Structure

The PMS procurement will affect a variety of Health Boards, stakeholders and professions. In view of this, the Programme has attempted to ensure that the process for identifying a preferred solution has been as robust and transparent as possible. As a result, a considerable effort has been made to ensure that all the key stakeholders have been represented throughout the process. Formal programme management arrangements were established as outlined in Figure 1.1 below.

Figure 1.1 PMS FBC Project Structure



A Project Board reporting to the PMS Consortium Management Group was established to oversee the project including representation the Consortium Boards, SGHD and ISD, Appendix F provides full membership details. The PMS Consortium Management Group reports to the eHealth Programme Board. Each of the participating boards in the consortium were invited to select two or three representatives to join the Management Group, and this group is comprised of senior managers representing the NHS Board Chief Executives; clinical leads representing the Board Medical Directors and eHealth Leads.

NHSGGC has had key representatives in all three layers of the PMS procurement, and this has provided confidence that the preferred solution is suitable for our needs.

Structure of the FBC document

The remainder of the FBC is structured as follows:

- Section 3 provides the strategic context for the programme;
- Section 4 signposting to Appendix B for summary of the OBC;
- Section 5 describes the preferred solution;
- Section 6 provides a value for money analysis;
- Section 7 sets out the process for identification and management of risk;
- Section 8 provides the affordability analysis;
- Section 9 describes the contractual framework;
- Section 10 outlines the governance and terms of reference

- Section 11 sets out the activities, timescales and resources of the implementation;
- Section 12 assesses the impact in terms of Equality and Diversity;
- Section 13 provides a description of and plan for realisation of benefits;
- Section 14 concludes by re-stating the preferred option in the FBC for which approval is being sought.

There is a number of supporting appendices and detailed financial spreadsheets available separately to minimise the length of the FBC and maintain readability.

3. Strategic Context

National

The eHealth Strategy for 2008-11 was launched in June 2008. The strategy is concerned with improving patient safety and effectiveness through information, and supports the overall NHS Scotland goals as set out in the *Better Health Better Care* Action Plan. It also shows how these improvements will be supported over the next few years; as part of a longer term series of steps towards electronic patient records and electronic communication.

The table below considers the contribution that the PMS solution will make to the delivery of the outcomes envisaged in the NHS Scotland eHealth Strategy with specific reference to its alignment with ***Better Health Better Care.***

eHealth Strategy Outcome	PMS Contribution
Delivering together on information confidentiality	The suite of systems that comprise PMS will provide the best possible levels of data security providing traceability of user activity across all parts of the systems
Performance management and service planning	The specification of the PMS made specific reference to HEAT Target monitoring requirements and the need to provide management information in accordance with current and future requirements
Managed Clinical Networks/Specific Conditions	The PMS will enable specialty and disease specific data collection through the use of the 'clinical tools functionality'. This is a key feature of the shortlisted systems
CHI-based patient record identification	The suite of systems comprising PMS have been subjected to rigorous assessment in terms of their capability to use CHI as the single patient identifier in accordance with current SGHD Targets in relation to CHI
Support for direct patient care	The clinical tools functionality available within PMS, together with core functions including Order Communications will directly support patient care through streamlining the flow of information that is integral to the care process
Patient alerting and traceability	The PMS will provide facilities to better manage 'at risk' patients including Hospital Acquired Infection (HAI) alerting and tracing and the facility to securely flag messages to staff in relation to specific conditions, allergies etc.
Medications management	Hospital Electronic Prescribing and Medicines Administration (HEPMA) will be procured as an optional component of PMS. It will link with all other aspects of the system and will provide to Boards who adopt it a full medicines management capability in accordance with the Audit Scotland Report.
Community health and Social Care	PMS will provide the information sharing functionality that will enable the seamless transmission of data securely between NHS care sectors and support the sharing of information between the NHS and Social Care.
Reducing 'referral to treatment' waiting times to 18	Meeting the target will require significant streamlining of patient administration, as well as new models of clinical management. PMS will have a major role to play in enabling the achievement of this target

weeks	and the specific needs of the 18 weeks programme are integral to the specification of requirements for the PMS.
Support for Cancer waiting times	The PMS will directly support Cancer services through the facility to better manage cancer waiting times with a reduced patient tracking administrative overhead.
Electronic Referral and Triage (eReferral)	The direct linkage that will be available between SCI Gateway and PMS will ensure that the requirements of Electronic Triage are provided by PMS The specification of the PMS made specific reference to HEAT Target monitoring requirements and the need to provide management information in accordance with current and future requirements

In addition, the PMS has been specified and architecturally designed to be fully compliant with standards and guidance, and to make an optimal contribution to the technical infrastructure that will support the wider eHealth Strategy, including:

eHealth Strategy Outcome	**PMS Contribution**
Integration with other systems to provide the underpinning infrastructure for an Electronic Patient Record	The PMS has been specified to fully integrate with 'cornerstones' of the NHS Scotland eHealth portfolio and are fully compatible with the Enterprise Architecture for eHealth. These include SCI Gateway, SCI Store and the Emergency Care Summary (ECS). In addition, the PMS will have an industry standard 'Integration Engine' and a range of integration services that will be available for all NHS Scotland Health Boards. This may obviate the need for a specific procurement of such technology.
Technology and process standardisation	The PMS will create a significant cohort of Health Boards who will deploy the same technology in pursuit of many of NHS Scotland's eHealth objectives. The approach to deployment will, where possible, be 'do once, use many' thereby providing efficiencies across the PMS member Health Boards.
Clinical Portal	The preferred PMS solution has the ability to integrate with the NHSGGC Clinical Portal. This will enable the Board to deploy its clinical portal in accordance with the aims of the eHealth Strategy.
Support for CHI 2	The PMS solution provides the potential to deliver an 'off the shelf' CHI 2 system. CHI (Community Health Index) 2 is the name given to a potential redevelopment of the current national CHI system which is many years old and is costly to support. Although further analysis is required from relevant technical and business stakeholders, the preferred PMS solution's product mix provides functionality to record and manage a Master Patient Index which may negate the need for a major development project in order to deliver CHI 2.
Support for Identity and Access Management System (IAMS)	Each of the shortlisted suppliers has committed to integrating the PMS with IAMS as part of the PMS implementation. (IAMS is the preferred solution for secure access to clinical systems based on an individual's role) This will assist the implementation timescales of the IAMS Programme (as Health Boards will not be required to renegotiate contracts or undertake development with existing PAS suppliers) providing further support for the implementation of the eHealth Strategy.
Support for future developments	The assessment of prospective suppliers has included the potential for future developments to meet service needs in light of policy change or service redesign. The facility to effectively, rapidly and efficiently

	develop the systems to NHS Scotland's needs, will be a significant strategic benefit of the PMS.
Support for eHealth Standards	Each of the shortlisted PMS solutions lends support to the adoption of a number of eHealth standards. Compliance with these standards by PMS provides further support for the wider adoption of existing eHealth standards across NHS Scotland.

NHSGGC Drivers

The following local drivers highlight the case for NHSGGC to implement the preferred solution:

Acute Services Review Strategy

In response to the NHSGGC Acute Services Review (ASR), an extensive redesign, modernisation and new build programme has been initiated within NHSGGC. The ASR Strategy is firmly rooted in seeking to transform the patient's experience and will result in a major reorganisation of clinical services.

The recent opening of the Ambulatory Care Hospitals at the Stobhill and Victoria sites is a significant milestone in implementing the ASR strategy and modernising Glasgow's healthcare facilities. Subsequent phases of the modernisation programme will see the development of a new South Glasgow Hospital campus and further rationalisation and consolidation of clinical services.

However, even with the significant rationalisation that has occurred to date, three different PAS systems are still in operation across NHSGGC, all providing differing functionality and supporting different services. This is shown in the diagram below:

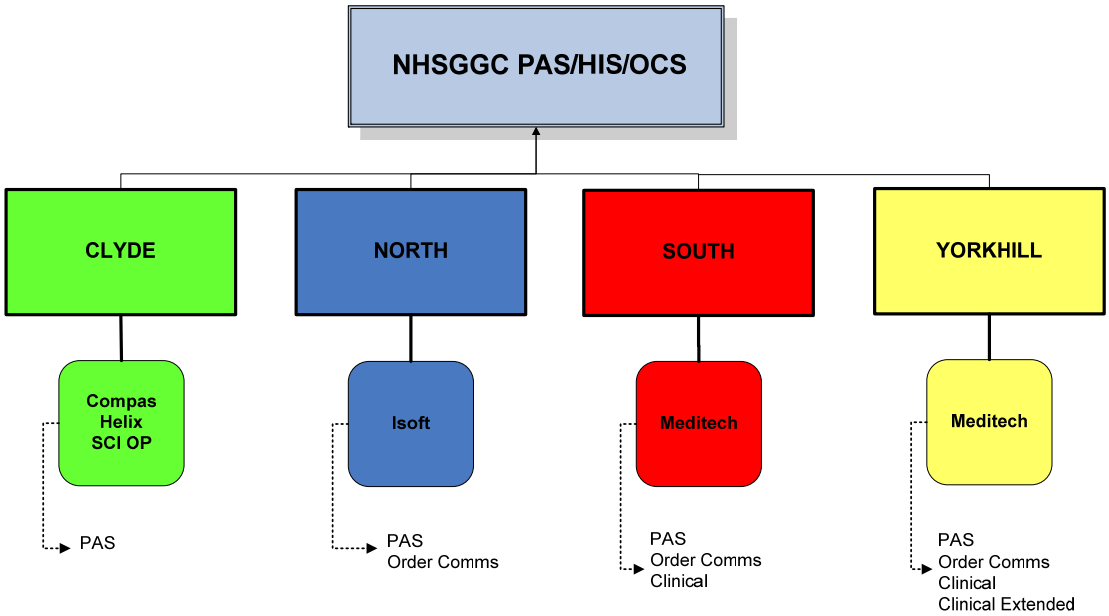


Figure 2 – NHSGGC PAS/HIS/OCS

[There are separate instances of the system on each site in Clyde]

Although South Glasgow and Yorkhill sites operate the same application (Meditech) they both utilise different components. The least functionality is delivered by Compas, Sema Helix and Out-patients; these systems support administrative processes but no clinical

functionality is provided. In addition, the instances of these systems are not unified across Clyde.

These disparate PAS systems sit within a complex system structure, as illustrated in Appendix A. This only allows patient information to be collected within discrete institutions rather than across an increasingly complex patient journey which can span several services. Therefore, there is an immediate need to standardise and consolidate the processes and systems to support the new and evolving business module and improving the quality of care provided to our patients.

The use of different systems has not only resulted in an inequity of the functionality available, but also the implementation of different practices and processes across the sites. The modernisation of services that NHSGGC is aiming to achieve requires a single PMS solution that is streamlined, functionally rich, patient-centred and can support the increasing complexity of the patient journey.

NHSGGC Performance Targets

It is anticipated that the implementation of the PMS solution will support the Board in achieving and reporting on the following national targets:

- 18 week Referral-to-Treatment
- 31 Day Cancer Journey
- e-referral
- 4 hour A&E wait
- Utilisation of CHI

<u>18 Week RTT/ 31 Day Cancer Journey</u>

It is recognised that the PMS implementation is not a pre-requisite to achieving the 18 Week Referral-to-treatment and 31 day Cancer Journey targets. However, the PMS solution will be a significant enabler to allowing the Board to manage and track these targets effectively and efficiently. Meeting these targets will require significant streamlining of patient administration, as well as new models of clinical management.

The preferred PMS solution has been extensively evaluated against the envisaged requirements for the 18 week programme as these formed an integral part of the PMS functional specification. In addition, binding clauses have been included in the Framework Contract to ensure that the preferred bidder delivers this functionality by specific dates.

<u>e-referral</u>

The Referral Management functionality within the Core PAS module provides electronic referral and triage capabilities. This includes the ability to receive the referral via SCI Gateway, electronically forward it to a specialty, consultant, or specific discipline within the hospital for triage to take place, and feed the triage decision back to the referring source. The provision of this functionality should encourage the take-up of electronic referral and triage across the Health Board.

4 Hour A&E Wait

The A&E application will help users track whether the patient is close to breaching the 4 hour wait, allowing the waiting times to be carefully managed. This includes clear visual indicators in the form of 'traffic light' reporting on the department tracking screen which depicts whether the patient is safely within the maximum waiting time (green), approaching the maximum waiting time (amber) or has reached or exceeded the maximum waiting time (red). The application also ensures that national reporting data is recorded by forcing the user to enter a reason for the delay when a breach of the target has been identified by the system.

The solution is also flexible enough to respond to changing targets, as the maximum waiting time can be defined by a system administrator.

Utilisation of CHI

The suite of systems comprising the preferred PMS solution has been subjected to rigorous assessment in terms of their capability to use CHI as the single patient identifier in accordance with current SGHD Targets.

Clinical Governance and Patient Safety

NHSGGC is fully committed to providing a health service that is based around and responsible to the patient; and focused on quality and openness. The process of establishing clinical policy and then monitoring compliance is the foundation for delivering safe and high quality services now and in the future.

The successful implementation and delivery of clinical governance requires health professionals having secure and timely access to comprehensive and relevant clinical information. The PMS solution will be a major component to delivering this.

Major system contracts expiring

NHSGGC currently has 5 main PAS suppliers: Meditech (in South Glasgow and Yorkhill) and iSoft (in North Glasgow). Contracts expire in 2009/10. Extension arrangements covering implementation have been put in place. The 3 other systems for Mental Health in NHSGGC and for Acute in Clyde have rollover contracts which can be terminated with less than 6 months' notice respectively.

4. The Outline Business Case

Background

An Outline Business Case for the procurement and development of a PMS was prepared in June 2007. This was based on a national approach involving all NHS Boards. At this stage, the financial projections were necessarily at a relatively high level using requests for information from suppliers and a cost survey of NHS Boards to determine current costs.

At the outset, it is important to recognise that given the contractual position of NHS Boards with suppliers and the expiry of current licences, there is no “Do Nothing” option. NHS Boards will need to deliver solutions to meet the provision of PMS beyond the approaching expiry dates. Whilst it may be possible to extend or renegotiate existing contracts, this may lead to cost pressures.

NHSGGC could not move to a single PAS contract without undertaking a full procurement.

The OBC considered the impact of delivering local solutions as a baseline against which national solutions could be appraised.

The PMS Project subsequently moved forward as a Consortium of five NHS Boards with the remit of developing a national framework contract**.**

Details of the OBC are in Appendix J.

5. The Preferred Solution

Procurement Process

It was agreed to conduct a public procurement through OJEU for all elements of the PMS solution including hardware, software and services. The PMS Procurement was managed using the Competitive Dialogue Procedure. The competitive dialogue procedure is appropriate where a contracting authority is not able to define the technical means of satisfying its needs or objectives or is not able to specify the legal or financial makeup of a project.

A notice (advert reference 2008/S71-095939) was placed on the 11 April 2008 in the Official Journal of the European Union ('OJEU') by the Common Services Agency (more commonly known as NHS National Services Scotland (NSS)). In response to the advert 73 suppliers noted interest.

A Pre-Qualification Questionnaire (PQQ) was issued to all 73 suppliers and a Supplier Open Day was in June 2008. Twenty-three supplier responses were received by the procurement deadline of 8 July 2008. Following scoring of the PQQ responses, nine suppliers were long listed.

It was anticipated that after scoring each supplier's response to the Outline Business Specification (OBS), a Supplier Short List would be produced of between three and six bidders to enter into the negotiation phase of competitive dialogue. However, following the scoring of ITPD Stage 1, the results were complex. The end result did not produce a clear set of three bidders, required as a minimum under competitive dialogue, to go through to the next stage of the procurement. It did produce a group of seven bidders whose scores were so close as to make it difficult to draw a down-select point between them.

Following extensive discussion and review, the PMS Programme Board decided to opt to take seven bidders through to the next stage of competitive dialogue. As a result, ITPD Stage 2 was split into two phases:

- ITPD Stage 2A, which took place before Christmas 2008; and
- ITPD Stage 2B, which started in January 2009.

ITPD Stage 2A was designed to enable a Supplier Short List Report to be produced, with the explicit aim of moving from seven bidders down to three or four bidders. On completion of Stage 2A the PMS Programme Board of 22 December 2008 agreed that four bidder solutions should be short listed.

ITPD Stage 2B was the negotiation stage of the competitive dialogue process. This required the project team to work with each bidder to create and test equally acceptable solutions, on which the three suppliers bid, in the final stage. To test the procurement's ability to close dialogue and therefore trigger the bidders' final tender an Invitation to Submit Draft Final Tender (ITSDFT) was issued. The responses to the ITSDFT were used to provide detailed feedback to the bidders. The dialogue phase officially ended on the 7 September 2009 with the issue of the ITSFT and the associated evaluation model.

The following bidder solutions were short listed:

- Perot (prime contractor) with the Oasis product

- InterSystems (prime contractor) with TrakCare product
- AOA (prime contractor) with Oasis product
- AOA (prime contractor) with System C product

It should be noted that in June 2009 AOA decided to withdraw their bid with Oasis and therefore only three solutions were assessed in the latter stages of the procurement.

Evaluation Process

The evaluation was performed using the agreed ITSFT evaluation model, as communicated through a set of Supplier Instructions. The ITSFT was used to evaluate the Bidders' final tenders and select the preferred bidder.

The ITSFT evaluation model required Bidders to formally respond in writing to the requirements set out in the OBS and the solution scope. Bidders were asked to reply explicitly to each referenced statement in the OBS. These written responses were scored by a series of evaluation teams.

In line with the ITSFT evaluation model the supplier responses were scored using the following weightings.

Award criterion	**Weighting ITSFT**
Application Functionality: Integrated Core PMS, and Clinical Support Tools	30
Application Functionality: Optional Modules	10
Technical, Performance, Operational Management & Support	11
Future Requirements	1
Implementation Services & Training	16
Price/commercials	25
Management of Risk	4
Contract Terms	3
Totals	**100**

In addition, there was a carry forward of 7.5% from ITPD Stage 1.

Outcome of the Evaluation

From the functional, technical, implementation, financial and legal scoring undertaken by the procurement evaluation teams along with the strategic benefits and future requirements scoring undertaken by the PMS Programme Board the Bidders' scores for the final tender evaluation are:

Award Criterion	Weighting % ITPD 2B	InterSystems	AOA (System C)	Perot (Oasis)
Application Functionality: Integrated Core PMS & CST	30	20.97	21.56	10.77
Application Functionality: Optional Modules	10	5.84	5.91	6.09
Technical Performance, Operational Management & Support	11	8.25	5.24	4.98
Future Requirements	1	0.60	1.00	0.20
Implementation Services & Training	16	11.40	10.10	10.70
Price / Commercials	25	10.71	11.94	15.05
Management of Risk	4	1.84	2.40	0.80
Contract Terms	3	3.00	1.80	1.80
Total		**62.61**	**59.95**	**50.39**
Minus 7.5% for carry over from ITPD 1		57.91	55.46	46.61
Carry Over from ITPD Stage 1		5.12	4.50	6.04
Total (inc. carry over)		**63.04**	**59.96**	**52.65**

A full breakdown of results by Bidder is provided in Appendix C.

Based on these scores, the PMS Programme Board concluded that their preferred bidder recommendation was InterSystems. In reaching this decision, the Programme Board highlighted a number of areas for clarification with the recommended preferred bidder. These are detailed below:

Area for clarification	Suggested action
Timescales around resolution for clinical support tools functional gaps.	Further binding assurances should be sought through the creation of call off contracts for individual boards stipulating the functionality that must be present before 'go-live'.
Timescales around resolution for 18 weeks RTT functional gaps.	Further binding assurances should be sought through the creation of call off contracts for individual boards.
Flexibility of supplier financial modelling.	InterSystems have indicated in their Final Tender submission their desire to be flexible with regards to financial issues. All Boards but in particular NHSGGC may require InterSystems to re- profile their costs.

The PMS Consortium Management Group (CMG) has endorsed the decision to appoint InterSystems as the preferred bidder and requested that the PMS Programme Board seek prompt clarification on the highlighted areas as a prelude to concluding the PMS procurement. Binding assurances have now been included in the Framework Contract in relation to RTT and Clinical Support Tools gaps and NHSGGC has reached a satisfactory conclusion to the profiling of supplier costs.

Description of the Preferred Solution

The preferred solution provides the full set of core and optional modules listed in the OBS, with the exception of Radiology, Theatres and Laboratories (Radiology and Theatres were the subject of separate national procurements),and includes:

Core Modules:

- Common Patient Administration (including Mental Health Administration);
- Clinical Support Tools; and
- Order Communications.

Optional Modules:

- Accident & Emergency;
- Clinical Mental Health;
- Hospital Electronic Prescribing and Medicine Administration (HEPMA);
- Maternity;
- Neonatal; and
- Pharmacy Management;

With the exception of the HEPMA and Pharmacy Management modules, which are provided by third party software vendor, JAC, the core and optional modules have been developed by the preferred bidder and share the same data model and database. The JAC modules will be accessed via the TrakCare system and therefore access to the entire suite of modules will be provided with a single login and data entered once is immediately available throughout the system. This unified information environment provides several benefits: simplified sharing of information, faster implementation, lower costs and easier maintenance. In addition, the embedded integration platform, will allow interoperability of these modules with local and nation applications.

The framework agreement allows Health Boards to call-off any combination of these modules, however, NHSGGC have committed to calling-off only the following modules in the first phase of implementation; Core PAS, Clinical Support Tools, Order Communications and A&E. The high level functionality provided by these modules is detailed below:

Core PAS

The Common Patient Administration module, or PAS, as it is more commonly referred to, is comprised of the following sub-modules:

- Bed Management;
- Case Note Management and Tracking;
- Coding;
- In-patient Management;

- Management Reporting;
- Mental Health Patient Administration;
- Master Patient Index;
- Outpatient Management;
- Referral Management;
- Scheduling; and
- Waiting List Management

Order Communications

This module provides the functionality, relating to order communications within and across multiple Hospital environments and results reporting from clinical systems capable of supporting this functionality ie allows clinicians to order tests from any location electronically and receive the results electronically. The main features of this functionality include:

- **Order Entry** captures relevant clinical information while minimizing the need for manual data entry. Order Entry can display default information for each specific request. The module also provides the ability to request non clinical orders eg request for portering staff etc.

