NHS HIGHLAND – PROPOSED IMPLEMENTATION OF THE NATIONAL PATIENT MANAGEMENT SYSTEM (PMS)

Report by Bill Reid, Head of eHealth on behalf of Deborah Jones, Chief Operating Officer

The Board is asked to:

- **Agree** the need for replacement of the current legacy Patient Administration Systems with a modern Patient Management System;
- **Consider** the more detailed content of the attached draft Business Case;
- **Agree** that NHS Highland commence implementation of the National Patient Management System from April 2013;
- **Agree** the required local funding to allow the implementation to commence.

1 BACKGROUND AND SUMMARY

On 6 December 2009 NHS Scotland announced that the successful prime supplier for the national Patient Management System (PMS) was Intersystems Corporation with the Trakcare product. The procurement of the new PMS was conducted on behalf of the Scottish Health Service by a Consortium of Boards comprising NHS Ayrshire & Arran, NHS Borders, NHS Grampian, NHS Greater Glasgow & Clyde and NHS Lanarkshire.

The Boards had agreed to undertake the procurement of a new “fit for purpose” PMS on behalf of the NHS in Scotland.

The procurement was successful in that it resulted in the selection of a modern suite of systems and services that are capable of delivering on current clinical demands and having sufficient flexibility to deliver against future service need.

The procurement also led to a framework agreement with catalogue pricing which allows other NHS Boards outwith the consortium to implement the PMS System without the need to go through their own discrete procurement process.

Implementation of the nationally procured Patient Management System across NHS Highland is a key component of the current NHS Highland eHealth Delivery Plan. It is planned that implementation will commence in the 2013/14 financial year.

The Initial Agreement was submitted to, and approved by, the NHS Highland eHealth Strategy Group as was an early draft Business Case. The current Business Case has been submitted to, and agreed by, the NHS Highland Asset Management Group, the NHS Highland Senior Management Team and the NHS Highland eHealth Strategy Group. The purpose of this paper and attached Business Case is to seek approval and funding to implement PMS across our Board area commencing in April 2013.

It is acknowledged that the Argyll & Bute Community Health Partnership of NHS Highland with its patient flows predominantly to NHS Greater Glasgow & Clyde creates specific issues in system implementation terms. These issues are around the patient pathway and clinical continuity in respect of the material number of our patients referred out of area. NHS Highland is working with the supplier and other NHS Boards who have similar issues to ensure that a cost effective and pragmatic solution is reached.
The implementation of PMS will be the most significant system work undertaken across NHS Highland. The eHealth function will require to review all existing and prospective workload with a view to ensuring that adequate capacity is created in resource terms.

2  PATIENT MANAGEMENT SYSTEM – NHS HIGHLAND

Currently NHS Highland operates two separate Patient Administration Systems (PAS), iSOFT iExpress in Northern NHS Highland and the ATOS Origin Helix System in the Argyll & Bute Community Health Partnership (CHP).

Each of these systems is approaching “end of life” in terms of support and functionality. These existing PAS Systems have little or no clinical functionality. They are administration systems, not patient management systems.

In addition, utilising two discrete systems across one Board area for clinically focussed patient-centric data and information means that a patient centred approach to records and clinical information across our area is not currently possible.

In contrast, the PMS is at the core of many NHS Scotland eHealth initiatives. NHS Boards who are already implementing the PMS are looking to maximise the use and benefit by utilising the functionality inherent in the system.

NHS Highland requires modern information systems to support clinical staff in the provision of high quality care. An integrated suite of systems, in this case the proposed PMS, is built to support current and future clinical requirement, including patient pathway tracking allowing the identification and analysis of variation. This implementation will represent the core of the future NHS Highland eHealth work-plan and is articulated in the NHS Highland eHealth Delivery Plan as formally approved by the Scottish Government eHealth Directorate earlier in 2012.

The new PMS will also ensure that patient journeys across the Acute Sector are fully reflected in an emerging Electronic Health Record (EHR). In summary PMS implementation will:

- engage our clinical community in the potential of eHealth to support the delivery of safe, effective, timely, equitable and efficient care to patients;
- enable information flows that improve the safety and quality of care for our patients;
- support the NHS Highland Delivery Plan particularly in areas such as 18 Weeks Referral to Treatment, the Treatment Time Guarantee (TTG) and HEAT Targets;
- support and enhance the key Highland Quality Approach (HQA); and
- support and enable service planning and redesign by delivering patient centred data and information across NHS Highland.

The current indicative costs which are not expected to show material variance from the actual costs are as follows:

**Non-recurring**

| Intersystems Implementation Costs | £ 1,450,000 |
| Hardware Costs                   | £ 500,000 (Refresh 2018/19) |
| Local Implementation Costs       | £ 842,000   |
| Total Implementation (Phased Years 1 and 2) | £ 2,792,000 |
The Scottish Government Health Department (SGHD) has responded to NHS Highland and confirmed that some central funding will be available towards implementation. We have been informed that this funding will be a total of £1,700,000 leaving £1,092,000 to be funded from NHS Highland resource over the two year implementation period.

Recurring

NHS Scotland has purchased a national licence for PMS; this was funded from capital and is available to NHS Boards. The associated capital charges become the responsibility of the local NHS Board. The full year revenue impact may be summarised as (rounded to £ ‘000):

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<tr>
<td>Capital Charges (Licence)</td>
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<td>Annual Support (Intersystems)</td>
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<td>Hardware Support and Staffing</td>
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| **Total**                            | **£1,200,000**

The figure above will be “offset” to an extent by the current cost of existing PAS Systems support which equates to £324,000 leaving a recurrent funding requirement of £876,000 per annum in respect of NHS Highland (full year).