- **EPR Order and Result History** presents the order and result history of diagnostic and investigational procedures.

- **Order Favourites** are frequently requested items displayed for quick selection during the order entry process. Lists of order favourites may be defined at the region, hospital, location, group, or individual user level.

- **Order Questions** can be defined to display at various points in the order entry workflow, ensuring relevant clinical information is always collected. Answers to questions can default from previous entries or display relevant pathology results.

- **Expiry limits** are available for previously answered questions to help ensure that up-to-date information is being provided.

- **Order Sets** enables quick ordering of a group of items, rather than selecting each individually. An example of this is a standard order set for a patient presenting with chest pain. This set could include various blood tests, an ECG, a stress ECG, and a chest X-ray.

- **Order Entry Alerts** are triggered for combinations of events including:

    - Allergy warnings
    - Duplicated order warnings
    - Age/sex restriction warnings
    - Additional checks that can be defined by the hospital

- **Order Security Restrictions** limit the user's ability to order items and view sensitive orders and results based on security group assignment. Audit trail functionality is available on all parts of the ordering process.

- **Result Entry -** TrakCare can receive results electronically from departmental or external systems via HL7 or directly from any TrakCare module. Results can include data captured in a questionnaire (user-defined form), dictated and transcribed documents, observations, and atomic data such as laboratory results.

- **Results Display** includes clinical indicators such as abnormal results, reference ranges, and criticality status where applicable. Alerts indicating abnormal and new results via system-based highlights and icons are provided. Unread results are clearly indicated, and the audit trail includes not only the reader, but also anyone who has viewed a result. Results can be displayed in a singular or cumulative format and may also be defined to display in a graph.

Clinical Support Tools

This module provides the ability to collect, manage and communicate patient clinical information electronically to support safe and effective patient care. The key components of this module include:

- integration with PMS core modules and access to patient past medical histories;
- ability to record diagnoses;
- care planning, goals, interventions, actual and expected outcomes recording;
- multiple patient assessment tools – with clear links between assessment and planned care;
- risk assessment measurement with automatic trigger indicating, and the automated calculation of scores;
- development of Integrated Care Pathways (ICPs)
- clinical note taking facility;
- clinical incident (event/intervention) recording;
- clinical audit functionality and management reporting;
- access to knowledge support for clinical decision making; and
- support of single discipline and multidisciplinary discharge process.

The key requirement of Clinical Support Tools is the development of assessments and ICPs and the preferred solution provides the Questionnaire (user-defined form) tool, to allow users to define the content of the assessment and create standard templates. In order to facilitate the implementation of national assessments, the user will have the ability to 'lock down' national fields to ensure consistency of reporting across Health Boards.

Information recorded within the Questionnaire will also be immediately available within the patient's Electronic Patient Record (EPR). Electronic sharing of assessment information is provided under security controls and a full history of all changes is maintained.

Accident & Emergency

This module handles the triaging and treatment of patients captures information in relation to the registration, movement, and care interventions during emergency attendances.

The A&E module is fully unified with all TrakCare modules so that, when this module are in use within a Health Board, information relating to pre-assessments, clinic attendances, and past admissions is available for viewing in the patient's EPR. The TrakCare A&E management functions include:

- **Registration** allows the user to create a new patient record or search for an existing patient previously registered in TrakCare, using the MPI module.

- **Major Incident Management** provides the A&E department with the ability to prepare for and accept a pre-defined number of unidentified patients from major incidents, such as multiple motor vehicle accidents or natural disasters.

- **Triage** allows users to distinguish critically urgent patients from less urgent cases in accordance with authorised protocol. The Triage feature allows the user to enter a patient's triage details, including the triage date, time, and category; this data will subsequently determine each emergency patient's priority. A specific colour is assigned to each patient based on the triage category.

- **A&E Frequent Attendees** ensures that patients with excessive emergency attendances are automatically highlighted to staff as a potential "person at risk." At-risk status is indicated by warning messages and the display of an alert icon, and a search facility is also provided.

- **Floor Plans** graphically displays waiting rooms, cubicles, and procedure rooms available within the department. At a glance, a user can see where patients are located, together with selected patient information. Moving a patient from one location (bed or cubicle) to another (including waiting areas) within the department is done using drag-and-drop functionality.

- **Multi-view** is used to search for admissions within a given date range for a location or location type.

- **Move** records a patient's movement away from the department to a temporary location, such as the Radiology department. The use of colour on Floor Plans and Worklists provides a visual cue that the patient is temporarily absent from the assigned bed or cubicle.

- **Bed Requests** is used if a patient requires admission as an inpatient to a ward. The request is recorded and transmitted to the bed manager. Allocation of a ward and bed by the bed manager will:

    - notify department that it may prepare to discharge the patient.
    - alert the ward staff of a pending patient transfer/admission.
    - retain available patient data to eliminate the need to re-key information.

- **Discharge** allows discharge details to be recorded against a patient. Assigning a discharge date and time will automatically remove the patient from the Floor Plan and patient list.

- **Four Hour Wait Tracking** - the module flags any patient who is nearing or exceeding the national target for maximum waiting time (currently four hours) by a change in background colour or text colour. This information is available from the Floor Plan view

- **Document Scanning** allows users to associate a scanned document with a patient record. For example, a picture of an injury sustained from an accident can be scanned and assigned to a specific episode.

6. Economic Appraisal *(Commercial in Confidence)*

Introduction

This section focuses on the value for money and economic assessment of the shortlisted options and the preferred option. Value for money does not necessarily mean lowest overall cost to either the Consortium or any individual Health Board as it is necessary to consider other aspects such as overall risk and fitness of purpose both functionally and technically.

The procurement process has been described in detail in section 5.1 of the Business Case. The financial components of the procurement process accounted for 25% of the overall scoring of the shortlisted options and this must be borne in mind in any overall evaluation of value for money.

Assessment Process

The methodology used to assess the economic and financial aspects was based on:

- establishing available budgets and funding for the project through on-going discussions with Boards and SG to ascertain the position;
- production of regular statements of affordability at project and Board level: based on initial supplier pricing and subsequent indicative pricing;
- regular contact with eHealth and Finance Leads: to discuss issues;
- analysis and interpretation of financial information;
- evaluation of suppliers financial templates;
- review and analysis of final tender documentation received;
- clarification of financial issues arising from inspection of the final tenders through written communication and meetings;
- focussed discussions at Board level to discuss and resolve financial matters; and
- dialogue with SG eHealth and Capital re funding and technical accounting issues.

Evaluation Team

The Financial Evaluation Team comprised:

- Gerry O'Brien, Susan Swan and Andy McLean (NHS Borders);
- Alan Sharp and Gillian Campbell (NHS Grampian);
- James Hobson and Peter Gallagher (NHS Greater Glasgow and Clyde);
- Stuart Sanderson (NHS Ayrshire and Arran);
- Carol Potter, Fiona Porter and Stephen Palmer (NHS Lanarkshire);

Results

The Finance Scoring element represents 25% of the overall scores for the shortlisted options. This is allocated as follows:

- Final Bid Price – 15%
- Economic Analysis of Supplier Cash Flows – 5%

- Pricing Flexibility – based on the pricing questions and clarification of the responses with suppliers – 5%

The following table sets out the scores allocated to suppliers.

	Final Bid Price Score	NPV Score	Pricing Flexibility Score	Total Score
AOA	**4.81**	**2.96**	**4.16**	**11.93**
Perot	**7.63**	**3.99**	**3.43**	**15.05**
Intersystems	**3.40**	**3.54**	**3.76**	**10.70**

Bidder Analysis

The following table sets out the overall Final Tender prices received for the ten year reference period and the net present value of the projected cash flows over the ten year period. These include the relevant clarifications.

	Final Tender Submissions as at Sept 2009		
	AOA System C £m	**Perot Oasis £m**	**Intersystems £m**
Licences	**6.83**	**7.71**	**12.82**
Implementation and Training	**27.99**	**17.23**	**7.80**
Recurring Support	**8.91**	**16.28**	**24.36**
	43.73	**41.22**	**44.98**

	Total 10 year price submitted @ Sept 2009 £m	Net present value of projected cash flow over 10 years £m	Prices as submitted at draft final tender in July 2009 £m	% movement in prices %
AOA	**43.727840**	**40.106756**	**47.54**	**-8.02%**
Perot	**41.219685**	**37.362984**	**51.89**	**-20.57%**
Intersystems	**44.979724**	**38.562863**	**48.22**	**-6.73%**

The AOA and Perot submissions both required clarification regarding the projected cash flows. The above tables reflect the outcome of the clarifications sought.

Clarifications from all three suppliers were sought on a number of issues and the relevant price adjustments have been made in the costs set out above.

Suppliers were required to answer a series of questions on Pricing as part of their submission on the basis that the responses form an element of the overall Finance scoring of the submissions.

Meetings with all three suppliers were held on 16 October 2009 to discuss the responses to the questions and seek clarification. All Boards in the Consortium were represented at these meetings.

Evaluation

The bids have been evaluated in accordance with the documentation provided to suppliers for the submission of final tenders. This covered the following areas:

- **Section 1 – Final Price**: the cost against the Solution Scope, which is sub-divided into 15% against the amount of the Final Price and 5% to the cash flow profile of the Final Price

- **Section 2 – Financial Model**: the flexibility of the payment profile, including options for national licences (5%)

The Final Price was scored by reference to a table and calculation, as defined in the Instructions to Suppliers for the Final Bid. This effectively set out a range of Final Prices giving rise to a calculated score out of 15%. Each supplier's price was entered into the spreadsheet table to calculate the exact score to be awarded.

For the Cash Flow Profile score the net present value of each supplier's cash flow over the ten year reference period was calculated by discounting the cash flow at the current discount rate of 3.5%, per HM Treasury Guidance. The resulting calculated net present value was then scored by reference to a table and calculation as defined in the Instructions to Suppliers for the Final Bid. This was applied in the same way as for the Final Price scoring but using a different range of values. Each supplier's net present value calculation was entered into the spreadsheet table to calculate the exact score to be awarded out of the 5% available.

The Final Price and Net Present Values of the cash flows are as set out in the above table at the start of this section.

With regard to Section 2, suppliers were required to answer a series of ten questions covering the flexibility of their pricing assumptions.

A meeting was held with each supplier to discuss the responses to the questions and seek further clarification of the answers provided. This meeting involved Finance representatives from all five Boards, the Finance Workstream Lead, the Programme Director and the Procurement Lead. On the basis of the information received and the answers provided at the meeting, the ten questions were scored, by the Finance Workstream Lead and by each of the Boards, individually for each supplier and an aggregate score out of five calculated for each supplier.

NHS Greater Glasgow & Clyde Assessment

The overall cash flows of the project and the discounted cash flows for the shortlisted options are summarised in the table below. These include all of the costs associated with

the project including licences, capital costs and non recurring and recurring revenue costs associated with implementation over the ten year life cycle of the project.

The results show a similar position to the overall Consortium position and that all of the options came within £2.6m over the project life cycle.

	Overall Cash Flow £	**Net Present Value £**
InterSystems	42,612,301	36,890,361
AOA	38,836,975	34,506,901
Perot	38,657,819	34,190,511

Conclusion

The preferred option chosen by the consortium was Intersystems which for NHSGGC was the most expensive of the options. However, the procurement process followed and the closeness of the suppliers in terms of overall cost has demonstrated that best overall value for money for both NHSScotland and NHSGGC has been achieved in the marketplace. The InterSystems option scored significantly higher in terms of functionality and technical aspects and in the overall assessment of risk of implementation. In addition, there was significant scope for all Boards to amend the cost profiles to improve affordability and overall value for money for the project post selection of the preferred supplier.

7. Risk Appraisal and Management Strategy

A risk workshop was held with key NHSGGC stakeholders to indentify a number of potential risks to the successful implementation and adoption of the national PMS solution for NHSGGC. In this section, these risks are clearly specified with responsibilities assigned to ensure they are measured and tracked on a regular basis.

Table 7.1 sets out the key risks identified for the programme, a proposed risk mitigation strategy and the potential impact of the risk.

Risk	Mitigation Strategy	Potential Impact of Risk
Programme Management & Governance		
NHSGGC is unable to complete key implementation activities due to a lack of internal resource capacity and/ or capability when required by this programme	The Board will identify key roles and skills required for the implementation and complete gap analysis to identify where these are not available within the Board. A Resource Plan will be developed to ensure capacity and capability are accurately defined as the project is initiated.	High
As both InterSystems and GGC have never previously implemented a single PMS on this scale previously then we may be compromised in terms of accurately planning and estimating work and effort required for data, testing, moving to single business processes, operational support, availability and best implementation approach recognising the scale and complexity of NHSGGC	Due Diligence activities have already taken place with the Suppliers to work through the implementation concerns. Further pre planning activities will be scheduled with the preferred supplier to work through the complexities of our implementation 'Technical scalability testing has previously been undertaken.	High
Organisation / Business Change		
The organisation will not release the necessary capability and capacity to own and manage the business change as it does not have the appropriate critical resource to fall back on.	We have a potentially a number of single points of failure in our resources. We will work together with the business to identify the necessary resource skill sets required and ensure that any clinical staff we require are given maximum clinical notice. Opportunities for back-fill /secondment opportunities will be fully explored with Directorates.	High
If there is an inability to change our organisation's culture as we deliver the PMS, we may loose some of the benefits we have identified in the business case	A comprehensive stakeholder and communications strategy will be developed in addition to a culture audit. This will ensure that in partnership with Senior Management Teams, Human Resources and Staff Side, we will work with our stakeholders and users, to	High

	ensure there is a common understanding about what needs to change, who needs to be involved and informed, urgency of change and adherence to agreed project timelines.	
Loss of confidence in the solution means that parallel (perhaps manual) systems will continue to be used denying NHSGGC the opportunity to realise the benefits from the new solution.	Thorough functional and performance testing of the solution will be completed to help ensure that the system is fit for purpose. The transition plan will also help ensure that users are not able to access the legacy systems once the switch-over is complete.	High
If the programme is not well defined and understood by all key stakeholders then we will not get the organisational commitment and ownership to enable delivery of the required business changes.	We intend to complete a stakeholder and communication plan for implementation. Engagement needs to include all relevant stakeholders, especially those directly impacted by the change. Road shows will be delivered across the NHSGGC system.	High
The degree of process change being supported or enabled by the PMS isn't fully understood and defined and there is user resistance to change.	A business change workstream will be established to identify and manage the activities that need to be completed to ensure change is managed successfully. This will include process analysis activities and a clear communication strategy. Some of the business processes that underpin the change are already in progress eg Service Improvement Managers (SIMs) for 18 weeks RTT, in addition to business process work related to the Paper-lite project.	High
Supplier		
InterSystems fails to deliver on promised new product delivery/completion of functional gaps identified during the evaluation. This will affect our implementation timescales and possible approach, resources required for testing, confidence by the business in our chosen solution.	The legal workstream has worked closely with the supplier to ensure that a robust contract has been developed that contains adequate penalties to discourage the supplier from failing to deliver. The Contract Management Function, post contract signing, will be in NHSGGC so this risk will be minimised.	High
InterSystems propose to recruit a significant number of their programme team (which will eventually result in up to 49 full time staff based in Scotland). There is a risk that if this large scale recruitment process takes longer than planned then the programme timescales could be delayed. An additional element to this	Close contract management of InterSystems with senior level sponsorship at a programme level will be undertaken to monitor how the planned resource profile is progressing against plan and to manage any issues and risks that may arise.	High

risk is that InterSystems may not be capable of scaling up resources quickly to meet changes in scope (i.e. the timescales involved in recruiting staff may not meet urgent resource needs). A recruitment delay both in recruiting the core team or additional resources to meet a particular need will lead to a reduced ability to meet deliveries and increase the project timescales.		
Clinical		
A lack of adequate clinical input leads to lack of enthusiasm and reluctance to embrace the new PMS solution.	This will need to be carefully managed through the Business Change workstream to ensure that clinicians are fully involved and buy-in to the new solution. Through the procurement we already had a number of our clinicians heavily involved in the functional assessments of the solution offerings; we intend to utilise these clinicians where possible within the implementation to ensure we bring forward their learnings and experience.	High
Functionality		
There are 33 Core PAS Requirement Gaps in the InterSystems/TrakCare product, which have a development timeframe > 6 months. Out of these 33 Requirement Gaps, 10 relate to 18 weeks RTT. If these requirements are not addressed by Dec 2010, then this will have implications for GGC meeting their targets.	This risk has been identified through the PMS procurement functional workstream. InterSystems has confirmed that they will deliver these requirements by 3 May 2010, following contract signing. The remaining requirements relating to Mental Health will be delivered within 6-9 months and the remaining 6 months + requirements will be delivered by May 2010. InterSystems will provide regular progress on these developments during regular supplier meetings. The Framework Contract has also been updated to include wording around delivery dates for RTT and CST functionalities and penalties for failure to deliver within these agreed timescales.	Medium
Technical/Operational/Infrastructure		
The required Infrastructure must be ready in time for the implementation of PMS. The ongoing roll-out of the	The roll-out of IDE is underway. The rationalisation of computer rooms is at the detailed planning stage. Contingency plans are under development.	Medium

standard desktop environment (known as the Integrated Desktop Environment [IDE]) is a key enabler for PMS implementation. It is important that these strands of work are in place in line with PMS implementation plans. Two secure and resilient computer rooms/data centre are required early in 2010/11.	The infrastructure requirements for this solution are less than its competitors.	
Financial		
There is a risk that full Project costs exceed expectation due to initial cost underestimates and/or the full extent of costs not being adequately taken into account.	The financial analysis undertaken as part of the Full Business Case will help ensure that all costs are identified upfront. NHSGGC's Financial Lead is working closely with the PMS Consortiums Financial Lead to ensure that all currently known costs and savings are factored into this Business Case.	High
If Financial cost saving measureable benefits attributed to the PMS cannot be included in the PMS Business Case as they have already been identified in other major developments where the PMS is an enabler, then this may impact on the financial justification for the PMS, particularly if the PMS contribution is not acknowledged in these business cases	This Programme will ensure that a full benefits dependency map/matrix will be generated to show the relationship between the benefits and business changes between the PMS Programme and other key projects and programmes. The PMS SRO will also ensure that where the PMS is a key enabler for other key programme of work, it is acknowledged within these business cases, that realisation will be a consequence of the PMS Programme.	Medium

In line with the NHSGGC risk management process, a rapid risk assessment was also conducted on the PMS Implementation project. The results of this assessment can be found in Appendix D.

Ongoing risk management for the PMS Implementation Programme will be carried out by the Programme Manager using the procedures developed by the eHealth Directorate Programme Management Office. As such, a risks and issues log will be maintained, monitored and escalated where appropriate in line with eHealth Programme standards. Any critical risks and issues will be included in the monthly highlight report.

8. Financial Appraisal

The financial appraisal is in Appendix E with a detailed financial profile at Appendix E(i).

9. Funding Model and Board Participation

Background

The basis of the funding of the project has been discussed with Scottish Government and Boards through an on-going process, since September 2008. It became clear in the Autumn of 2008 that some of the assumptions made at the Outline Business Case stage of the overall process were no longer appropriate and different funding solutions were required. Similarly, the development of the bids through the Competitive Dialogue process has provided a range of challenges to Boards in terms of achieving an affordable solution.

The sources of funding and affordability of the project has been reported to all Consortium PMS Programme Boards since October 2008. The reports reflected changing assumptions, financial modelling of scenarios and the updated potion with regard to supplier bids.

This culminated in the Programme developing a paper for consideration by the Scottish Government eHealth Strategy Board on 10th September 2009. This identified the financial situation of the Boards in assessing the draft final tenders provided by the bidders and the potential benefits accruing from the investment. As a result of the consideration of the paper Scottish Government agreed a further package of flexible funding with a value of up to £11m.

At the meeting to select the Preferred Bidder on 4 November 2009 all Boards were able to confirm that all the supplier solutions were affordable to them.

Key Assumptions regarding Funding Sources

The key assumptions with regard to the funding sources for the project are:

- Scottish Government will provide capital to cover the cost of the software licences on an unsupported capital basis;
- Boards will provide capital to cover the costs of hardware / infrastructure;
- Boards will use supported capital, where available, and the impact of funded capital charges is taken into account;
- Boards will capitalise implementation costs where appropriate and where funding is available;
- A flexible package of funding from SG eHealth totalling £11m is available and is allocated to Boards on the basis of supplier cost profiles, as set out in the final tenders received from the preferred bidder on 21st September 2009;
- Non recurring SG eHealth funding of £3.75m over two years is allocated to Boards on the basis of supplier cost profiles, as set out in the final tenders received from the preferred bidder on 21st September 2009;
- The payment profile of the preferred bidder is subject to final negotiation between each Board and the preferred bidder;
- Capital charges have been calculated using a depreciation period of 5 years for hardware and 11 years for software / implementation costs. The rate of return is assumed to be 0%, based on an indication by SG that this will change from the current rate of 3.5% with effect from 1 April 2010. A formal announcement is expected shortly;
- Board recurring revenue and non recurring revenue funding is as determined by Boards;

- Board CRES arising from benefits is as determined by Boards; and
- Internal brokerage of capital / revenue is as agreed by Boards.

Each Board provided a ten year forecast of financial projections covering:

- Capital for licences;
- Other capital;
- Recurring revenue; and
- Non recurring revenue.

These forecasts have been used as the basis of assessing the affordability of the project for each Board. Boards were asked to confirm the robustness of their projections and the inclusion of the projected sums in their financial plans.

In the clarification discussions with suppliers, the issue of flexibility of supplier payment profiles was discussed. Suppliers also provided statements on their ability to provide flexibility of payment profiles and their willingness to work with Boards to flex payments to take into account individual Board Capital and Revenue funding profiles. All suppliers showed a considerable commitment to a flexible approach.

Positive discussions with InterSystems about payment profiles have taken place with no outstanding issues unresolved.

10. Summary of the Contract Structure

Contractual Framework

The overall contractual framework consists of a **Framework Agreement**, which NSS will sign and which allows Customers (NHSScotland Health Boards as well as other NHS Scotland bodies and NHS Northern Ireland bodies) to call off a system and services from the chosen supplier. The form of **Call Off Contract** to be used by Customers is appended to the Framework Agreement and has been heavily negotiated with the Bidders, such that at the time of call off by the Board, only those issues specific to the Board will need to be negotiated and agreed with the Preferred Bidder, InterSystems. Such issues include:

- the Specification of the Board's chosen System;
- the Implementation Plan;
- the Acceptance Tests applicable to the System; and
- the Pricing/Payment Schedule.

The Framework Agreement is best described as an "enabling agreement" in that its purpose is to facilitate call off by Health Boards of their chosen solution. Call Off Contracts will be entered into between InterSystems and the Board. Under the Call Off Contract, InterSystems commits to implement and then provide support services for "the System", which is the PMS core solution and any optional modules that the Board opts to take.

The Call Off Contract covers two main phases:

- the Implementation Phase; and
- the Support Phase.

Linked to these phases is the agreed warranty of the System to be provided by InterSystems, which is a three month period from the date when the System goes live. The warranty period runs concurrently with the beginning of the Support Phase (see paragraphs below).

Implementation Phase

During the Implementation Phase of the Call Off Contract, InterSystems will deliver a System that meets the agreed Specification in accordance with the agreed Implementation Plan. The Board will test the delivered System in accordance with agreed Acceptance Tests and, should the System pass the Acceptance Tests, it will go live. The Implementation Plan will be agreed between the Board and InterSystems prior to signature of the Call Off and will contain key implementation milestones (we expect milestone payments to attach to at least some of these) and the Board's corresponding responsibilities in connection with the implementation.

Provision has been made for Liquidated Damages to attach to some (if not all) of the implementation milestones, which provides an additional remedy for the Board should InterSystems be late in delivering against that milestone.

The development of agreed functionality around RTT and CST has been identified as a key milestone by Boards, which has been considered sufficiently important as to merit specific treatment. InterSystems are being asked to confirm that RTT and CST development will be a key milestone in InterSystems' Implementation Plan with Boards.

The RTT/CST milestone will have attached to it:

- a milestone payment, which shall not be payable until successful delivery against the milestone;
- liquidated damages, which will provide further remedies for the Board should InterSystems fail to deliver on time; and
- a right for the Board to terminate the Call Off Contract if InterSystems fails to deliver on time.

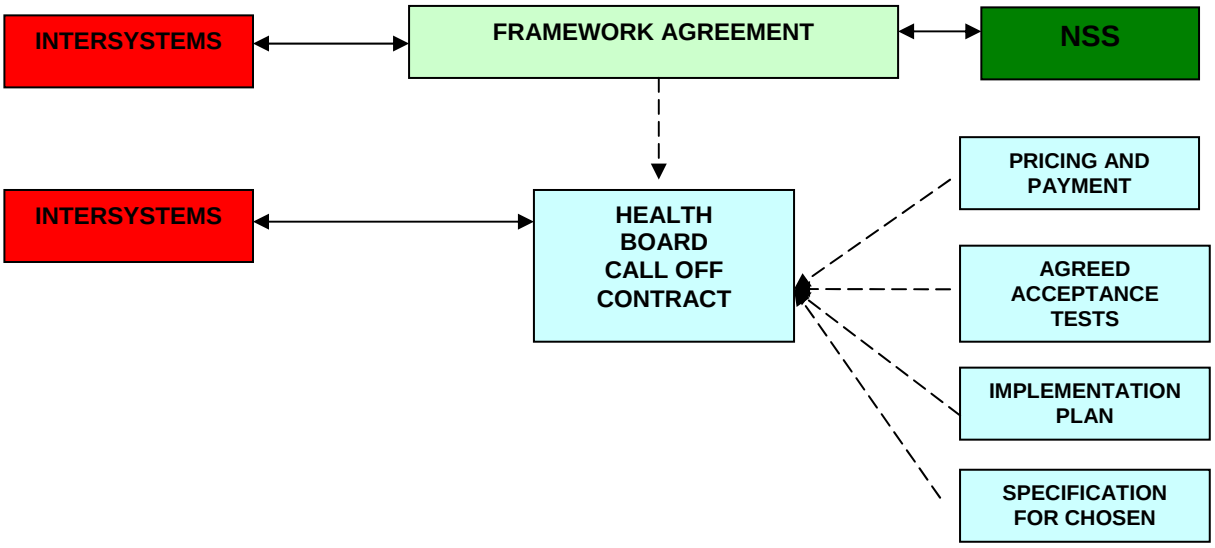
The detailed wording around this commitment in respect of RTT/CST is to be agreed with InterSystems in a meeting to clarify and confirm their Final Bid commitments following their appointment as Preferred Bidder

Support Phase

Following go-live, the Call Off Contract enters the Support Phase, where InterSystems offers support and maintenance services for the System. The support and maintenance services are to be provided in accordance with agreed service levels, to which service credits attach for failure to adhere. As well as measuring response and fix times according to agreed priority levels of incidents, InterSystems is also measured against overall System availability.

Legal Relationship

The legal relationships between the various parties can be summarised as follows



Summary Of Main Provision Of Contract

Term and Termination

The term of the Call Off Contract is to be agreed at the time of calling off, but InterSystems were been asked to provide prices on the basis of a 10 year term. The Board has the ability to terminate the Call Off Contract for convenience, but will have to pay Breakage Costs to InterSystems in the event of such a termination

In addition to termination for convenience, the Board is also entitled to terminate the Call Off Contract in various other circumstances, including: insolvency, material breach, damage to the Board's reputation, extended step-in, built-up Service Points, change of control, drop in InterSystems' financial standing or termination of the Framework Agreement

InterSystems does not have the ability to terminate the Call Off Contract, except in circumstances of non-payment by the Board and then only after additional time has been given to pay.

InterSystems' Liability

InterSystems has accepted an obligation to warrant that the System complies with the Specification throughout the life of the Call Off Contract. Therefore, if the System was found not to comply then the Board would be entitled to exercise contractual remedies against InterSystems, including service credits, damages for breach, step-in and termination.

The System will not exit the Warranty Period successfully until certain criteria are met, which are that during the period of one month (which period starts no more than two months after the Go-Live Date), there have been no Severity Level 1 Problems.
In addition, InterSystems has agreed to a Warranty Retention sum, the amount of which will be agreed on a case by case basis, and which will not be released to InterSystems unless certain criteria are met, which are that the System has no unresolved Severity Level 1 and Severity Level 2 Problems and that the number of Severity Level 3 and Severity Level 4 Problems has fallen by 50% from the number reported two months after the Go-Live Date.

InterSystems has negotiated liability caps which are based on a fixed financial cap, regardless of the price due under the Call Off Contract. The cap is £10M during the Implementation Phase and £5M during the Support Phase. In addition, the chosen supplier has negotiated a global liability cap of £25M, which applies across all Call Off Contracts.

The liability cap does not apply to the indemnities which have been granted by InterSystems in relation to death or personal injury, breach of data protection law, breach of the data protection, confidentiality and FOI clauses in the Call Off Contract and IP infringement.

Intellectual Property

The overall position in relation to intellectual property rights is as follows:

- InterSystems retains ownership of its pre-existing IPR and licences this to the Board;
- the Board retains ownership of any pre-existing IPR required in respect of the System and licenses this to InterSystems for the purposes of delivery of the System only;

- where InterSystems develops software specifically for the Board ("**Specially Written Software**"), ownership of this is assigned to the Board. To be part of the category, the software must be created specifically to meet the Board's Requirements, be used to provide services under the Call Off Contract to the Board and be paid for by the Board;

- where the Board is granted a licence to use InterSystems' Background IPR for the purposes of making use of the Specially Written Software, provided that the Board commits that it will not seek to unbundle any embedded Background IPR or use that Background IPR on a stand-alone basis; and

- InterSystems' software licensing has been agreed to be on a concurrent user basis. This means that a specified number of users will be licensed by each Board to access the System **at one time**.

InterSystems has estimated the following licence capacity for each of the Consortium Boards:

Board	Beds	Core Users
NHS Ayrshire & Arran	1901	570
NHS Borders	630	189
NHS Greater Glasgow & Clyde	7512	2254
NHS Grampian	2836	851
NHS Lanarkshire	2361	708

Following implementation and go-live of the System, InterSystems intend to determine that Boards have sufficient concurrent user licences by observing the actual number of concurrent users at each Board one year following go-live. If the actual concurrent users is **more than** those estimated for the Board per the table above then InterSystems has agreed to provide the additional users at no additional licence or support charge. If the actual number of concurrent users is **less than** the number estimated per the table above then the Board can either keep the additional concurrent user capacity or choose to drop down to the lower amount in order to lower ongoing support costs (albeit that there will be no licence fee refund).

When the required concurrent user capacity has been determined for a Board, any additional user capacity must be purchased by the Board.

Customer Responsibilities/Assumptions and Dependencies

InterSystems' responsibilities under the Call Off Contract are subject to the Board meeting its agreed "Customer Responsibilities" and to certain agreed "Assumptions and Dependencies" remaining true. The consequences of failure of either of these are relief for InterSystems from its contractual obligations. This relief can take the form of an extension of time and/or compensation for loss suffered by InterSystems.

Governance

The Call Off Contract contains a governance structure whereby Call Off Contract Representatives from each of the Customer and InterSystems meet regularly to manage the Call Off Contract. In addition, the Call Off Contract envisages a Call-Off Level Management Forum, which has the role of providing executive level review of the delivery and receipt of the services and the System, providing a holistic review of the overall commercial and strategic relationship between the Board and InterSystems and discussing and sharing areas of common interest in relation to overall business strategy.

Compliance with Standards and Policies

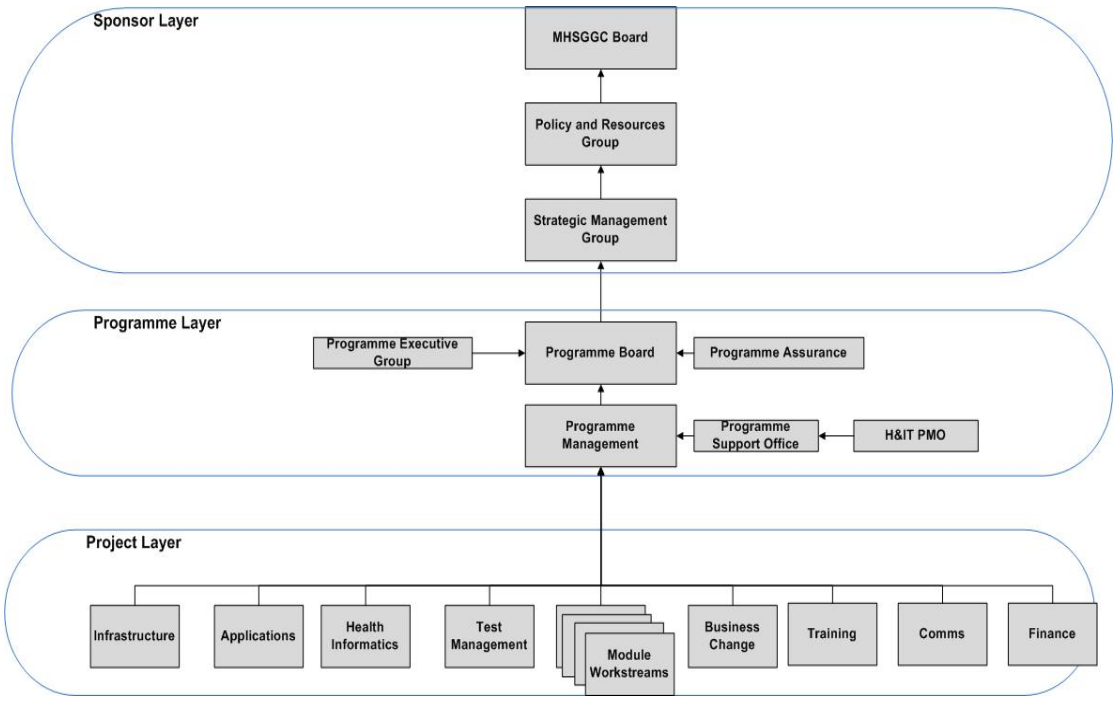
InterSystems is obliged to comply with the NHS Scotland standards and policies and security requirements, as well as any additional standards and policies that apply "locally" to the Board and which are agreed as part of the Call Off Contract.

11. Programme Management

Programme Delivery Structure

The proposed implementation project structure and governance arrangements have been structured into three layers, consistent with PRINCE2 best practice. This consists of a Project Team and Programme Board which reports to the Strategic Management Group.

Figure 11.1.1 Programme Governance Structure



Sponsor Layer

The Programme Sponsors provide the necessary 'business' support for the Programme Manager. The Strategic Management Group (SMG) will be the most involved sponsor in the PMS implementation. However, the NHSGGC Board carry the ultimate responsibility for the programme of work. Various other key groups and stakeholders will receive regular reporting updates of the programme implementation. These groups will include; Community Health Partnerships, Mental Health Partnerships, the HI&T Steering Group and the national eHealth Programme Board.

Programme Layer

Programme Board - The Programme Board will act on behalf of the Strategic Management Group to govern all aspects of the Programme. The delegated authority from the Strategic Management Group requires compliance with the operating principles and thresholds as set out in the Strategic Management Group Terms of Reference. A Terms of Reference has

been finalised for the Programme Board and includes details of Board membership, this can be found in Appendix f.

Project Assurance - This group will provide verification that the project remains consistent with, and continues to meet, a business need and that no change to the external environment affects the validity of the project. The activities that this group will be involve in include:

- Quality Reviews;
- Gateway reviews; and
- Project audit through examination of documentation and interviews.

Programme Executive Team: This group will contain a subset of key representatives from the Programme Board and will meet on a more frequent basis that the Programme Board. This will help ensure that critical risks and/or issues are actioned or escalated quickly.

Programme Support Office (PSO) – The PSO will provide the necessary supporting services to ensure the PMS Implementation Programme is being effectively and efficiently directed, managed and delivered. In particular, it will provide the following services:

- monitor programme's budget;
- set up and maintain Programme plans and risk, issues and other registers;
- provide a general secretariat function, looking after the Programme's document library and configuration management. As part of this it will collect and share information from across the Programme, and will monitor overall progress;
- manage Programme-wide change control and impact analysis; and
- look after internal Programme communications, including progress reporting.

The HI&T PSO will provide expert guidance and support to the PMS PSO as and when required and will play a key role in providing the processes to be implemented.

Project Layer

The delivery of the Programme will depend on the various workstreams detailed within the project layer of the diagram.

A module workstream will be established for each functional module within the scope of this first phase of implementation: Core PAS, Order Comms, Clinical Support Tools and A&E. Each of these module workstreams will be resourced with the following roles:

- Project Manager;
- Deputy Project Manager;
- Supplier Experts;
- Business Leads;
- Subject Matter Experts (Admin, AHP, Imaging, Labs, Medical, Nursing, Pharmacy)

- HI&T Business Analysts (sourced from the Applications workstream); and
- Further HI&T workstream Leads as required.

Each functional workstream will be responsible for the delivery of its module across all four geographic sites (Clyde, North, South and Yorkhill) as this will ensure a consistent approach to implementation. It will also ensure that the knowledge and lessons learnt are transferred from site to site. The functional workstreams will be adequately resourced to ensure that the teams can cope with simultaneous site implementations. The rationale for approaching the implementation on a site by site basis is explored in Section 12.

The Health Information and Technology Directorate (HI&T) will deliver many underpinning support services for the PMS implementation, including hosting and deployment infrastructure, application configuration and management, help desk and support services, technical integration with existing systems such as Labs and SCI Store, and a broad range of Health Informatics areas of work including data migration and Health Records business changes to align to the new single PMS system. In preparation for the removal of the old PAS and HISS systems the Directorate must also undertake wider 'internal' work to realign integration with numerous other IT systems which rely, for example, on exchange of patient demographics.

To ensure all PMS-specific HI&T workstreams are delivered effectively, and that inter-dependencies with the wider HI&T work are appropriately managed, the HI&T support to PMS will be grouped into a single sub-programme with a dedicated HI&T programme manager.

NHSGGC has undergone a major reorganisation of services and the implementation of the new single Patient Management System will enable the Board to move to the next level of achievement of performance; requiring the standardisation of clinical, administration and management processes and data and systems. The programme of work will have dedicated workstreams for business change management, communication, finance and training.

12. Implementation Plan

Implementation Approach

NHSGGC will adopt an incremental approach to implementing the full suite of available modules available within the TrakCare solution. This will ensure that:

- costs are controlled;
- lessons learnt from the initial phase of implementation inform subsequent implementations;
- each new module is subjected to a business case to ensure costs are justified; and
- the organisation has the capacity to implement the level of change associated with such significant system replacement.

NHSGGC has committed to calling-off the following modules within the first phase of implementation:

- Core PAS (including mental health administration);
- Order communications;
- Clinical support tools; and
- Accident and Emergency.

The initial focus has to be on replacing existing functionality which is currently provided by fourteen separate systems across four former geographic areas (North, South, Yorkhill and Clyde). However, there will be additional strands of activity during this period which will consider the options for rolling out new functionality (ie providing Order Communications and Clinical Support Tools in Clyde and Clinical Support Tools in North).

Implementation Sequencing

The sequencing of the implementation in NHSGGC is primarily driven by the geographic composition of the Health Board and the systems that are currently in use within these sites.

The ordering of the implementation, based on increasing complexity of legacy data to be migrated and the functionality to be maintained, is proposed as follows:

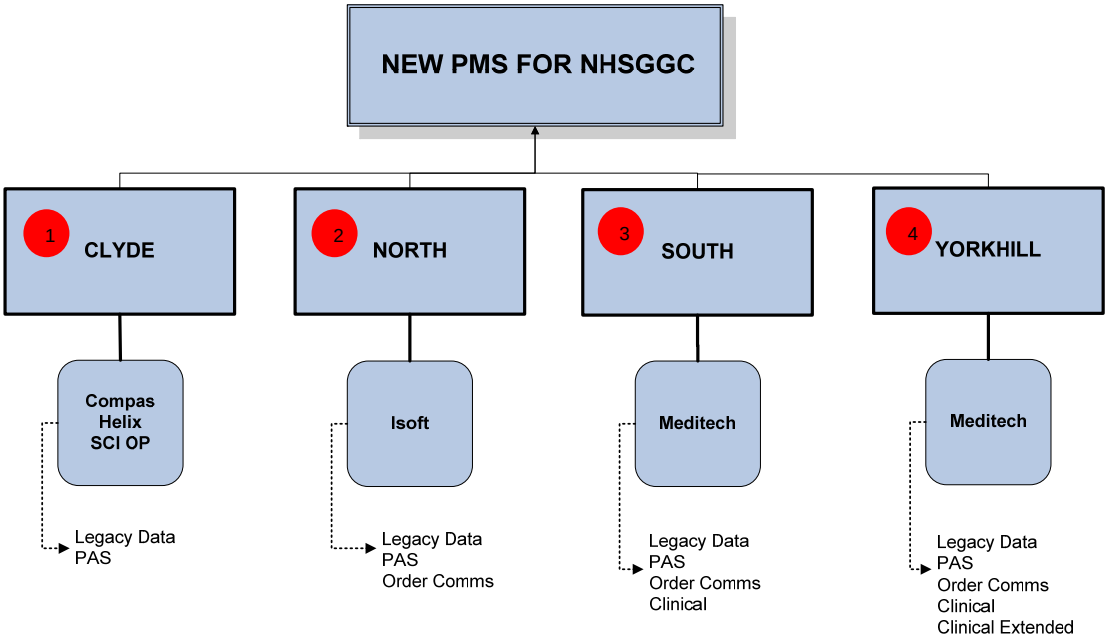


Figure12.2.1 – Implementation of PMS in NHSGGC legacy data to be migrated from underlying information systems

Each implementation will be approached as a single project, allowing the organisation to start small, over-resource the early implementations and learn in a reasonably controlled environment before moving on to larger and more complex sites. The additional advantage of starting in Clyde is that it can be tackled as discrete elements: Inverclyde, RAH and Vale of Leven with each site operating a different PAS (COMPAS, Sema Helix and SCI Outpatients). These systems also offer the least functionality, therefore the benefits offered by the enhanced functionality of PMS will start to be realised from the outset of the implementation.

If the data migration involved in the Yorkhill implementation can be made less complex than currently anticipated, it may then make more sense to tackle this site prior to commencing the South Glasgow implementation. This will be further examined in the detailed planning phase with InterSystems in late 2009/early 2010.

Within each site implementation, the deployment of the PMS modules will be conducted simultaneously.

Key Milestones

The following diagram depicts the high level implementation plan based on the approach detailed above. This will be subject to review following detailed discussions with InterSystems in late 2009/ early 2010.

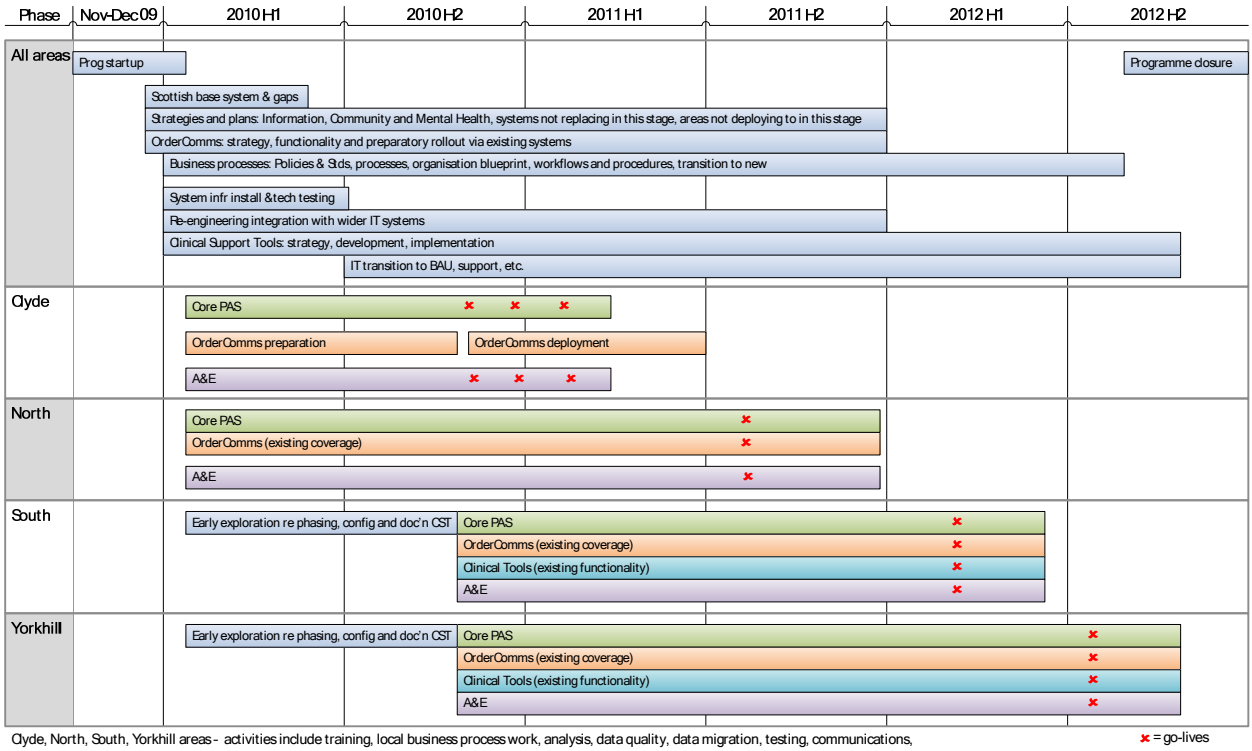


Figure 12.3.1 High level implementation plan

The key milestones as detailed in the plan are summarised below:

Module / Site	Clyde	North	South	Yorkhill
Core PAS	Early 2011	Summer 2011	Spring 2012	Summer 2012
Order Comms	Summer 2011	Summer 2011	Spring 2012	Summer 2012
Clinical Support Tools	TBC	TBC	Spring 2012	Summer 2012
A&E	Early 2011	Summer 2011	Spring 2012	Summer 2012

It should be noted that the main objective of this plan is to communicate the go-live dates for replacing the existing functionality in the four sites, additional activities will run in parallel with the implementations which will include:

- establish the Scottish Foundation System (SFS): InterSystems is proposing establishing the SFS in conjunction with key personnel from the consortium Health Boards who will be responsible for all application and integration decisions for the SFS. By the end of this process, the joint team will have established the finalised scope and Programme Plan for the implementation phase and have produced the Scottish Foundation System;
- development new business processes;
- install system infrastructure and conduct technical testing;
- develop strategy for introducing new functionality (Order Communications and Clinical Support Tools); and
- IT transition to BAU, support etc.

It is therefore anticipated that this first phase of implementation will be completed by end of 2012.

Resources

PMS is NHSGGC's largest ever implementation of a single IT system. It is a complex business transformation and HI&T programme of work and has very significant resourcing requirements. The PMS Resource Strategy proposes that all lead/project management roles are filled on a dedicated basis and all other roles are risk assessed and prioritised to assure an appropriately balanced approach. The options include:

- dedicated resource moved across from business as usual teams;
- part-time resource from business as usual teams;
- dedicated resource seconded internally and back-filled;
- externally recruit resources;
- use existing HI&T support resources through the programme to give wide exposure and transition of PMS knowledge eg utilise the implementation site's support staff.

Predicted resource requirements have been benchmarked against the experienced views of the three final PMS bidders, specifically after due diligence work with NHS GGC each supplier presented their breakdown of expected resourcing from the Health Board (excluding business change, benefits management, BAU and support) and these discussions have informed the breakdown of the roles and numbers provided below. Resources have been split into two types: 'Business' and 'H&IT'. Please note that these numbers are based on peak time requirements:

Figure 12.4.1 – Business Resource Breakdown

		Number Required	
		FTE	**Part Time & BAU**
Business Resource	Programme Sponsor		1
	Programme Director		1
	Programme Manager	1	
	PMO Admin Support	2	
	PMO Governance		1
	Senior Clinical Lead	1	4
	Functionality Project Manager	4	
	Deputy Functionality Project Manager	4	
	Business Change Lead	1	
	Nursing Lead	1	11
	Midwifery Lead		2
	AHP Lead	1	5
	Imaging Lead		1
	Labs Lead		1
	Pharmacy Lead		1
	Management Lead		1
	Admin & Clerical Lead		1
	Finance Lead		1
	Contract Management Lead		1
	Communication Lead	1	
	Stakeholder Engagement Lead		1
	Organisation Development Lead	1	11
	Training Lead	1	
	Training Facilitator	2	
	Trainers		30
	Key Operators		60
	Ongoing support		BAU Staff
Total		**20**	**134 + BAU Staff**

Figure 12.4.2 H & IT Resource Breakdown

		Number Required
		FTE
H & IT Resource	Programme manager	1
	Project managers	4
	IT Infrastructure	3
	IT Applications & Analysis	8
	IT Applications Development	3
	IT Systems Integration	3
	Health Informatics – Data migration	3
	Health Informatics – Data quality	9
	Health Informatics – Business Intelligence	2
	Testing support	2
	Health Records business change	2
	Ongoing support	BAU Staff
Total		**40 + BAU support staff**

Resource Gaps

A gap analysis has been conducted on the proposed high level implementation workstreams. The results are detailed in the table below:

Workstream	Description of Gap	Rating
Application Management	Lead to be filled externally, other staff drawn from mix of internal and external options. Particular gaps are on potential numbers of business analysts, although this is being reviewed internally to explore the option of redirecting internal development resource with the appropriate skills.	Amber
Health Informatics	Lead to be filled internally, other staff drawn from mix of internal and external options	Amber
Infrastructure	Lead to be filled internally, other staff drawn from mix of internal and external options.	Green
Overall H&IT Programme	Already filled via fulltime secondment of an existing senior manager within HI&T	Green
System Integration	Existing temporary staff to be re-deployed to PMS programme and limited existing staff.	Amber
Test Management	No internal specialists, roles to be filled externally though low risk as more important to have skilled testers than business knowledge	Amber

Various options for filling these gaps are explored in the table below:

Option	Advantages	Disadvantages	Proposed Action
Share resource with other boards	More efficient use of specialist resource. Sharing of knowledge.	Most resources on GGC scale are full time roles. Creates inter-dependencies and less control.	Nov 09 – being explored through consortium work.
Maximise use of BAU resource	More efficient use of specialist resource	Risks of less effective project team and delivery (staff collocating). Risk of delays while staff reduce current commitments. Risks associated with matrix management and natural tendency to prioritise operational issues and short-term work.	Nov 09 – actively implementing as develop detailed resource plans and deliverables for each workstream.
Transfer responsibilities to supplier	Less risk sits with GGC.	Explored in procurement stage and costs prohibitive. Cost of any scope changes / change control.	Nov 09 – to be explored further with InterSystems during start-up work.
Utilise 'risk-based testing'	Reduces amount of testing work, so resources.	More complex, experienced test management required, as name implies focuses on high risk areas so potentially not appropriate.	Nov 09 – exploring further within HI&T and wider subject matter experts.

Consortium Board Readiness Assessment

The Programme's Gateway Review 2 recommended reaching out to other public sector procurements that used the competitive dialogue procedure to share lessons learned and an independent readiness review was identified as a valuable exercise in assessing preparedness before moving into implementation phase. The PMS readiness review was therefore initiated to test the consortium boards' readiness for moving from procurement into implementation, provide visibility of this at a Programme level, and assist in preparations for Gateway 3.

The report indicated that:

> 'In general, the review team found that a good deal of thought has already been given to implementation planning. While the focus to date has been on procurement, the level of activity undertaken and the groundwork already completed stands the Programme in good stead for implementation.'

The recommendations from the report focused around the following areas:

- business cases;
- affordability;
- benefits;
- implementation model;
- contract management model;
- implementation planning;
- risk management; and
- stakeholder and communications plan.

Detailed findings from the review, together with steps that NHSGGC have taken or plan to take to address the recommendations are provided in Appendix G.

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13. Equality and Diversity Impact

Introduction

NHS Greater Glasgow and Clyde Board is committed to reducing health inequalities and reducing discrimination within the Board Single Equality Scheme. An integral component of this commitment is the completion of Equality Impact Assessment (EQIA) to ensure that policies, systems and services do not:

a) unintentionally discriminate against people on the basis of sex, disability, race, faith, sexual orientation or age, or against particular marginalised groups;

b) or has a known or potentially different impact on different groups.

The scale of the new single Patient Management System (PMS) development is such that this information system will have a major impact on the organisation in terms of scale or significance, in relation to patient management, patient data and patient experience. As such, the preferred solution has been subjected to an EQIA to identify any areas which need to be addressed in line with EQIA guidelines.

Approach

Guidance was sought from the NHSGGC Equality and Diversity representative and it was agreed that the EQIA process would be conducted in 2 stages:

Stage 1 – Data Collection and Analysis

The PMS requires to evidence best practice in relation to data fields and reporting potential. It was proposed that a desktop exercise be undertaken to ensure the preferred solution is fully compliant with equality legislation, related national guidance, and that the data collection and reporting potential supports the organisational needs in relation to service planning and patient profiling.

Stage 2 – Functionality Assessment

The operational function of the PMS has the potential to both positively and negatively impact on groups of patients and a detailed analysis (full EQIA) of the areas where most impact is likely is proposed. A full EQIA should be undertaken with both system developers and principle users. The purpose of the EQIA will be to identify system gaps and opportunities and to agree appropriate actions or change control to address these.

Stage 1 - Data Collection and Analysis

A ‘desktop’ exercise was undertaken that involved a number of local discussions between members of the PMS Implementation Team, Corporate Inequalities and Acute Equalities staff, review of key documents, data systems and consultation with key national contacts at ISD and Health Scotland.

This exercise identified the following:

- Absence of a mandatory national data set cognisant of Equalities Legislation relating to sexual orientation;

- Availability of new National guidance on best practice for data collection *ie 'Equalities monitoring and profiling guidance and recommended questions' NHS Health Scotland (September 2009).* This guidance requires action to be identified by December 2009 and completed during 2010/11;

- Specific legislation around needs of 'vulnerable groups' including Children and Adults. *Adult Support and Protection Act (2009) and The Audit and Review of Child Protection (2002) / 'Children and Young People Experiencing Domestic Abuse: Guidance Note for Planners (2004)';*

- Consideration of 'cutting edge' good practice that may enhance the PMS ahead of time e.g. *'Adult Support and Protection Act (2009)' defines vulnerable adults in a way that excludes adults who may be at risk of harm from others eg victims of Gender Based Violence but are not vulnerable in other ways;*

- Current capacity of data systems to import data via SCI-Gateway using General Referral Protocol or the need to complete on admission data collection;

- The ability of PMS to generate reports for discreet patient groups based on data index or to create patient profile information across relevant fields.

The product of this exercise includes:

The completed EQIA identified a range of recommendations and actions to be addressed through the PMS Implementation programme and data collection practice. This can be summarised as follows:

- changes to data fields in line with best practice; and

- consideration of the best way to address data availability and collection.

Stage 2 - PMS Functionality

The functionality assessment is to consider whether 'how the information is used' or 'how the system works' impacts on the different groups, and how can we maximise the functionality to give best service to key groups or how we can use system to avoid discrimination eg the generation of letters in different languages.

It is proposed that a detailed EQIA be undertaken on the preferred solution to ensure the application of the 'real' system is considered. This will enable the identification of any gaps or opportunities that can be developed into actions. These may not have any impact on the IT specification itself, but on how it is used in operational practice.

It is anticipated that the timescale for completion of the EQIA will be prior to the contract signing at the end of January 2010.

Key areas for consideration within the detailed EQIA will be:

- referral management
- scheduling

- inpatient management
- clinical tools
- patient alerts

Participants in the EQIA will include: Corporate & Acute Equality leads, Health Records, HI&T Business Analyst, Nursing, Service Planning, and PMS Programme Manager.

Conclusion

The PMS development offers a unique opportunity to consider and plan services to meet the needs of individual and groups of patients. The initial specification is well placed to address the majority of issues and, with some additional refinement and consideration, areas of additional value are being identified by the process of EQIA. Activities do not highlight any areas of concern and identified actions will be bringing in line with areas of best practice.

14. Benefits Assessment and Realisation Plan

The implementation of a national PMS solution will result in a number of benefits for NHSGGC. Key stakeholders have been consulted in the identification of these benefits and these have been grouped into two categories:

- quantifiable benefits that can be identified, monitored and measured pre and post implementation; and
- non quantifiable benefits.

Quantifiable Benefits

The table below summarises four quantifiable benefits associated with the implementation of the PMS solution in NHSGGC. These include a specific and measurable target to assist the benefits realisation process. Each of the benefits has been mapped to one or more of the Institute of Medicine's six quality dimensions.

#	Benefit	Description	Quality Dimension
B1	Single System and Patient Safety	The implementation of the new single PMS offers benefits in terms of patient safety relating to cancer tracking; joined up patient data; improving bed management which with visibility of beds will enable sustainability of the 4hour A&E wait target and provide opportunity to reduce A&E attendances. Patient safety relates to the effectiveness of delivered healthcare. It is about enabling better decisions, managing risk, reducing the opportunity for error and, ultimately, improving outcomes for patients. The new single system with a single MPI contributes to the reduction of errors and thus reduction in the management of risk Target: PMS is a key enabler of ASR etc and will contribute to Acute Division CRES. This will be specified in more detail as we move towards implementation.	Safe, Effective & Efficient
B2	Improved clinical and operational functionality	The implementation of the new PMS solution will provide a standard set of functionality, clinical and operational, across all of NHSGGC. The functionality available will, as a minimum, replace current functionality and make this available across all sites. Additional functionality will also be implemented to support the NHSGGC strategic aim of an Electronic Patient Record. Target: in line with B1 above.	Safe, Effective & Efficient
B3	Achievement of Performance Measures	The implementation of the new single PMS offers benefits in terms achievement of performance through improved information for reporting and monitoring. Supports achievement	Safe, Effective & Efficient

		of 18 weeks RTT; 31 day cancer target; delayed discharges; 4hour A&E wait and reduction in A&E attendances. Ability to track patients across the system offers potential to minimise risk of harm to patients. • 95% of cancer patients will start treatment within 31 days from decision to treat; • discharge summaries provided to GP practices electronically within 72 hours of discharge; • Reduced length of stay;* • Reduced DNAs; * • Improved day case rates;* • Fewer delayed discharges.* *Percentage improvements will be agreed during first quarter 2010/11	
B4	Cost Avoidance	Fundamentally the single PMS system is replacing 14 or more current IT systems from many different suppliers. Each of these systems currently requires separate upgrades to support new functional requirements (e.g. 18 weeks RTT) and to maintain ongoing capacity and support. Cost avoidance: approximately £560K between 2009-2011, and potential further cost avoidance during and after this depending on the volume of changes and new IT systems requested.	Efficient

It was decided not to identify more than four quantitative benefits to minimise the burden associated with data collection. Associated benefit profiles for each target are set out in Appendix H. Data on benefits B1 (single system and patient safety), B2 (improved clinical and operational activity and B3 (achievement of performance measures) will be collected by auditing current practice prior to system implementation and then again post implementation. As B4 relates to cost avoidance this cannot be tracked in the same way as the other benefits.

Qualitative Benefits

In addition, to the four quantifiable benefits associated with the implementation of the PMS solution a number of non-quantifiable (or intangible) benefits are likely to be realised. A number of these are summarised in the table below:

No.	Benefit	Description	Quality Dimension
Integrated Care Pathway and Patient Safety			
B5	Single Master Patient Index	Minimise the risk of harm and improve patient safety with avoidance of inappropriate treatment through the mis-identification of patients.	Safe
B6	Electronic Laboratory and Imaging Requesting	Reduce unnecessary re-testing and radiation exposure, as previous relevant results will be presented before permitting re-test requests.	Safe Efficient
B7	System Alerts	All clinicians have the opportunity to view care on a multi-disciplinary and role-based access basis. This function aligns with patient safety in terms of early notification of child protection and vulnerable adult service provision issues.	Safe
Enhanced Patient and Carer Involvement Experience			
B8	Complex Scheduling	Improved co-ordination of appointments to avoid having to return to visit different professionals on different days by appointing in a sensible way.	Patient centred
B9	Bed Management	Less chance of hospital admission being cancelled due to 'lack of beds'.	Efficient
TGP Communications			
B10	Standardisation of discharge letters	Standardised data sets enable electronically efficient transfer of discharge information to the GP and / or extended primary care team for follow on care. This benefit further relates to the organisation's transformational theme (8) for driving integration of acute and community services to improve the experience of patients.	Timely Timely
Business Intelligence and Service Planning			
B11	Single standard set of reports	Managers will have access to real time information to support service provision and performance management i.e. 'the self service dash board'; with the increase in range, quality and availability of clinical data services can be planned more efficiently.	Efficient
B12	Clinical Risk Management	Better access to quality data enables decision making and ability to determine effectiveness of specific care regimes; whilst minimising risk and supporting improvements in governance.	Safe
Equality and Diversity and Public Health Planning			
B13	Modern PMS	Data captured and entered can be extracted and used for identifying disease trends, targeting unmet need and disease surveillance.	Equitable

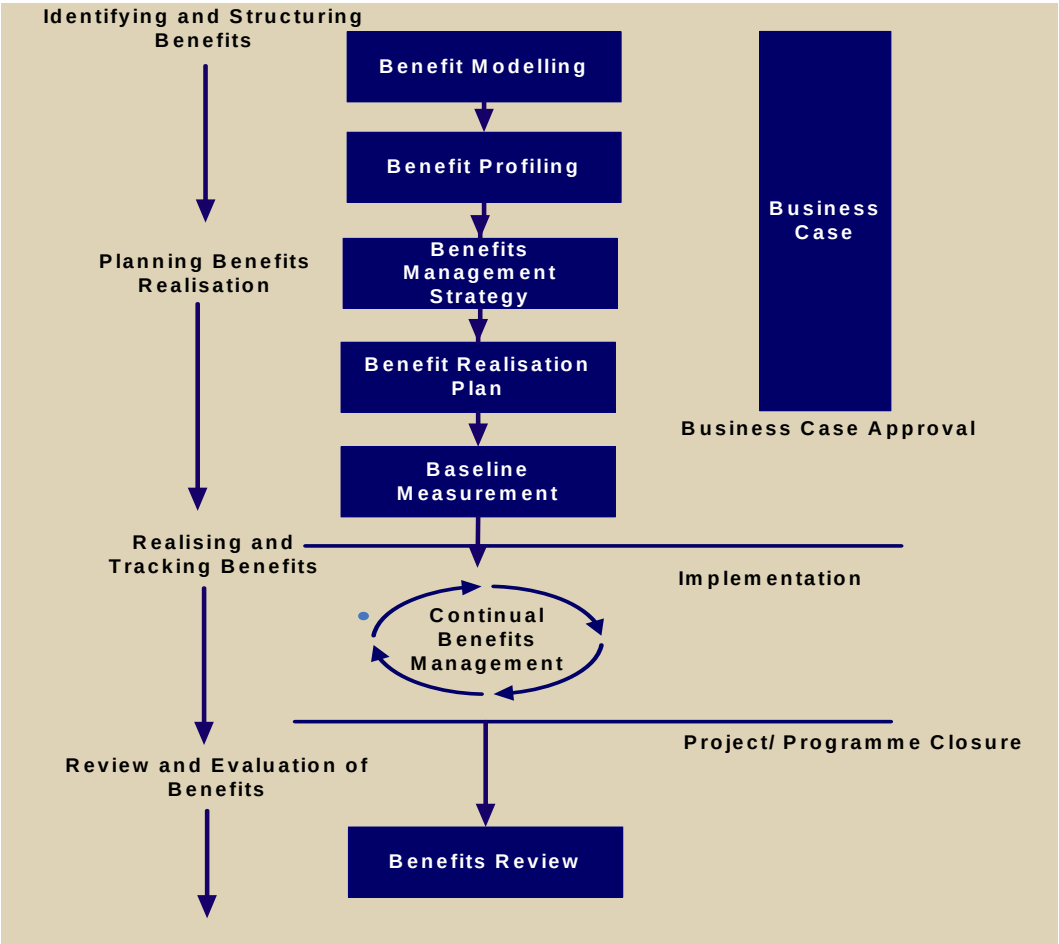
These benefits will not be measured as part of the benefits realisation process, however, the post project evaluation will consider the extent to which these have been realised and delivered as part of the PMS solution.

Benefits Management Approach

The PMS implementation programme will follow a Benefits Management approach based on the principles of the national eHealth Benefits Management Strategy. The key steps of this approach are detailed in the following diagram:

Figure 14.3.1 - Benefits Management Approach

Figure 7 – Proposed Benefits



Management Approach

Strategic Benefits Evaluation

Benefits evaluation has comprised one of the key parts of the PMS procurement. As part of the evaluation exercise, suppliers were asked to address how their system will benefit NHS Scotland in respect of pre-defined strategic benefits. The strategic benefits were grouped into seven areas and the suppliers were asked to provide, for each section; how their system currently contributes towards realising the benefit and any future plans and deliverables to extend the strategic benefit.

The benefits addressed were:

- Patient Safety;
- Pathway Improvement;
- Communications;
- Efficiency;
- Access;
- Discharge Planning;
- Service Planning.

The preferred bidder scored well in this area and NHSGGC are confident that the preferred solution will be a key enabler in helping the Board realise significant benefits in these areas. The strategic benefits evaluation approach and those involved in evaluation are set out in Appendix I.

15. Evaluation Plan

NHSGGC will adopt a formal approach to evaluating the PMS solution during the implementation phase and post implementation. This is an essential aid to improving project performance, achieving best value for money, improving decision-making and learning lessons.

Scope

Project performance and the performance of the PMS solution will be evaluated and the following areas will be assessed:

Project Performance

- costs;
- timescales; and
- project management.

PMS Solution

- the achievement of business case objectives;
- costs and benefits against forecast, and other benefits realised and expected;
- continued alignment to the business strategy;
- the effectiveness of revised business operations;
- ways of maximising benefits and minimising cost and risk;

Approach

The evaluation will be conducted during both the project delivery and post implementation.

Delivery Phase Evaluation

The evaluation during this phase is with a view to strengthening and improving the work in progress and the likelihood that it will be successful. Formal project management methodologies will be implemented to help ensure the project stays on track, this will include:

- Risk and Issue management;
- Change control management;
- Financial management; and
- Progress reporting.

Regular progress reporting will be the key evaluation tool to identify whether the project is progressing to plan and if any corrective action is needed.

Progress reporting will be conducted in all three layers of the governance structure: project, programme and sponsor. This will ensure that issues are identified, managed and escalated, if necessary, throughout the project structure.

The level of detail contained in the Highlight Reports are likely to vary across governance layers, however, in general, the reports will provide the following information:

- current status of schedule (actual versus estimated);
- budget status;
- summary of issues, problems and risks; and.
- summary of work completed to date and planned work within the next reporting period.

The PMS PSO will be responsible for quality assuring the content of the report and an additional quality layer will be provided by the H&IT PMO resources who will also receive the progress reports.

Post-Implementation Evaluation

This phase of the evaluation will examine the effects and outcomes of the PMS implementation and will focus on whether the project was effective, achieved its objectives, and benefits were realised.

End of Project Report (**EPR**) – As each site implementation will be approached as a mini project, an EPR will be completed on immediate conclusion of each site implementation as well as a final EPR that will be completed on conclusion of the overall implementation. The completion of the first EPR will be a particularly important deliverable as this will help inform the activities of the subsequent site implementations. A key input into each EPR will be a Lessons Learnt workshop that will be held with key project stakeholders. The EPR will be completed by the PMS Implementation Manager and submitted to the Programme Board. It will contain the following information:

- performance against the planned target time and cost;
- the effect on the original project plan and business case of any changes that were approved;
- final analysis on change issues received during the project;
- the total impact of approved changes;
- analysis for all quality work carried out; and
- Post-Project Review date and plan (final EPR only).

Post-Implementation Review (PIR) – The PIR is a formal review of a programme or project. It is used to answer the question: Did we achieve what we set out to do, in business terms and if not, what should be done. It will focus on the following areas:

- assess whether the project achieved its aims and objectives;
- identify the current situation;
- assess the impacts, benefits, and value of the programme in the broader context;
- identify achievements; and
- identify areas for future development work.

The PIR is also a key part of the benefits management process as it will check whether benefits, including those set out in this business case have been achieved. The PIR will enable NHSGGC to evidence that the investment in PMS was worthwhile.

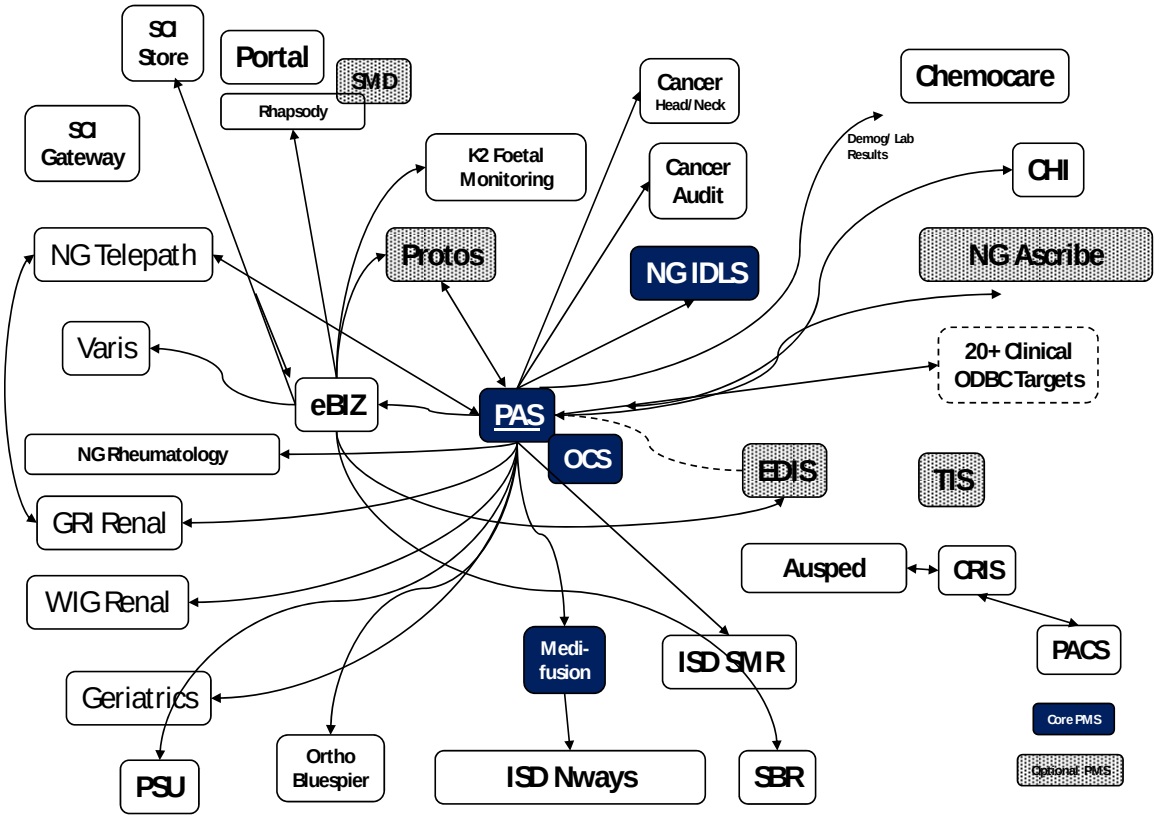
A detailed PIR plan will be developed which will contain the specific details on the approach that will be delivered and the output of the study. The timing of the first PIR will be aligned to the predicted benefits stream brought about by the business change, as detailed in the benefits profiles. Although time must be allowed for benefits to accrue, it is important that the PIR is completed early enough to identify any problems. Remedial action can therefore be taken promptly if predicted benefits are not realised. It is envisaged that the initial PIR will be carried out 6-12 months after implementation of PMS in all four sites.

16. Conclusion

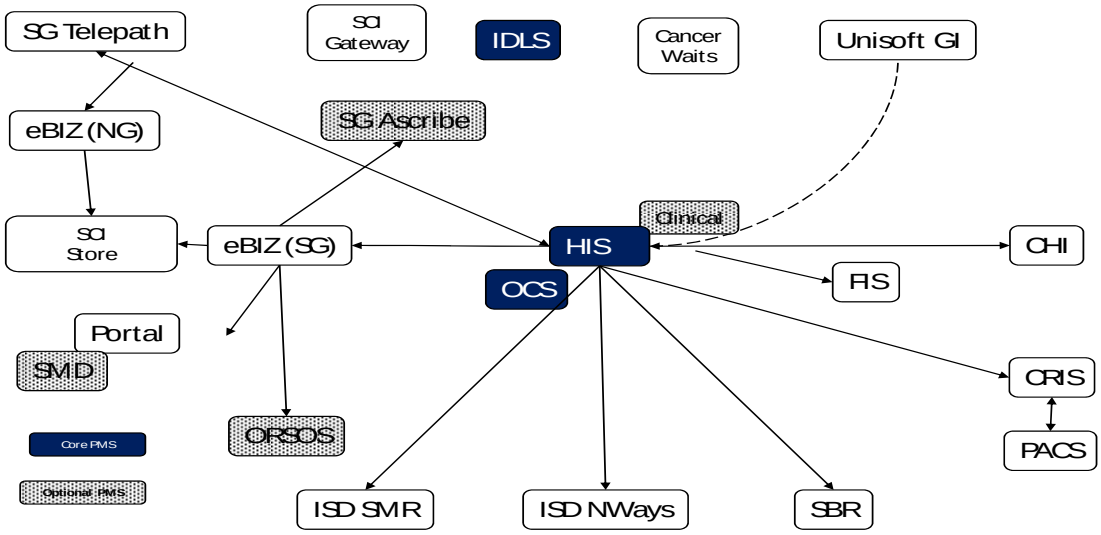
The PMS procurement has been a very comprehensive exercise and has identified a clear winner in InterSystems/TrakCare. The solution is affordable for NHS Greater Glasgow & Clyde and will enable a common system covering over 70% of NHSScotland's population. The NHS Board is asked to approve call-off from the National Framework Contract.

Appendix A – NHSGGC Current Infrastructure

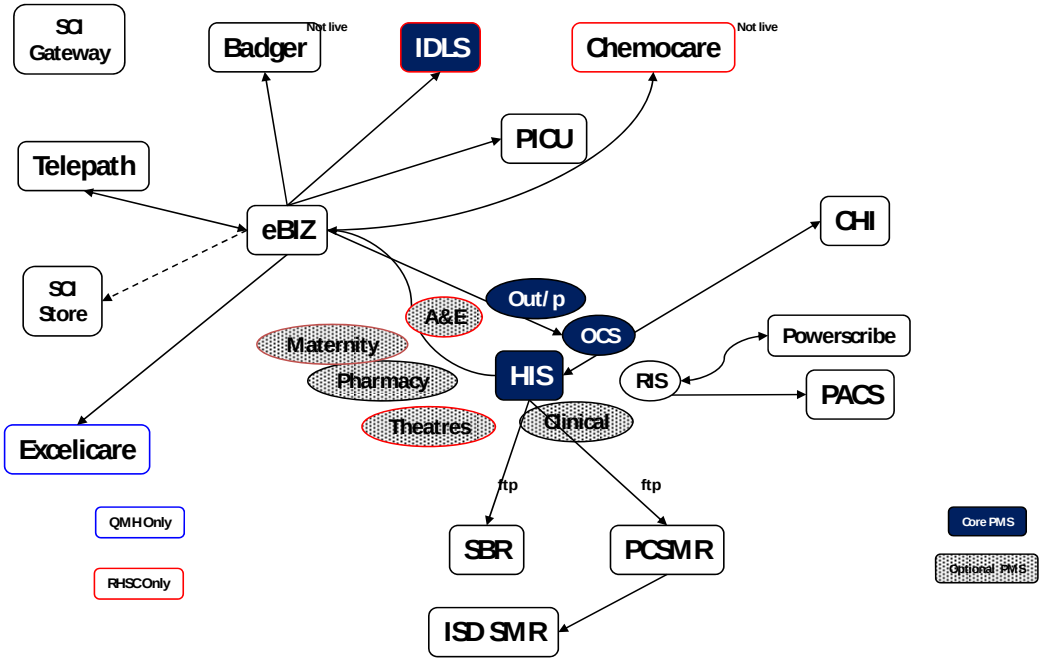
1. North Glasgow



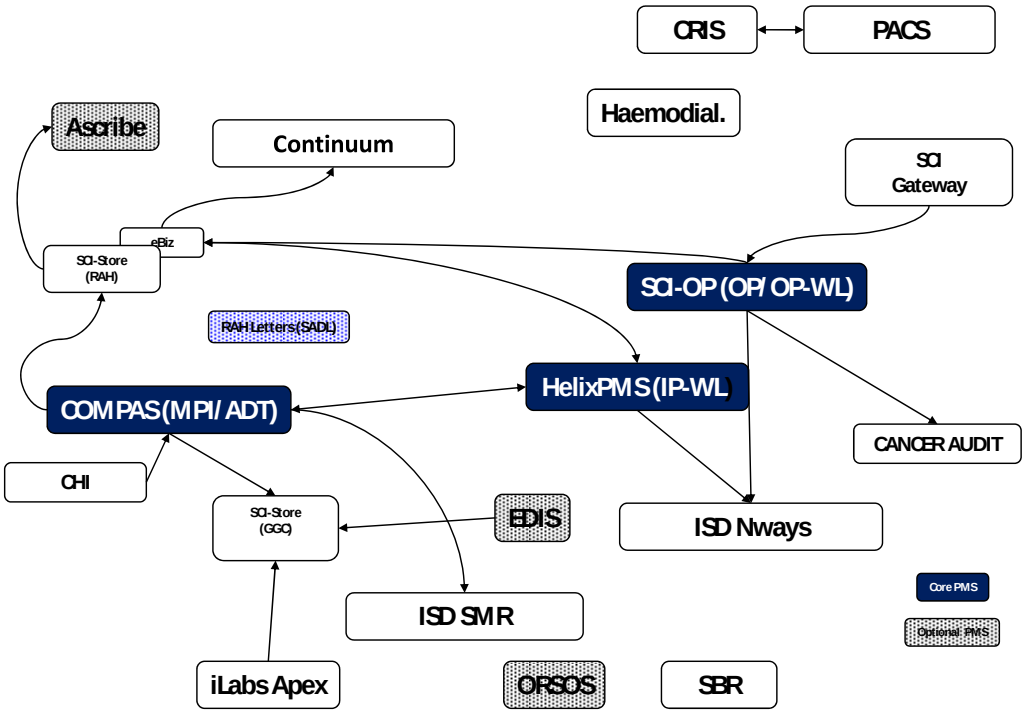
2. South Glasgow



3. Yorkhill



4. Clyde



Appendix C – Bidder Scores

AOA

Award criterion	Weighting% ITPD2B	Score/100	TOTAL	Level 1	Weight%	Score/100	TOTAL
Application Functionality: Integrated Core PMS, & CST	**30**	**71.88**	**21.56**	Strategic Functional Benefits	20	66.37%	13.27
				Functional Site Visit	16	64.60	10.34
				Functional Spec	32	83.17	26.61
				Demonstrations	32	67.66	21.65
				TOTAL	**100**		**71.88**
Application Functionality: Optional Modules	**10**	**59.13**	**5.91**	Strategic Functional Benefits	20	87.82%	17.56
				Specialist Questionnaire	16	41.28	6.60
				Functional Spec	32	54.05	17.30
				Demonstrations	32	55.20	17.66
				TOTAL	**100**		**59.13**
Technical, Performance, Operational Management & Support	**11**	**47.64**	**5.24**	Strategic Technical Benefits	20	60.00%	12.00
				Technical Site Visits	20	33.00	6.60
				Technical Specification	60	48.40%	29.04
				TOTAL	**100**		**47.64**
Future Requirements	**1**	**100.00**	**1.00**	CMG Supplier Meeting/Strategic Visits	100	5	**100.00**
Implementation Services & Training	**16**	**63.11**	**10.10**	Strategic Implementation Benefits	20	67.56%	13.51
				Implementation Site Visits	20	50.00	10.00
				Implementation Spec	60	66.00%	39.60
				TOTAL	**100**		**63.11**
Price/commercials	**25**	**47.76**	**11.94**	Flexibility	20	83.4	16.68
				NPV	20	59.2	11.84
				Final Price	60	32.06	19.236
				TOTAL	**100**		**47.756**
Management of Risk	**4**	**60.00**	**2.40**	CMG Supplier Meeting/Strategic Visits	100	60.00%	**60.00**
Contract Terms	**3**	**60.00**	**1.80**	Final Bid	100	3	**60.00**

				Contract Terms			
High Level Total	**100**		**59.95**				
Minus 7.5 for carry over	92.5		55.46				
Carry over 7.5%	7.5		4.50				
TOTAL including carry over	**100**		**59.96**				

InterSystems

Award criterion	Weighting% ITPD2B	Score/100	TOTAL	Level 1	Weight%	Score/100	TOTAL
Application Functionality: Integrated Core PMS, & CST	**30**	**69.90**	**20.97**	Strategic Functional Benefits	20	53.62%	10.72
				Functional Site Visit	16	67.21	10.75
				Functional Spec	32	67.00	21.44
				Demonstrations	32	84.31	26.98
				TOTAL	**100**		**69.90**
Application Functionality: Optional Modules	**10**	**58.36**	**5.84**	Strategic Functional Benefits	20	47.82%	9.56
				Specialist Questionnaire	16	54.08	8.65
				Functional Spec	32	67.68	21.66
				Demonstrations	32	57.78	18.49
				TOTAL	**100**		**58.36**
Technical, Performance, Operational Management & Support	**11**	**75.00**	**8.25**	Strategic Technical Benefits	20	48.80%	9.76
				Technical Site Visits	20	88.00	17.60
				Technical Specification	60	79.40%	47.64
				TOTAL	**100**		**75.00**
Future Requirements	**1**	**60.00**	**0.60**	CMG Supplier Meeting/Strategic Visits	100	3	**60.00**
Implementation Services & Training	**16**	**71.28**	**11.40**	Strategic Implementation Benefits	20	60.00%	12.00
				Implementation Site Visits	20	72.00	14.40
				Implementation Spec	60	74.80%	44.88
				TOTAL	**100**		**71.28**
Price/commercials	**25**	**42.83**	**10.71**	Flexibility	20	75.40	15.08
				NPV	20	70.78	14.16
				Final Price	60	22.65	13.59

				TOTAL	**100**		**42.83**
Management of Risk	**4**	**46.08**	**1.84**	CMG Supplier Meeting/Strategic Visits	100	46.08%	**46.08**
Contract Terms	**3**	**100.00**	**3.00**	Final Bid Contract Terms	100	5	**100.00**
High Level Total	**100**		**62.61**				
Minus 7.5 for carry over	92.5		57.91				
Carry over 7.5%	7.5		5.12				
TOTAL including carry over	**100**		**63.04**				

Perot

Award criterion	Weighting% ITPD2B	Score/100	TOTAL	Level 1	Weight%	Score/100	TOTAL
Application Functionality: Integrated Core PMS, & CST	**30**	**35.91**	**10.77**	Strategic Functional Benefits	20	46.66%	9.33
				Functional Site Visit	16	35.59	5.70
				Functional Spec	32	32.96	10.55
				Demonstrations	32	32.31	10.34
				TOTAL	**100**		**35.91**
Application Functionality: Optional Modules	**10**	**60.92**	**6.09**	Strategic Functional Benefits	20	47.82%	9.56
				Specialist Questionnaire	16	52.64	8.42
				Functional Spec	32	61.49	19.68
				Demonstrations	32	72.68	23.26
				TOTAL	**100**		**60.92**
Technical, Performance, Operational Management & Support	**11**	**45.24**	**4.98**	Strategic Technical Benefits	20	48.80%	9.76
				Technical Site Visits	20	28.00	5.60
				Technical Specification	60	49.80%	29.88
				TOTAL	**100**		**45.24**
Future Requirements	**1**	**20.00**	**0.20**	CMG Supplier Meeting/Strategic Visits	100	1	**20.00**
Implementation Services & Training	**16**	**66.86**	**10.70**	Strategic Implementation Benefits	20	53.51%	10.70
				Implementation Site Visits	20	72.00	14.40
				Implementation Spec	60	69.60%	41.76

				TOTAL	**100**		**66.86**
Price/commercials	**25**	**60.19**	**15.05**	Flexibility	20	68.6	13.72
				NPV	20	79.78	15.96
				Final Price	60	50.85	30.51
				TOTAL	**100**		**60.19**
Management of Risk	**4**	**20.00**	**0.80**	CMG Supplier Meeting/Strategic Visits	100	20.00%	**20.00**
Contract Terms	**3**	**60.00**	**1.80**	Final Bid Contract Terms	100	3	**60.00**
High Level Total	**100**		**50.39**				
Minus 7.5 for carry over	92.5		46.61				
Carry over 7.5%	7.5		6.04				
TOTAL including carry over	**100**		**52.65**				

Appendix D – Risk Readiness Assessment

RAPID RISK CHECK - ASSESSMENT 1 - Completed 30/10/09

NHSGGC PMS Implementation Programme

Key to scoring system

YES (Low risk) score:	**1**
Largely (Medium Low) score:	**2**
To some extent (Medium) score:	**3**
Partially (Medium High) score:	**4**
NO (High risk) score:	**5**

Corporate risks (external to the project) - INHERENT

		Risk assessment
A	**Business vision**	
A.1	Are the business needs, assumptions and outcomes clearly understood?	2
A.2	Is the impact of business change small?	5
A.3	Has the organisation delivered comparable change before?	4
A.4	Is it clearly stated how the changes will affect the business?	3
A.5	Is the requirement clearly defined and related to business objectives?	2
A.6	Do those affected by the change know how they will be affected and why?	4
A.7	Is the delivery team able to translate the business requirement into a detailed specification?	2
A.8	Is it clear how the new programme or project fits with existing business and any conflicting priorities resolved?	1
A.9	Is it clear why the change needs to be made?	1
		2.67
B	**Business process**	
B.1	Is it clear how existing business processes will be affected by the change?	4
B.2	Will critical business processes be unaffected?	4
B.3	Will existing ways of working remain unchanged?	4
B.4	Is the likely impact of other change on this minimal?	4
B.5	Are the people who will work in new ways all in one place?	5
B.6	Is the business process that underpins the change already in place?	4
B.7	Are existing communication lines between programmes/projects and stakeholders adequate?	3

B.8	Does the organisation learn from relevant experience?	3
		3.88
C	**Business environment & constraints**	
C.1	Does the organisation understand the current state of its infrastructure?	2
C.2	Are the proposed changes to the technical environment straightforward?	4
C.3	Is the impact on the existing technical environment (including facilities and services) well understood?	2
C.4	Is the business familiar with any proposed technology and does it have available the core skills and competencies to exploit it?	4
C.5	Are the technical components of the change basic 'off-the-shelf' items and / or compliant with relevant industry standards?	4
C.6	Has the entire life-cycle of the project been adequately considered in terms of cost/budget and flexibility?	2
C.7	Has the need for modular/incremental delivery been addressed, where appropriate?	2
C.8	Are customers likely to be confident about the reliability of the existing technical infrastructure and quality of existing services?	3
C.9	Will the implementation of the change be straightforward?	5
C.10	Will the organisation release the necessary capability and capacity to own and manage the business change?	4
C.11	Do the senior managers responsible for delivery of this programme acknowledge and accept their responsibilities?	2
	Risk assessment answer:	3.09
	YES (Low risk) score:	**1**
	Largely (Medium Low) score:	**2**
	To some extent (Medium) score:	**3**
	Partially (Medium High) score:	**4**
	NO (High risk) score:	**5**
		3.21

RAPID RISK CHECK

Key to scoring system

YES (Low risk) score:	**1**
Largely (Medium Low) score:	**2**
To some extent (Medium) score:	**3**
Partially (Medium High) score:	**4**
NO (High risk) score:	**5**

Project-specific risks - ACQUIRED

Risk

		assessment
D	**Scope of Programme, project or procurement**	
D.1	Is the 'project' scope well defined and agreed in terms of what the project should deliver?	3
D.2a	Is the 'project' well defined and understood by the project team?	2
D.2b	Is the 'project' well defined and understood by all stakeholders?	4
D.3	Does the scope of the 'project' include all of the business areas affected?	2
D.4	Does the scope of the 'project' address modular and/or incremental delivery, each with clear business scope and business case, where appropriate?	2
D.5	If the project fails to deliver the expected outcome, will the business be able to continue?	1
D.6	Does the 'project' have some flexibility on delivery dates?	3
D.7	Are the business processes being supported or enabled by the technical infrastructure (solution) well understood, well defined and formally documented by the project team?	4
D.8a	Do all the people who have a stake in the project agree on what the project should deliver and how it will benefit the business?	4
D.8b	Do all the Senior Management Teams who have a stake in the project agree on what the project should deliver and how it will benefit the business?	2
D.9	Is there a business case that clearly states why the changes are needed, what the changes are, how the business will benefit and how benefits will be measured?	3
D.10	Has the necessary funding been approved and allocated, with budget holders identified?	2
D.11	Have you considered how contract management will be dealt with in the future?	2
		2.62
E	**'Project' organisation and control**	
E.1	Are the senior stakeholders committed in their support of the 'project' and its objectives?	1
E.2	Are our clinicians and operational staff able to commit sufficient time to the 'project'?	4
E.3	Is the 'project' plan complete and considered to be achievable?	3
E.4	Are good relationships established between the project team, clinicians and operational staff and suppliers?	3
E.5	Are the project management approach and milestones approach understood by all parties?	2
E.6	Is there adequate budget provision (risk allowance) for contingency actions?	4

E.7	Are the project interfaces defined and being managed effectively?	3
E.8	Is the project fully under control, in terms of progress against milestones, budget and deliverables?	3
E.9	Are there appropriate processes for managing change to requirements?	3
E.10	Are there established and effective communications between the project and all stakeholders?	3
E.11	Are the project dependencies clearly identified and being managed effectively?	4
		3.00
F	**Team capability, experience and support**	
F.1	Are the necessary project skills available within the project team?	3
F.2	Are team members able to commit sufficient time to the project?	2
F.3	Is there sufficient fall back for critical resources?	4
F.4	Has the team access to the specialist expertise needed, when required?	3
F.5	Is the team adequately supported in terms of accommodation, administrative support and tools?	2
F.6	Is there enough time and resource within the schedule for necessary information gathering?	2
F.7	Has the team access to people who understand the business domain and the business needs?	3
F.8	Is there a good mix of leadership and other key attributes within the project team?	2
F.9	Are roles and responsibilities clearly defined both within the team?	3
F.10	Are the clinician and operational staff and/or user roles clearly defined and understood?	4
	Risk assessment answer:	2.80
	YES (Low risk) score:	**1**
	Largely (Medium Low) score:	**2**
	To some extent (Medium) score:	**3**
	Partially (Medium High) score:	**4**
	NO (High risk) score:	**5**
		2.81

RAPID RISK CHECK - ASSESSMENT 2 - Completed xxxxxx
NHSGGC PMS Implementation Programme

Key to scoring system

YES (Low risk) score:	**1**
Largely (Medium Low) score:	**2**
To some extent (Medium) score:	**3**
Partially (Medium High) score:	**4**
NO (High risk) score:	**5**

Corporate risks (external to the project)

		Risk assessment
A	**Business vision**	
A.1	Are the business needs, assumptions and outcomes clearly understood?	1
A.2	Is the impact of business change small?	1
A.3	Has the organisation delivered comparable change before?	1
A.4	Is it clearly stated how the changes will affect the business?	1
A.5	Is the requirement clearly defined and related to business objectives?	1
A.6	Do those affected by the change know how they will be affected and why?	1
A.7	Is the delivery team able to translate the business requirement into a detailed specification?	1
A.8	Is it clear how the new programme or project fits with existing business and any conflicting priorities resolved?	1
A.9	Is it clear why the change needs to be made?	1
		1.00
B	**Business process**	
B.1	Is it clear how existing business processes will be affected by the change?	1
B.2	Will critical business processes be unaffected?	1
B.3	Will existing ways of working remain unchanged?	1
B.4	Is the likely impact of other change on this minimal?	1
B.5	Are the people who will work in new ways all in one place?	1
B.6	Is the business process that underpins the change already in place?	1
B.7	Are existing communication lines between programmes/projects and stakeholders adequate?	1
B.8	Does the organisation learn from relevant experience?	1

		1.00
C	**Business environment & constraints**	
C.1	Does the organisation understand the current state of its infrastructure?	1
C.2	Are the proposed changes to the technical environment straightforward?	1
C.3	Is the impact on the existing technical environment (including facilities and services) well understood?	1
C.4	Is the business familiar with any proposed technology and does it have available the core skills and competencies to exploit it?	1
C.5	Are the technical components of the change basic 'off-the-shelf' items and/or compliant with relevant industry standards?	1
C.6	Has the entire life-cycle of the project been adequately considered in terms of cost/budget and flexibility?	1
C.7	Has the need for modular/incremental delivery been addressed, where appropriate?	1
C.8	Are customers likely to be confident about the reliability of the existing technical infrastructure and quality of existing services?	1
C.9	Will the implementation of the change be straightforward?	1
C.10	Does the organisation have (or can readily obtain) the necessary capability and capacity to own and manage the business change?	1
C.11	Do the senior managers responsible for delivery of this programme acknowledge and accept their responsibilities?	1
	Risk assessment answer:	1.00
	YES (Low risk) score:	**1**
	Largely (Medium Low) score:	**2**
	To some extent (Medium) score:	**3**
	Partially (Medium High) score:	**4**
	NO (High risk) score:	**5**
		1.00

RAPID RISK CHECK

Key to scoring system

YES (Low risk) score:	**1**
Largely (Medium Low) score:	**2**
To some extent (Medium) score:	**3**
Partially (Medium High) score:	**4**
NO (High risk) score:	**5**

Project-specific risks

D	**Scope of Programme, project or procurement**	Risk assessment

D.1	Is the 'project' scope well defined and agreed in terms of what the project should deliver?	1
D.2	Is the 'project' well defined and understood by the project team and all stakeholders?	1
D.3	Does the scope of the 'project' include all of the business areas affected?	1
D.4	Does the scope of the 'project' address modular and/or incremental delivery, each with clear business scope and business case, where appropriate?	1
D.5	If the project fails to deliver the expected outcome, will the business be able to continue?	1
D.6	Does the 'project' have some flexibility on delivery dates?	1
D.7	Are the business processes being supported or enabled by the technical infrastructure (solution) well understood, well defined and formally documented by the project team?	1
D.8	Do all the people who have a stake in the project agree on what the project should deliver and how it will benefit the business?	1
D.9	Is there a business case that clearly states why the changes are needed, what the changes are, how the business will benefit and how benefits will be measured?	1
D.10	Has the necessary funding been approved and allocated, with budget holder/s identified?	1
D.11	Have you considered how changes will be dealt with in the future?	1
		1.00
E	**'Project' organisation and control**	
E.1	Are the stakeholders committed in their support of the 'project' and its objectives?	1
E.2	Are customers and/or users able to commit sufficient time to the 'project'?	1
E.3	Is the 'project' plan complete and considered to be achievable?	1
E.4	Are good relationships established between the project team, customers and suppliers?	1
E.5	Are the project management approach and milestones approach understood by all parties?	1
E.6	Is there adequate budget provision (risk allowance) for contingency actions?	1
E.7	Are the project interfaces defined and being managed effectively?	1
E.8	Is the project fully under control, in terms of progress against milestones, budget and deliverables?	1

E.9	Are there appropriate processes for managing change to requirements?	1
E.10	Are there established and effective communications between the project and all stakeholders?	1
E.11	Are the project dependencies clearly identified and being managed effectively?	1
		1.00
F	**Team capability, experience and support**	
F.1	Are the necessary project skills available within the project team?	1
F.2	Are team members able to commit sufficient time to the project?	1
F.3	Is there sufficient fall back for critical resources?	1
F.4	Has the team access to the specialist expertise needed, when required?	1
F.5	Is the team adequately supported in terms of accommodation, administrative support and tools?	1
F.6	Is there enough time and resource within the schedule for necessary information gathering?	1
F.7	Has the team access to people who understand the business domain and the business needs?	1
F.8	Is there a good mix of leadership and other key attributes within the project team?	1
F.9	Are roles and responsibilities clearly defined both within the team and third party interfaces?	1
F.10	Are the customer &/or user roles clearly defined and understood?	1

Risk assessment answer:		1.00
YES (Low risk) score:	**1**	
Largely (Medium Low) score:	**2**	
To some extent (Medium) score:	**3**	
Partially (Medium High) score:	**4**	
NO (High risk) score:	**5**	
		1.00

Appendix E – Financial Appraisal

Background

The basis of the funding of the project has been discussed with Scottish Government and Boards through an on-going process, since September 2008. It became clear in the Autumn of 2008 that some of the assumptions made at the Outline Business Case stage of the overall process were no longer appropriate and different funding solutions were required. Similarly the development of the bids through the Competitive Dialogue process has provided a range of challenges to individual Boards in terms of achieving an affordable solution.

The sources of funding and affordability of the project has been reported to all Consortium PMS Programme Boards since October 2008. The reports reflected changing assumptions, financial modelling of scenarios and the updated potion with regard to supplier bids.

This culminated in the Programme developing a paper for consideration by the Scottish Government eHealth Strategy Board on 10 September 2009. This identified the financial situation of the Boards in assessing the draft final tenders provided by the bidders and the potential benefits accruing from the investment. As a result of the consideration of the paper Scottish Government agreed a further package of flexible funding with a value of up to £11m.

At the meeting to select the Preferred Bidder on 4 November 2009 all Boards were asked to confirm that all the supplier solutions were affordable to them.

Key Assumptions regarding Funding Sources

The key assumptions with regard to the funding sources for the project are:

- Scottish Government will provide capital to cover the cost of the software licences on an unsupported capital basis.
- Scottish Government will provide supported capital for the project to cover the costs of hardware / infrastructure. The Boards will use supported capital, where available, and the impact of funded capital charges is taken into account.
- The Boards will capitalise implementation costs where appropriate and where funding is available.
- A flexible package of funding from SG eHealth totalling £11m is available and is allocated to Boards on the basis of supplier cost profiles, as set out in the final tenders received from the preferred bidder on 21 September 2009**.**
- Non recurring SG eHealth funding of £3.75m over two years is allocated to Boards on the basis of supplier cost profiles, as set out in the final tenders received from the preferred bidder on 21 September 2009.
- The payment profile of the preferred bidder is subject to final negotiation between each Board and the preferred bidder.
- Capital charges have been calculated using a depreciation period of 5 years for hardware and 11 years for software / implementation costs. The rate of return is assumed to be 0%, based on an indication by Scottish Government that this will change from the current rate of 3.5% with effect from 1 April 2010. A formal announcement is expected shortly.
- Board recurring revenue and non recurring revenue funding is as determined by Boards
- Board CRES arising from benefits is as determined by Boards

- Internal brokerage of capital / revenue is as agreed by Boards

Each Board provided a ten year forecast of financial projections covering:

- Capital for licences
- Other capital
- Recurring revenue
- Non recurring revenue

These forecasts have been used as the basis of assessing the affordability of the project for each Board. Boards were asked to confirm the robustness of their projections and the inclusion of the projected sums in their financial plans.

In the clarification discussions with suppliers the issue of flexibility of supplier payment profiles was discussed. Suppliers also provided statements on their ability to provide flexibility of payment profiles and their willingness to work with Boards to flex payments to take into account individual Board Capital and Revenue funding profiles. All suppliers showed a considerable commitment to a flexible approach.

NHS Greater Glasgow & Clyde Position

At the final tender stage the overall cash flows for each supplier were summarised in the table below.

	Intersystems £m	AOA £m	Perot £m
Recurring Revenue			
Recurring Revenue Funding	22.8	22.8	22.8
Recurring Revenue Expenditure	25.1	17.4	20.4
Recurring Revenue Position	**-2.3**	**5.4**	**2.4**
Non Recurring Revenue			
Non Recurring Revenue Funding	7.9	6.6	7.2
Non Recurring Revenue Expenditure	7.1	7.1	7.1
Non Recurring Revenue Position	**0.8**	**-0.5**	**0.1**
Licences			
Funding - Licences	6.3	2.5	3.3
Expenditure - Licences	6.3	2.5	3.3
Overall Licences Position	**0.0**	**0.0**	**0.0**
Capital Expenditure			
Capital Funding	9.7	9.7	9.7
Capital Expenditure	4.1	11.9	7.8
Overall Capital Position	**5.6**	**-2.2**	**1.9**
Overall Capital / Revenue Position	**4.1**	**2.7**	**4.4**

The cash flows over the life of the project showed that the total costs for each supplier were within the funding envelope available to NHS Greater Glasgow & Clyde. However, the

InterSystems option was the most expensive option and based on the analysis at that time would have presented a revenue challenge of £2.3m over the period due to the higher revenue implementation costs and capital charges on the licence fees. However, the capital costs for InterSystems were lower than those of the other shortlisted suppliers potentially giving scope for negotiation with the supplier to amend the capital and revenue costs within the overall cost profile to achieve a more balanced overall position.

Based on discussions between Consortium Boards Finance Leads, suppliers and Scottish Government colleagues NHS Greater Glasgow & Clyde took a view that all suppliers were willing to show a significant degree of flexibility in classification and phasing of capital and revenue costs and that this approach should enable the Consortium to achieve an overall cost profile that would allow all Consortium Boards to achieve an affordable solution irrespective of the supplier selected as preferred bidder.

Revenue and Capital Costs of Preferred Option

Following the Consortium's selection of InterSystems as preferred option further analysis has been undertaken to review and confirm funding sources and expenditure profiles for this option. Surplus capital of £3.0m has been used where appropriate to capitalise some of the implementation costs and the balance of £2.6m will remain available to the Board within the overall Capital Plan. This results in a more balanced overall profile and has significantly reduced the in year and overall recurring revenue shortfall within the project.

The revised revenue and capital costs of the preferred option over the 10 year period are summarised in the table below.

	Note	Final £m
Licences	1	
Funding - Licences		6.3
Expenditure - Licences		6.3
Licences Total		0.0
Capital	2	
Capital Funding		7.1
Capital Expenditure		7.1
Capital Total		0.0
Non Recurring Expenditure	3	
Non Recurring Revenue Funding		7.9
Non Recurring RevenueExpenditure		7.6
Non Recurring Expenditure Total		0.3
Recurring Revenue	4	
Recurring Revenue Funding		24.7
Recurring Revenue Expenditure		23.6
Recurring Revenue Total		1.1
Overall Position	5	1.4

A detailed 10 year financial projection is included as Appendix E(i)

Notes:

1. Licences

The capital cost of Licences will be fully funded by Scottish Government Health Department. The Board will require to meet the recurring revenue cost of the capital charges on the licence costs.

2. Capital

There are 2 main elements of capital funding;

- The first element is a specific allocation of £2.5m of supported capital (supported by associated revenue funding for capital charges) towards the capital cost of the project.
- The second element of capital funding will be provided by the Board from within its Capital Resource Limit.

The specific funding required for this project has already been provided within the Board's current capital plan and will require to be managed to match the related capital expenditure.

The capital expenditure will be incurred in respect of the capitalisation of the project implementation costs. These will be incurred over a 2.5 year implementation period commencing in 2010/11.

The overall capital position for the project is in balance.

3. Non Recurring Income and Expenditure

The Non Recurring Revenue funding for this project will be provided to the Board from 2 main sources detailed below:

- The Board's share of non recurring SG eHealth funding of £3.75m over two years on the basis of supplier cost profiles and NHS Greater Glasgow & Clyde will receive £1.825m of this funding.
- The Board's share of a flexible package of funding from SG eHealth totalling £11m which will also be allocated to Boards on the basis of supplier cost profiles of which NHS Greater Glasgow & Clyde will receive £5.354m.
- In addition, the Board has identified £0.7m of internal e-Health non recurring funding to contribute to the project.

The Non Recurring Revenue expenditure for the project includes a number of elements, as follows:

- NHS Implementation costs – these are the non recurring project management costs due to be paid to the supplier during implementation of the project over a 2.5 year period.
- Current Commitments – provision has been made for the double running costs during the implementation of the project so it is assumed that in year 1 all current expenditure on the existing PMS systems will continue to be incurred.
- Transitional Costs – it is assumed that the Board will incur transitional costs of £1.350m during the implementation period

The summary shows that the project has an overall surplus of £350k in respect of non recurring funding.

4. Recurring Revenue Funding and Expenditure

The recurring funding sources for the project are:

- Current Revenue Budgets – The Board currently spends £2.010m on a number of existing systems that will be replaced by the PMS system. These budgets will be available to meet the recurring revenue costs of the replacement system. Provision has been made for a period of double running costs as the new system is being implemented.
- Efficiency Savings – a standard assumption has been made by all Boards participating in the procurement that £1.0m of savings will be made over the 10 year life of the project of which NHS Greater Glasgow & Clyde would realise £453,250. However, it has been recognised that this is a conservative assumption and following an assessment of benefits it is assumed in the financial analysis that savings of the order of £2.3m will be achieved over the 10 year project life. These will be achieved on a phased basis and the full annual effect will be available by year 7 of the implementation. However, it is also planned that the PMS system will provide 10% of the total Acute CRES (3%) by the end of year 3. This figure is not included in the financial schedule to avoid any double counting of savings.
- Funded Capital Charges – The e-Health capital funding allocation of £2.5m will be supported by associated revenue funding. This will provide the Board with recurring revenue funding of £2.272m over the 10 year life of the project.

The recurring revenue expenditure elements are:

- Establishment of a local MTS Service – This will be hosted on the PMS system and will incur recurring revenue costs of £350k per annum when fully implemented.
- Supplier Support & Maintenance Costs – These are the recurring costs to be paid to InterSystems for ongoing support and system maintenance. The revenue profile for payments will be agreed with InterSystems and there is scope for this to be varied to suit the Board's in year revenue position.
- Capital Charges – The Board will incur the capital charges associated with the licence costs and capitalised project implementation costs. Capital charges have been calculated using a depreciation period of 5 years for hardware and 11 years for software / implementation costs.

The overall revenue position over the project is a surplus of £1.462m with positive returns in the early years and a negative in year position being returned in years 4-6 before in year balance is restored as planned savings are realised when the system is fully implemented. However, the Board is confident that these in year fluctuations can be managed within the overall budget for Health Information & Technology.

5. Overall Affordability

Overall the financial projections for the project shows a positive cash flow of £1.462m over the 10 year period.

The capital funding required is available and has been provided in the Board's financial plan although Board will require to accommodate the phasing of expenditure within the overall parameters of its Capital Plan.

There is an overall surplus of Non Recurring Funding of £350k over the period of the project and it is assumed the Board can manage to carry forward this funding to match non recurring expenditure as incurred within the Board's overall revenue budget.

The cash flows for the Recurring Revenue costs show a surplus of £1.112m over the 10 year period of the project.

Appendix F – NHSGGC PMS Programme Board Terms of Reference

1. Background

In late 2006, a decision was taken by the NHS Scotland eHealth Strategy Board to consider a national approach to the procuring of a new Secondary and Community Hospital Patient Administration System (PAS).

Following consultation, the NSS eHealth Strategy Board commissioned an Outline Business Case (OBC) to clearly identify and assess options for a national procurement.

The preferred approach to ICT in the Secondary Care & Community Hospital sectors looks to cover not just core PAS functionality but to also support key clinical data flows (e.g. Order Comms) and key clinical functionality modules to support the core patient pathway. The extended system scope being considered for national procurement is known as the Patient Management System (PMS).

A consortium of NHS Boards in Scotland, listed in appendix A, is now progressing, on behalf of the eHealth Strategy Board, a detailed business case, refined requirements definition and procurement strategy for a PMS.

The outcome of the Consortium Led PMS Procurement project will be a framework contract for a single solution or suite of solutions with associated services accessible to all NHS Scotland Boards by call off. The framework contract will include Northern Ireland for the OJEU Notice, and partner organisations such as hospices if appropriate. The target date for a framework contract to be in place is January 2010. Implementation timeframe is then expected to be around mid 2010 / 2012, dovetailing with the expiry of current PAS support contracts at each Board.

NHSGGC is well represented on the National PMS Consortium Board and PMS Procurement Programme Board and is actively involved in moving forward the PMS agenda at the National level.

NHSGGC now wish to develop an implementation strategy for the Board to ensure readiness and capability to implement Board-wide the nationally procured PMS.

This Terms of Reference sets out details of the governance model that will be adopted, details the responsibilities of the Board and its Members and provides information on the administration of the Board

2. Programme Board

Programme Board Role

The Programme Board is established by Jonathan Best and Richard Copland, the Senior Responsible Owners (SROs), and its prime purpose is to drive the programme forward and deliver the desired outcomes and benefits. The Programme Board will oversee progress across all of the workstreams and the subgroups that will be set up to reflect the work that will emerge from the implementation programme.

The SROs have a mandate to direct all implementation activities and are accountable for the successful delivery of the programme. The Programme Board reports to the Strategic Management Group. While the SROs may delegate responsibilities to the Programme Board, ultimate accountability resides with the SROs. Programme Board members must support the authority and control of the SROs over the programme and assist in the direction, co-ordination and overseeing of the activities within the programme.

Programme Governance

The Programme Governance model is outlined in appendix B and identifies the reporting structure upwards from the Programme Board; the reporting structure into the Programme Board from the implementation subgroups will be further developed.

Programme Board Membership

In considering the core membership of the Programme Board a key requirement is to ensure there is appropriate senior stakeholder involvement from across NHSGGC and that members provide visible leadership.
Details of those chosen as a representative on this Programme Board are outlined in appendix C.

Input and guidance from other services and the selected supplier will be sought as and when is required.

Programme Board Responsibilities

Programme Boards have both a corporate and organisational responsibility and members of the PMS Programme Board are accountable to the SROs for their areas of responsibility within the programme as follows:

- To drive the Programme forward and deliver the desired outcomes and benefits;
- The Programme Board will empower a Programme Director to run the programme on a day-to-day basis;
- Defining the acceptable risk profile and risk thresholds for the programme and the projects within the programme;
- Ensuring the Programme delivers within its agreed parameters e.g. costs;
- Resolving strategic and directional issues between subgroups, which need the input and agreement of senior stakeholders to ensure the progress of the programme;
- Ensuring the integrity of benefit profiles and realisation plan;
- Ensuring adherence to appropriate Local and National Policy, Standards and Guidelines;
- Providing assurance for operational stability and effectiveness through the programme delivery cycle;
- Ensuring that a comprehensive communications strategy is created and implemented to support the objectives of the Programme;

- Ensuring that the Programme and individual subgroups are appropriately resourced;
- Ensuring effective two-way communication between the Board and within their area of responsibility.

Each Programme Board member must attend the majority of Programme Board meetings and have the appropriate responsibility and accountability for decisions taken within the board that will have a direct or consequential impact on their Directorate / Service, and must make clear to the Programme Board the impact of decisions taken.

Key Supporting Activities

The Programme Board will act on behalf of the Strategic Management Group to govern all aspects of the Programme. The delegated authority from the Strategic Management Group requires compliance with the operating principles and thresholds as set out in the Strategic Management Group Terms of Reference.

A number of Reference Groups for the Programme may be established, with the option of utilising existing groups to act as a reference for the programme; the membership of such groups would be reviewed and terms of reference aligned to the PMS implementation programme's requirements.

Groups required include:

- Clinical Group(s)
- Health Records
- Information
- HR/OD
- Information Governance
- Technical Design and IT Service Delivery
- Operational General Management

These are essential for ensuring:

- Process change is identified, agreed, tested and implemented
- Information requirements are identified, tested and implemented
- Clinical protocols are agreed and implemented
- Service and Role redesign developed and implemented
- Transition Planning

Programme and Subgroup Relationships

It is essential that there is a formal relationship between the Programme Board and the various subgroups that are controlled by the Programme. In particular, the need to balance the level of support versus control is critical. These relationships are summarised as follows:

- The Programme Board will be provided with a monthly report on the status of the implementation subgroups. This information will be summarised and presented at each Programme Board meeting;
- Subgroups will be established with appropriate membership, skills and expertise and will include representation from the Programme Implementation Team in the membership;
- Further detail will be defined in the Programme Implementation Teams Terms of Reference.

3. Meetings arrangements

Chair

The meeting will be chaired by John Dickson, Associate Medical Director and in his absence Jonathan Best, SRO will assume the chair. The chair is responsible for the recording of formal minutes and these will be circulated within two weeks of the meeting.

Meetings

The Programme Board will meet on a monthly basis; however this may vary as the need arises.

Additional attendees may be invited to attend by the Chair and SROs, in accordance with the agenda subject matter.

Quorum

Meetings require a quorum of three quarters of members to be in attendance including one of the SROs, particularly if decisions taken commit resources.

Agenda

Agenda items will be given to the chair one week in advance of the meeting.

Minutes, actions and decision making

The Board has delegated decision making authority from the Strategic Management Group.

All meetings will be documented and these notes will contain a list of actions and decisions. A copy of these actions and decisions will be logged with the PMO after the conclusion of each meeting, where it will be held in accordance with the programme governance methodology.

Attendance

In the event of a member being unable to attend, apologies for absence should be sent to the Secretariat. Given the scale of the organisation and the importance of the PMS Implementation Programme, a named deputy should be appointed to attend in the absence of a Member and notified to the Secretariat at the same time as apologies for absence.

Papers

Papers and the agenda will be circulated, by email, 5 working days in advance of the meetings to all members to permit adequate time for review.

Please note that hard copies of papers sent electronically will not be tabled at the meetings.

Changes to the ToR

Changes to the terms of reference and functions of the board may be proposed at any meeting of the board with due notice of the proposed change having been given on the Agenda of the meeting.

4. Risk and Issue Management

The Programme Board will define the acceptable risk profile and risk thresholds for the programme and the workstreams / subgroups within the programme

Included in the monthly implementation report will be a review of current Risks and Issues that are applicable.

Management of risks and issues remains, where applicable, with the individual subgroups and should be performed in line with the PMS Programme Risk & Issue Strategy (being developed).

Consortium Members

NHS Ayrshire and Arran

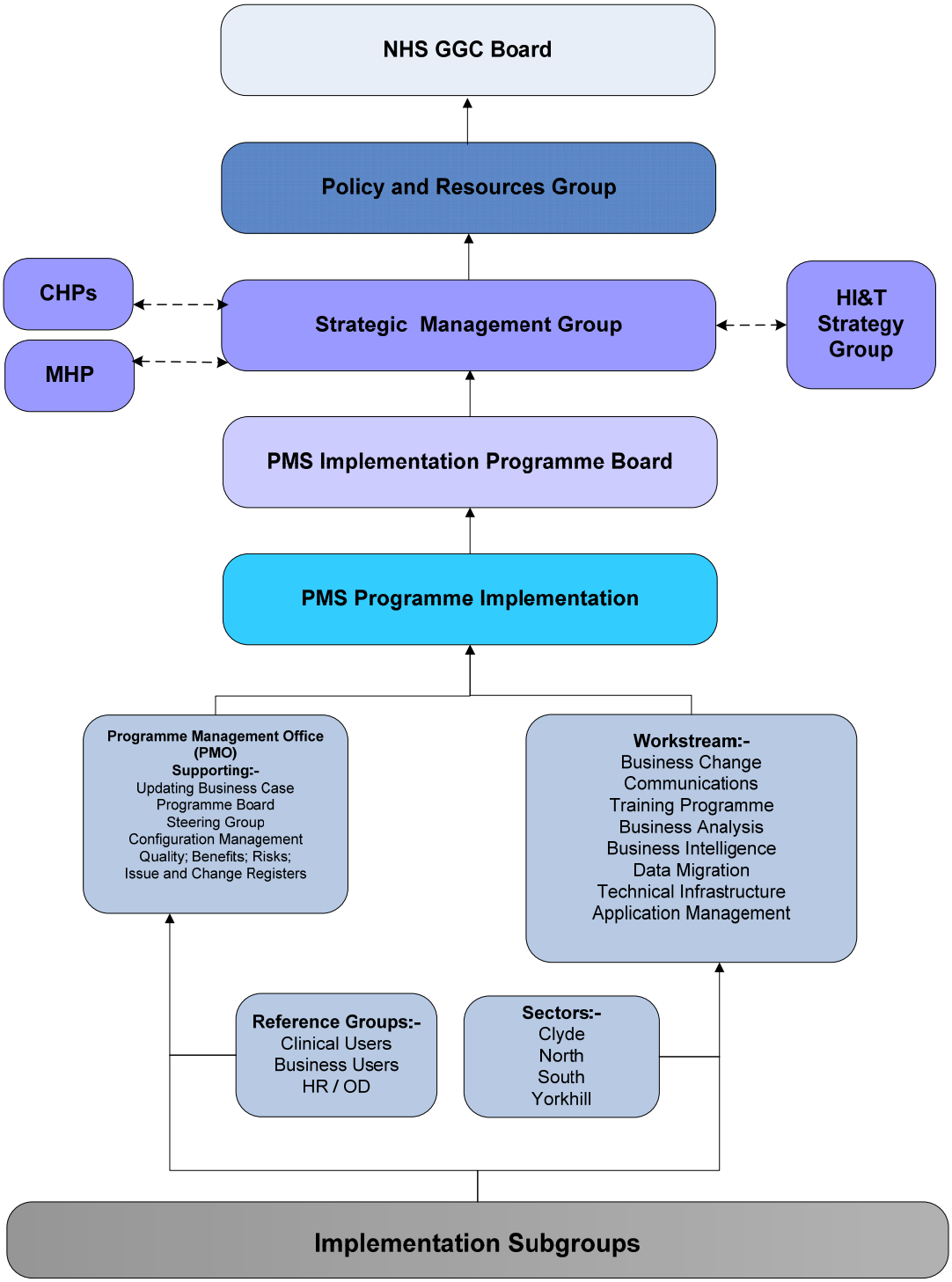
NHS Borders

NHS Grampian

NHS Greater Glasgow and Clyde

NHS Lanarkshire

Board Structure



Board Membership

Board Member	Representing	Designation
Kate Benson	Nursing	Assistant Director
Jonathan Best	Regional Services	Director
Maureen Clarke	Human Resources	Head of HR, Regional Services
Richard Copland	Health Information & Technology	Director
Mairi Dick	Health Information & Technology	Acting Head of Information, Knowledge Management & Health Records
John Dickson	Surgery & Anaesthetics	Associate Medical Director
Peter Gallagher	Finance (Acute)	Director
Malcolm Gordon	Emergency Care & Medical Services	Consultant Emergency Medicine
Anne Harkness	Rehabilitation & Assessment	Director
Anne Hawkins Calum MacLeod	Mental Health Partnership	Director Head of MHP
Kevin Hill	Oral Health	Director
James Hobson	Corporate Finance	Head of Finance, East Dunbartonshire CHP
Alan Hunter	Emergency Care & Medical Services	General Manager
Norman Lannigan	Pharmacy & Prescribing Support Unit	Professor, Lead Pharmacist Acute Care, Mental Health and Innovation
Sarah Leslie	Human Resources	Head of HR, Facilities
Frances Lyall	Acute Services Division Partnership Forum	Co-Chair ASDPF
Juli McQueen	Organisation Development	Head of Organisation Development
Karen Murray	CHP – East Dunbartonshire	Director
Antoinette Parr	Diagnostics	General Manager
Andrew Powls	Women & Children	Consultant Neonatologist
Paul Rogers	Surgery & Anaesthetics	Consultant Surgeon
Claire Stewart	Women & Children	Clinical Services Manager
Marian Stewart	Health Information & Technology	Head of Applications
Andrea Thompson	Communications	Senior Internal Officer, Communications
Margaret Welsh	PMS Implementation	Programme Manager
Ann Wilson	Surgery & Anaesthetics	General Manager
Brenda Wilson	Regional Services – Burns & Plastics	Clinical Service Manager
Total: 27		

Acute Strategic Management Group Membership

Grant Archibald
Professor David Barlow
Anna Baxendale
Jonathan Best
Sandra Bustillo
Helen Byrne
Paul Cannon
Richard Copland
Brian Cowan
Andy Crawford
Rosslyn Crocket
Jim Crombie
Ann Crumley
John Dickson
Rory Farrelly
Peter Gallagher
Rachel Green
Anne Harkness
Kevin Hill
Cameron Howie
Mary Anne Kane
Frances Lyall
Aileen MacLennan
Anne MacPherson
Ray McAndrew
Joseph McIlwee
Alex McIntyre
Margaret Roberts
Stuart Rodger
David Stewart
Iain Wallace

Appendix G – Readiness Review Actions

#	Recommendation	Progress to Date
1	The linkage between PMS and other initiatives needs to be clarified in order that the change is managed across all programmes, staff are clear about how they fit together, and all benefits are accrued without double-counting.	A refreshed strategy is currently being produced with clear schematics outlining linkages. Benefit realisations will be made clear.
2	Each health board needs to consider its portfolio and prioritise accordingly to ensure sufficient focus and capacity to implement successfully.	This is underway with PMS, GP IT implementation, data sharing with Local Authorities, paper-lite and the portal being key priorities.
3	Implementation risks to be formally documented at both Programme and health board level together with mitigation strategies, followed by active management of these risks.	NHSGGC has conducted a risk management workshop which has identified a number of implementation risks. These are detailed, along with mitigation actions and impact level in Section x. The PMS PSO will continue to maintain and add to these risks as required to ensure active management.
4	Each health board should complete a stakeholder and communication plan for implementation. Engagement needs to include all relevant stakeholders, especially those directly impacted by the change. All health boards should consider a launch event for the implementation programme.	The Business Change workstream will work closely with the Communications workstream to develop and stakeholder and communication plan. This will be completed by end January 2010.
5	Health boards should continue to focus on solutions for addressing affordability gaps, with detailed analysis of payment profile and funding flows once the preferred supplier is appointed.	Discussions with InterSystems have come to a satisfactory conclusion.
6	Each health board needs to decide on its approach to benefits management in relation to other initiatives.	NHSGGC will embed its benefits realisation/management in the ASR transformation and Mental Health strategies. This will enable all relevant HEAT targets to be met.
7	Benefit management plans need to be developed by each health board including the quantification of benefits and responsibilities for delivering them.	NHSGCC will be adopting a business management approach based on the principles of the eHealth Programme Benefits Management Process. Several benefits workshops have been held and both quantitative and qualitative benefits have been identified. These are outlined in Section X.
10	Each health board should develop a clear definition of business change (processes,	A dedicated Business Change workstream will be established as

	job roles and skills) and corresponding implementation activities.	part of the implementation project.
11	Health boards could share work and learnings on potential efficiencies with other boards and prioritise quick wins.	Discussions are underway on short, medium and longer term collaboration to produce continuing efficiencies.
12	All health boards need to make decisions soon on the data set and volume of historical data to be migrated. Appropriate challenge should be given to the amount of data being migrated, utilising archiving options to retain access to historical data in essential cases and data warehouses (ISD or local) for planning purposes to minimise historical conversion. Each boards needs to focus on improving data quality in the data set to be migrated.	This workstream is underway. A Data Quality Programme Board is in place. Detailed proposals will be brought forward in early 2010.
13	Health boards could collaborate on data migration, sharing extract tools and utilising work undertaken by previous migrations.	These are part of the discussions taking place at para 11.
14	All boards should review interfaces to third party systems to ensure that any additional costs are included in local business cases and agreement reached with incumbent suppliers.	This workstream is underway with other Boards.
15	Boards need to consider the additional pressure that local hosting will place on health board staff to provide extended support coverage.	An H&IT Resource Strategy has been completed which address this issue.
16	The implementation model needs to be agreed and fully documented as a matter of urgency in order for planning at the Programme and a local level to take place, minimise duplicated effort, ensure momentum is retained and transfer knowledge successfully in the transition from procurement to implementation.	A final set of discussions with NHSGGC PMS Implementation Board and key stakeholders is being scheduled to finalise implementation running order.
17	When the preferred supplier is confirmed, all health boards should work together with the supplier on the overall consortium implementation plan, taking into account phasing of modules and training to make most efficient use of resources and reduce risk to the Programme as far as possible.	A programme of weekly meetings are in place with other Boards.
18	Once the preferred supplier is confirmed and the overall phasing agreed, all health boards need to develop their local board implementation plans.	A high level implementation approach and plan has been developed and is found in Section 12. This will be further refined following detailed discussion with InterSystems and once an overall consortium implementation plan is agreed.
19	All health boards should complete resource planning and initiate mobilisation as soon as possible.	A high level resource plan has been developed.

20	Actively manage resource position throughout implementation.	NHSGGC will actively manage the resource position throughout implementation and any resourcing risks or issues will be actively managed or escalated as per the documented governance structure.
21	Health boards could collaborate on recruitment activities such as advertising and interviewing.	This will be considered at the weekly meetings with other Boards.
22	Establish a mechanism for the PMS implementation leads to meet regularly. Introduce a shared workplace (for example utilising existing Sharepoint tool) to share materials between health boards and the Programme team.	This is under active consideration at the weekly meetings and includes the preferred supplier.
23	Utilise the experience and lessons learned from Lothian and Fife who have already implemented a PMS. For example, Lothian has offered to share extract specifications for iSoft.	A series of meetings with Lothian have been set up.
24	Boards could collaborate on defining test strategies and common testing areas so that testing effort is minimised.	This is under active discussion with other Boards.
25	Lessons from previous major training exercises should be shared. For example, Lanarkshire intends to combine testing and training resource to enable trainers to gain a thorough understanding of the system prior to training.	NHSGGC has recently moved into two new ACHs and lessons learnt will form part of this programme.
26	Boards could collaborate on training to share resources where possible and consider this in the staging of the overall rollout plan.	Agreement has been reached on training materials and geographically co-located Boards are discussing further collaboration.
27	Agree and document the contract management model as a matter of urgency. This should also outline how the five consortium boards are going to work with one supplier during the implementation period.	This has been progressed and NHSGGC has developed a draft proposal which has been agreed by all Consortium Boards. This is being taken forward for implementation.
28	Contract manager(s) should be appointed prior to award in order that knowledge transfer can be initiated at an early stage and ideally provide continuity with the procurement team.	This is being taken forward with para 28.
29	Managed legacy supplier risks carefully throughout the implementation, minimising dependencies and identifying contingency plans.	This is included on the risk register but regular meetings with legacy suppliers are in place and will continue to be

Appendix H – Benefit Profiles

PMS System Benefit Profile for Single System Across NHSGGC			
No.	1	**Owner**	**Acute Chief Operating Officer (COO) and Directors**
Benefit Overview	Single System and Patient Safety		
Detailed Description:			
The implementation of the new single PMS offers benefits in terms of patient safety relating to cancer tracking; joined up patient data; improving bed management which with visibility of beds will enable sustainability of the 4hour A&E wait target and provide opportunity to reduce A&E attendances. Patient safety relates to the effectiveness of delivered healthcare. It is about enabling better decisions, managing risk, reducing the opportunity for error and, ultimately, improving outcomes for patients. NHS Boards face the ever-present risk of reputational damage and financial loss through patient-led litigation. The new single system with a single MPI contributes to the reduction of errors and thus reduction in the management of risk.			
Stakeholders	PMS Implementation Programme Board, NHSGGC		
Quality Dimension*	**Safe**		
Key assumptions	**Will drive organisational effectiveness and COO signs up to PMS being a key enabler for ASR and part of Acute CRES target**		
Risks to benefit	**The organisation fails to embrace IT-enabled business change and working practices are not re-designed.**		
Costs	**N/A**		
Performance Measure(s)	**Contribution to CRES targets from year 4 (after implementation) will be finalised prior to beginning implementation**		
Measurement Source	**Risk management reports**		
Measurement Frequency	Post implementation		
Dependencies	1. Sufficient Desktop equipment for end users 2. Workflow and process re-design 3. Promote evidence-based care 4. Clinical Audit		

PMS System Benefit Profile for Improved Clinical and Operational Functionality			
No.	2	**Owner**	**Acute Chief Operating Officer (COO) and Directors**
Benefit Overview	Improved clinical and operational functionality		
Detailed Description:			
The implementation of the new PMS solution will provide a standard set of functionality – clinical and operational - across all of NHSGGC. The functionality available will as a minimum include all that is currently available on any site from current PAS/HISS implementations and make this available across all sites. Additional functionality will also be implemented to support the NHSGGC strategic aim of an Electronic Patient Record. Patients will be registered once only by Health Records as they will all be on a single system; Referral information will be available from the system; Referrals will be managed via the system with a UCPN (Unique Care Pathway Number) available for all referrals facilitating the joining up of the patient journey; Patients can be managed operationally and clinically across all NHSGGC sites; Appointment scheduling can be maximised across NHSGGC; Waiting lists can be managed across NHSGGC making best use of capacity; Patients will be more easily tracked across NHSGGC; Order Communications will be available and used for all test or investigation requests; Diagnostics test results will be available electronically, test status will be visible allowing the tracking and electronic sign off of results; Standard set of clinical data will be captured at point of care; Single A&E system across NHSGGC facilitating the identification of 'at risk' children; Multiple healthcare professionals having role based access to the patient record at one time; Patient care will therefore be consistent across NHSGGC; Information reporting will also be standardised across all of NHSGGC with improved information available for the planning and management of clinical services; Enhanced quality of clinical coding.			
Stakeholders	PMS Implementation Programme Board, NHSGGC		
Quality Dimension*	**Efficient and equitable**		
Key assumptions	**Will drive organisational effectiveness and COO signs up to PMS being a key enabler for ASR and part of Acute CRES targets** **Clinical and operational staff will routinely use the new PMS and become less reliant on paper;** Clinical and operational staff will agree standard ways of working across NHSGGC in line with programme implementation timescales and adopt them universally across NHSGGC.		
Risks to benefit	Inability to agree standard clinical requirements across NHSGGC; Current lack of standard processes – operational and clinical Lack of uptake of functionality by clinicians; Appropriate devices to access systems not available; Insufficient training before go-live date; Technology issues.		
Costs	**N/A**		

Performance Measure(s)	Up to 10% contribution from year 3 onwards towards Acute Division CRES
Measurement Source	**Monitor:** **number of end users logging on to use functionality for OCS / PAS / CST/A&E** volume of OCS requests number of clinical documents (e.g. letters) created reduction in return outpatient appointments **achievement of targets eg 18 Weeks RTT, Cancer 31 day target, A&E**
Measurement Frequency	During and after the implementation programme
Dependencies	Standardisation is agreed and implemented Clinical data to be captured Clinical processes Operational (eg Medical Records) processes Infrastructure and application are performant Staff have access to appropriate devices Staff are trained

PMS System Benefit Profile for Achievement of Performance			
No.	3	**Owner**	**Acute Chief Operating Officer (COO) and Directors.**
Benefit Overview		**Achievement of Performance**	

Detailed Description:

The implementation of the new single PMS offers benefits in terms achievement of performance through improved information for reporting and monitoring. Supports achievement of 18 weeks RTT; 31 day cancer target; delayed discharges; 4hour A&E wait and reduction in A&E attendances. Ability to track patients across the system offers potential to minimise risk of harm to patients.

Performance – the PMS system will underpin the management and monitoring of performance of targets across the system providing managers and clinicians with accurate, real time information and data to manage the patient journey. This will lead to organisational efficiency and a focus on achieving key patient access targets.

18 Week RTT – the PMS solution will underpin capacity plans and redesign initiatives across acute specialties to meet the target date of December 2011 for an 18 week referral to treatment journey for all patients. There will be significant benefits for the service in performance managing progress toward agreed trajectories and milestones provided by a PMS 18 week RTT solution for use by managers and clinicians and through an agreed reporting framework.

31 Day Cancer Target – the PMS single system PAS solution and ability to track individual patients on the cancer pathway will allow closer monitoring of progress against target i.e. 95% of cancer patients will start treatment within 31 days from decision to treat. There are further benefits in reducing the cancer pathway time through active management and tracking as well as an early warning flagging of potential deviation from pathway to ensure targets are met and sustained. A single system and unique identifier for patients across GGC will allow economies and efficiencies in audit and admin in year 3 following implementation. A further benefit exists through the inclusion of Clyde sites where multiple non IT based systems are currently relied on to provide data on individual patient's cancer journey.

A&E – currently a stand alone system to track and manage patients through A&E exists in some parts of GGC. There are significant benefits to introducing an integrated A&E system as part of the PMS deployment which will provide faster links to diagnostics, Labs and bed management to ensure patients get to the right area at the right time. This will improve capacity planning and support the acute bed model process to reduce beds and increase efficiency in all specialties. Further efficiencies will be achieved following implementation in bed management and administrative processes leading to a contribution towards CRES targets.

Improved patient tracking – single PAS will allow improved tracking to prevent patient breaching through real time pathway management particularly in the 31 day and 62 day cancer targets. Another major benefit of a single integrates PMS solution will be one data source for each patient through unique identification thus reducing clinical risk with improved information on clinical history measured in downward trends in medication errors and infection rates.

Faster discharge information to primary care will reduce readmission rates and improve continuity of care through agreed KPIs e.g. discharge summaries provided to GP practices electronically within 72 hours of discharge.

Other benefits – Bed management across hospitals.
Reduced Length of Stay.
Patient Scheduling.
Reduced DNAs
Improved day case rates.

Delayed discharges.	
Stakeholders	PMS Implementation Programme Board, NHS GGC
Quality Dimension*	**Efficient**
Key assumptions	**Will drive organisational effectiveness and COO signs up to PMS being a key enabler for ASR and part of Acute CRES targets**
Risks to benefit	Data entry not captured in 'real time' Technical system failure
Costs	
Performance Measure(s)	**Contribution to CRES targets from year 4 (after implementation) will be finalised prior to beginning implementation**
Measurement Source	**Management reporting: access targets, cancer targets, delayed discharges, 4 hour wait in A&E, measuring trajectories against 18 week**
Measurement Frequency	During and after implementation
Dependencies	Sufficient desktop / mobile IT equipment for end users

PMS System Benefit Profile for Cost Avoidance			
No.	4	**Owner**	**Acute Chief Operating Officer (COO) and Directors**
Benefit Overview		**Cost Avoidance**	

Detailed Description:

The implementation of the new single PMS offers cost avoiding benefits in several areas, with a total cost avoidance between 2009-2011 of approximately £560K, and potential further cost avoidance during and after this depending on the volume of changes and new IT systems requested.

Fundamentally the single PMS system is replacing 14 or more current IT systems from many different suppliers. Each of these systems currently requires separate upgrades to support new functional requirements (e.g. 18 weeks RTT) and to maintain ongoing capacity and support. Without PMS the following would be required:

1. Meditech HISS (two instances- South Glasgow and Yorkhill) – new version is required for full 18WRTT functionality, plus current version approaching end of supported life – so major upgrade required along with associated user re-training and configuration of the system. As part of 18WRTT this has been costed for South Glasgow at £114K plus considerable IT and end user resourcing (training, system configuration).
2. Clyde PASs (nine related systems) – physical server hardware is beyond the end of supported life plus systems require consolidation into a single Clyde PAS to support current and planned activity across RAG, IRH and VoL. This has recently been costed at £150K plus considerable IT and end user resourcing (e.g. equipment replacement, staff commitment to configure system and undertake training).
3. All systems would require significant development work to deliver fully electronic ordering and results communications as required to deliver the Labs strategy (or investment in an alternative order comms solution), with a known high risk that the systems could not deliver and therefore Labs benefits / savings not being realised. A separate Order Comms system (as would be required in Clyde) was costed at £300K.
4. Any future new requirements (as 18 Weeks RTT and New Ways have been over the last few years) would require separate work to specify, develop, test and implement with each separate system and supplier. With PMS we have one supplier, shared specifications with and development costs with other Boards, and a single implementation.
5. IT systems rely on exchanging data with each other, for example patient data, lab results and clinic lists. These exchanges take place through specialist IT integration solutions, NHSGGC has many of these, mostly aligned to the old PAS systems, most of them are at the end of their supported life, are difficult to support on a real-time basis, and require many different skill-sets and support contracts to maintain. The PMS solution will provide a new single integration solution to replace most of these, so avoiding the otherwise separate investment in maintaining this area. The cost of this would have been at least the same as the investment being made for integration in PMS.
6. In addition, integration of new applications currently has to be undertaken separately with each current PAS (typical cost £5K to £20k each). Once PMS is implemented such integration will only be needed once per new application.

Stakeholders	PMS Programme Board, HI&T
Quality Dimension*	**Efficient**
Key assumptions	**None**
Risks to benefit	Low – will be realised unless entire PMS implementation ceased.

Costs	**N/A**
Performance Measure(s)	Costs
Measurement Source	**Documented proposals for recent upgrades and alternative system implementations.**
Measurement Frequency	Already complete
Dependencies	None

Appendix I – Strategic Benefits/Future Requirements Evaluation

Methodology

A number of activities have been undertaken to assess the strategic benefits and future requirements proposals of each PMS Bidder. The key stages of the assessment are detailed below:

- **Product Roadmap demonstrations:** a sub-set of the PMS Programme Board attended product roadmap demonstrations provided by each Bidder. These demonstrations were designed to assess the product roadmap planned for each system on offer and their 'fit' with NHS Scotland's likely future strategic direction. These visits were not scored.

- **Strategic Site visits:** a sub-set of the PMS Programme Board undertook strategic site visits to Boards/Trusts where the three systems have been deployed. The team visited Aintree Hospital for System C, Royal Infirmary Edinburgh for InterSystems and Royal Surrey Community Hospital for Oasis. The purpose of these visits was to provide members of the programme board with visibility of the three systems being used by NHS staff and provide an opportunity for discussion with NHS Boards/Trusts to understand how they work with the three systems. These visits were not scored.

- **Evaluation of strategic benefits and future requirements:** each Bidders' strategic benefits and future requirements submissions were evaluated. Responses were viewed in terms of the benefits that can be delivered and the management of risk. Responses were also viewed in terms of the ability of NHS Scotland to positively influence the future roadmap of the bidders' products. This element of the procurement was scored by the PMS Programme Board on the 3rd November.

Evaluation Team

The evaluation team for the strategic benefits and future requirements comprised of the PMS Programme Board. The membership of the PMS Programme Board is detailed below.

Member	Organisation
Alan Lawrie (Chair)	NHS Lanarkshire
Paul Rhodes	Scottish Government
Robin Wright	NHS Lanarkshire
Richard Copland	NHS Greater Glasgow & Clyde
Denise Brown	NHS Ayrshire & Arran
Jackie Stephen	NHS Borders
Alison Hawkins	NHS Grampian
Robert Bryden	NHS Ayrshire & Arran
Roy Garscadden	NHS Lanarkshire
Anne Leigh-Brown	ISD, NSS
Andy Robertson	ISD, NSS
Dr Alison Graham	NHS Lanarkshire

Christine Gilmour	NHS Lanarkshire
Rachel Bacon	NHS Borders
Malcolm Gordon	NHS Greater Glasgow & Clyde
Mary McGinn	NHS Ayrshire & Arran
Marian Stewart	NHS Greater Glasgow & Clyde

Key Findings

Responses were viewed in terms of the benefits that can be delivered, the management of risk and in terms of the ability of NHS Scotland to positively influence the future roadmap of the bidders' products. This element of the procurement was scored by the PMS Programme Board on the 3rd November.

AOA scored highest on the basis of the modernity, flexibility and development potential associated with the System C solution.

During the strategic scoring session a number of issues emerged that required clarification from both AOA and InterSystems. These related to timescales associated with developments of clinical support tools, mental health PAS and RTT functionality. Assurances were secured from AOA and InterSystems that timescales would be met within boards' expectations. Work will be undertaken during the selected preferred bidder due diligence process to ensure these commitments are contractually binding.

Appendix J – Outline Business Case

Key Assumptions in the Outline Business Case V1.1 dated June 2007

- The options compared Status Quo (Baseline – no national PMS Procurement, local solutions) and movement to a National PMS solution;
- The preferred option assumed that all Boards are involved in a national procurement of a PMS System;
- The baseline costs were based on a Cost Survey of Boards using 2007/08 budgets;
- The investment appraisal excluded any additional IT infrastructure that may be required eg additional PCs at ward level, additional network infrastructure;
- The accuracy of the PMS solution costs were dependent upon the quality of the responses received from suppliers to the Requests for Information process – there was a significant variation in the responses reflecting the preliminary stage of the procurement;
- Suppliers were asked to cost three scenarios covering a small, medium and large NHS Board. It was assumed that the cost of a national PMS solution would be approximately four times the large Board scenario (which was based on the volumetric data from Greater Glasgow and Clyde);
- The aggregate responses to the Board cost survey were assumed to provide a reliable picture of IT expenditure within the acute and community hospital sector across Scotland. However the time allowed for Boards to provide this information was limited and this may have impacted upon the quality of these costs. The issue of recurring and non-recurring funding is recognised as a further point impacting on the available funding for the project and the affordability of the project;
- An 18 month procurement timeframe was built into the business case;
- It was assumed that NHS Boards would implement a national PMS solution within a six year timeframe. The implementation was assumed to take place on a phased basis. It was assumed that first phase would start in 2009/10. Given the expiry of current licences it was assumed that this would be necessary under a national or a local solution;
- It was recognised that the transition timescales are ambitious and would require a major, well managed and resourced effort by NHS Scotland;
- Optimism bias was applied to the costs;
- The projected costs included provisions for Hosting / Disaster Recovery;
- The preferred option projected additional costs (allowing for changes in current expenditure) of £40m in 2009/10, £15m in 2010/11 and £22m in 2011/12; and
- In terms of affordability it was anticipated that the bulk of the funding for the implementation of the core components of the preferred option would come from the SGHD eHealth Budget;

Affordability as at OBC

The key assumptions in the OBC are set out above. In terms of affordability the broad assumptions appears to have been that:

- capital would be available from Scottish Government to facilitate the procurement of the licences and infrastructure required specifically for the PMS Project;
- capital would be available from Scottish Government to facilitate the procurement of the licences and infrastructure required specifically for the PMS Project;
- the revenue implications of the capital expenditure, as above, in the form of capital charges, would be met by NHS Boards;
- the bulk of the non-recurring costs of implementation of the PMS Project would be met by the SGHD eHealth Budget;
- the recurring costs of licences and software maintenance would be met by Boards;
- the funding of the project assumed a traditional public sector model. The assumption in the financial projections is that VAT will be payable on the capital expenditure and that an assessment of optimism bias, to address risk, is required.
- assumed baseline costs of approximately £8m for all NHS Boards.
- the Local Solutions Option in the OBC assumed capital expenditure, including VAT and optimism bias, of £19.465m giving rise to capital charges of approximately £4.4m. It was assumed that the capital would be depreciated over a five year period. In Year 2 of the project, and assuming that the non-recurring costs were to be funded by SGHD eHealth Budget, then the recurring costs would be approximately £14.45m against a cost baseline of £8m, giving an affordability gap of £6.4m.
- Option 2(a) of the OBC considered a Core PAS and Order Communications solution. This involved a phased approach but in Year 2 of the project the capital expenditure, including VAT and Optimism Bias, was £12.119m giving rise to capital charges of £2.873m. On the same basis as above this gave rise to recurring costs of £11.375m against the cost baseline of £8m and an affordability gap of £3.3m.

The above costs included provision for hosting and disaster recovery but demonstrate that there was a significant challenge to the affordability of the project at the OBC stage, arising to a large extent through the impact of capital charges on recurring annual revenue costs.

It has subsequently emerged that SG eHealth would not be funding the “bulk” of the non recurring implementation costs. The current basis of the funding to be provided is included in the sources of funding section of this FBC.

Overview of OBC Options

The NHS Board Consultation exercise identified a number of options for a PMS solution. These options related to three key dimensions:

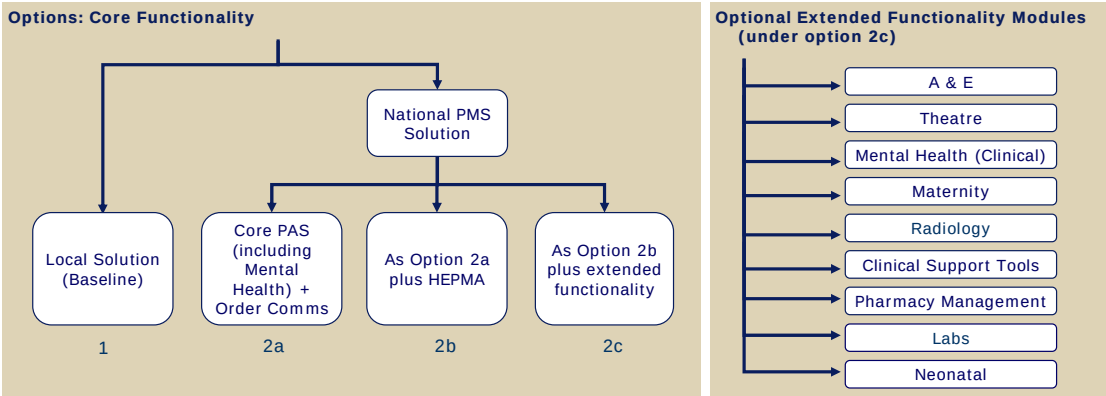
- the scope of the solution in terms of:
    - the mandatory functional requirements that a core PMS *‘must have’*;
    - the desirable (but optional) functional requirements that a PMS might have;
- the delivery of the system in relation to the number of suppliers;
- the approach to hosting the solution.

All three dimensions were discussed by the Project Team, Senior User Reference Group, Stakeholder Groups and the Project Board during the short-listing process. The outcome of these discussions in relation to scope and hosting are discussed below.

Scope Long List Options

The following figure illustrates the long listed scope options for PMS.

Figure 1 Scope Options

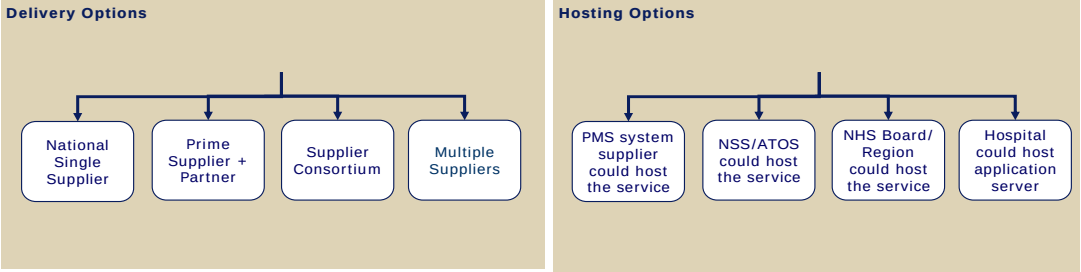


The long list functional scope options were structured as:

- **Option 1** – this is the status quo (baseline) option. It is assumed that no national PMS procurement is undertaken and that a mixed set of outcomes would occur, with around 50% of Boards continuing as they are whilst the other 50% would move to a single incidence of a PAS/PMS at a Board level (see section 4.1) with Order Communications, HEPMA and two optional modules;
- **Option 2(a)** – this assumes that there is a national procurement and implementation of a PMS system across NHS Scotland which comprised a Core PAS (including Mental Health PAS functionality) plus Order Communications;
- **Option 2(b)** - as Option 2(a) plus HEPMA; and
- **Option 2(c)** – as Option 2(b) plus a number of optional modules from which Boards would select according to need and priority. The number of modules selected would vary from Board to Board, with some perhaps taking none and others a larger number. For the purposes of analysis in this OBC, it was assumed that Boards on average would select two modules. These modules include:
    - Accident & Emergency application;
    - Theatres module;
    - Mental Health Clinical;
    - Maternity module;
    - Radiology
    - Clinical support tools;
    - Pharmacy Management system;
    - Laboratory system;
    - Neonatal system.

Delivery and Hosting Long List Options

Figure 2 illustrates the options around the delivery of the PMS solution.



[In "Hosting Options", "NSS/ATOS could host service" to be omitted]

Delivery options relate to whether NHS Scotland will choose a single supplier, a prime supplier plus partner, a supplier consortium or multiple suppliers to provide the PMS solution. Implicit within the first three supplier scenarios is that a single system would be rolled out nationally. Under the multiple suppliers option there would be a choice of supplier, but this choice could apply at different levels. That is, there would be a single supplier:

- across an NHS Region;
- across an NHS Board or;
- at an individual hospital site level.

The hosting options diagram outlines the possible levels at which the PMS solution could be hosted (i.e. the server location and associated technical management). There are four options for this:

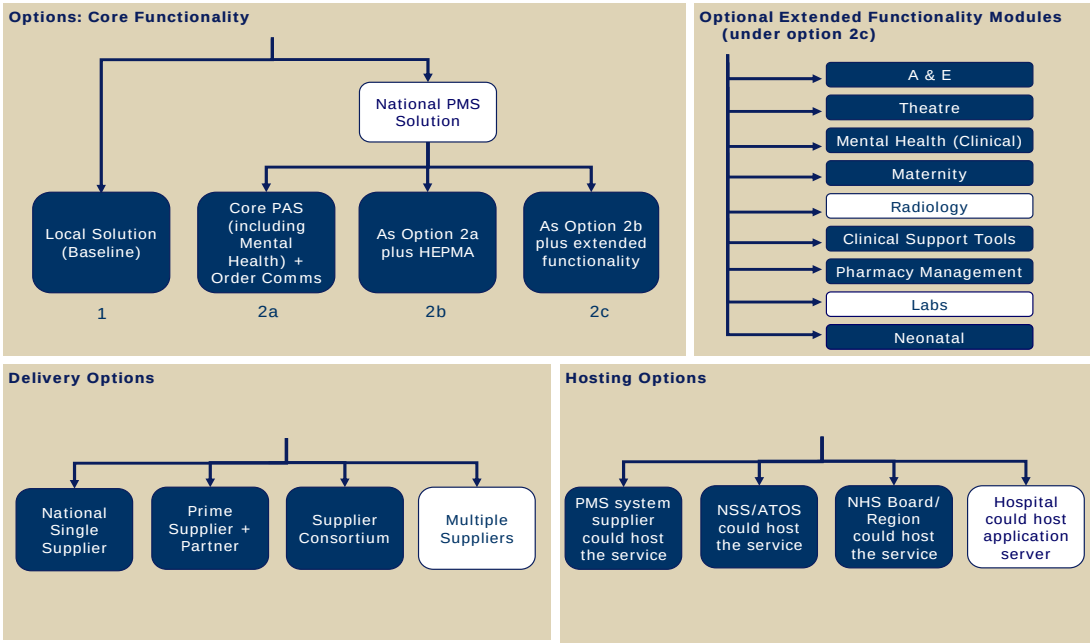
- the PMS system supplier could host the service;
- National Services Scotland could host the service under the existing Atos Origin alliance contract;
- each NHS Board and/or region could host the service (i.e. NHS Lothian & Fife host within Board);
- each Hospital site could host the application server (the Do Nothing option; most hospitals have a server).

Short-Listed Options

Following discussions with the Project Team, Project Board and Senior User Reference Group the long list of options was reduced to a slightly shorter but nevertheless more manageable number to evaluate in more detail. This process was influenced by the market sounding exercise which provided information on market capability in certain areas.

Figure 3 illustrates the final short-listed options, which are highlighted in blue.

Figure 3 Short Listed Options (in Blue)



The general strategy for PMS is to have a defined 'core' which would be procured centrally, plus a range of optional modules that would be adopted by individual Boards if they required them. The determination of what should be in the core is therefore of considerable importance. It is important to explain that at this point 'core' functionality was taken to mean the functionality that would be covered by the national PMS solution and as such would attract central funding. It does not necessarily imply that this functionality would be provided through a single software product. However, if different products are part of the overall 'core' then these would be provided as a fully integrated/ interfaced product set.

As will be further discussed under Procurement, the ability to provide the 'core' will be a primary consideration in the selection of the PMS supplier(s). The ability to provide functionality covered by the Optional Functionality list will be taken into consideration but not as a primary determinant.

Core PMS Functionality: As illustrated in Figure 5.3, two options (2a and 2b) remain for what should be in the 'core'. The team considered option 2b to be more desirable, given that, with one exception, no Board currently has an acceptable HEPMA solution. However, it was recognised from the market sounding exercise that delivery would probably depend on the selected PMS supplier being able to forge an effective partnership with a best of breed HEPMA supplier – at that time the opinion was that there was no general PMS product that included a sufficiently sophisticated HEPMA component for NHS Scotland's needs.

Optional Functionality: The list of optional functions shown in Figure 5.3 is the same as the original long list with the exception of Radiology and Laboratory systems, which were both excluded in short-listing. The Project Team and Senior User Reference Group agreed that Radiology and Laboratory applications should be excluded because:

- a national procurement for replacement of Radiology systems had just taken place. Boards requiring a Radiology system could "call off" that contract;

- almost all Boards currently have acceptable laboratory solutions, all of which are complex mixtures of interlinked systems for the various specialised laboratory functions. Given this complexity and the fact that laboratory systems are presently most effectively delivered as “best of breed” products, it was agreed that it made better sense to deal with them separately from PMS.

There were strong views from the Senior User Reference Group supporting inclusion of an Accident & Emergency module in the core, because experience had shown that a closely integrated A&E component would be operationally much more effective than a (more) stand alone solution. The Pharmacy representatives also strongly expressed the view that ‘Pharmacy Management (PM)’ applications should be part of the core PMS as there is an essential inter-dependency between PM and HEPMA.

At this stage, no firm decision was made in relation to the inclusion of these additional elements in the core, largely because it was not at that time possible to assess the full implications, particularly costs, of their inclusion. One possibility was that functionality might be added to the core if Boards were prepared to fund the additional core items. This issue will be revisited later in this section.

Delivery Options: the Project Team, Board and the Senior User Reference Group considered all the delivery options. Significant reservations were expressed in relation to the ‘Multiple Supplier’ option given that any divergence from the single supplier solution would limit the benefits available from a national PMS solution (see Section 7).

Taking into account the HEPMA situation (see above) it was agreed that the optimum solution would be a single prime supplier in partnership with a single preferred HEPMA supplier.

Hosting Options: The Project Team and Senior User Group considered that only three of the four hosting options listed in Figure 3 were viable. Hosting at hospital site level was rejected in view of the cost and complexity of providing multiple hosted services. There was general agreement that a centrally hosted service would be most advantageous in terms of simplicity, security, technical support and economy of scale. It was recognised that the resilience of the national Wide Area Network (WAN) and its ability to support the significant increase in traffic would need to be assessed. This issue was also raised during the NHS Board Consultation exercise. The ultimate choice between national and more local (i.e. Board or Region) hosting is yet to be resolved, since the answers to key questions will at least in part depend on the PMS solution selected.

The movement from a national to a consortium based approach to the procurement and the affordability issues are important factors that have presented challenges in taking the programme forward from the OBC stage to the selection of the preferred bidder and the development of this FBC.