3 CONTRIBUTION TO BOARD OBJECTIVES

The proposed implementation of the Patient Management System will significantly contribute to the delivery of improved services to patients through effective clinical systems and information provision. The NHS Highland Quality and Efficiency Plan is built upon the foundation principles of reducing harm, manage variation and reduce waste.

Implementation of the PMS will facilitate seven specific key contributions to NHS Highland Corporate Objectives. These contributions have been identified as tangible improvements in the following areas:

- patient care
- access to care
- bed management and discharge planning
- patient safety
- clinical communication
- clinical effectiveness
- service planning

4 GOVERNANCE IMPLICATIONS

Staff Governance

There are significant implications for staff, both clinical and non-clinical. The implementation of PMS will result in a reconfiguration of service design and clinical work-flows. The formal project management process includes ensuring staff involvement in, and knowledge of, the streamlined processes which will result.

Patient and Public Involvement

There will be patient and public representation on the key Project Boards. The implementation of a Patient Management System is a significant event for NHS Highland and our users and periodic updates will be issued.
Clinical Governance

The implementation of a modern and integrated Patient Management System will make a significant contribution to the improvement and maintenance of robust clinical governance across the NHS Highland area. This will include the ability to establish and monitor clinical pathways.

Financial Impact

While implementation of a modern patient management system will lead to significant costs being incurred there will be a longer term benefit in ensuring the most effective utilisation of our resources.

5 RISK ASSESSMENT

The implementation of PMS will be undertaken using formal Project Management techniques, based on Projects in a Controlled Environment (PRINCE 2) and LEAN Principles. This approach ensures a continual process of risk assessment involving the maintenance of formal Risk Registers and audit trails around risk mitigation.

6 PLANNING FOR FAIRNESS

PMS implementation will require reconfiguration of individual service delivery elements. This reconfiguration process will be subject to formal impact assessment as an inherent element of the project management process.

7 ENGAGEMENT AND COMMUNICATION

Approval of the Business Case will result in the establishment of a Programme and Project Board. Engagement and communication will be an inherent and formal element of this structure. A Clinical Focus Group has already been established to ensure early clinical participation and engagement at an early stage.

In addition, communication with staff at all levels of the organisation will be through cascade from senior management, staff briefings and the joint staff governance approach along with the NHS Highland Communications Department.

Bill Reid
Head of eHealth
Corporate Services

23 November 2012
DRAFT

BUSINESS CASE

PROPOSED INTRODUCTION OF

Trak Patient Management System
(PMS)

To

NHS HIGHLAND
## Configuration History Sheet

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INTRODUCTION

The purpose of this Business Case is to seek approval from NHS Highland to invest in the implementation of a new Patient Management System (PMS) which will support NHS Highland’s mission “to provide patient-centred services tailored to people’s needs in a systematic and consistent way – to provide quality care to every person every day”.

PMS implementation will ensure that patient journeys in acute services are fully recorded in the Electronic Health Record; the PMS has much greater functionality than the current Patient Administration System (PAS) and will:

- engage the clinical community in the potential of eHealth to support the delivery of safe, effective, timely, equitable and efficient care to patients;
- enable information flows that improve the safety and quality of care for patients;
- support and enable the NHS Highland Local Delivery Plan around objectives such as 18 Week RTT and HEAT targets;
- support and enhance the key Highland Quality Approach (HQA); and
- support and enable service planning and service redesign by delivering NHS Highland–wide data and information in a patient and service orientated way.

The PMS will facilitate the achievement of objectives in the eHealth Delivery Plan such as:

- the provision of real-time, accurate data to make informed decisions;
- enabling integration/collaboration between hospital departments;
- minimise variation in hospital schedules, emergency arrival patterns, and support Clinical Governance.

The proposed implementation of PMS is in compliance with the eHealth Strategy and Delivery Plan agreed by NHS Highland on 26 January 2012.

BACKGROUND

On 6 December 2009 NHS Scotland announced, after a major procurement exercise, that the successful Prime Supplier for the National PMS solution was Intersystems Corporation with the Trakcare PMS product. The procurement of the new PMS was conducted by a consortium of Boards comprising NHS Ayrshire & Arran, NHS Borders, NHS Grampian, NHS Greater Glasgow & Clyde and NHS Lanarkshire on behalf of the Scottish Health Service. The objective of this procurement was the selection of a modern suite of systems and services that are capable of delivering upon current demands and having sufficient flexibility to deliver upon future service need.

This process was conducted in accordance with European Union Procurement Law and was devised to ensure that the selected supplier offered the best:

- functional product;
- technical compliance with NHS requirements;
- implementation support;
- financial and economic best value, and;
- strategic fit.
NHS Scotland, through National Services Scotland (NSS) entered into a framework contract that gives individual NHS Boards access to ‘call off contracts’.

The Framework Contract means that there is no requirement for NHS Boards to undertake their own procurement thus simplifying the NHS Highland intention to replace the current PAS.

Intersystems currently is working with the 5 Consortia Boards to implement the new system within their Board areas. In addition, NHS Lothian was implementing the system prior to the procurement and continue to use the system as their Patient Management System. Intersystems has a strong track record of delivering Healthcare Information System across the world. They have demonstrated a high level of understanding of NHS Scotland’s requirements and have proposed and are now delivering a suite of products and an implementation process that is credible and appropriate to the needs of NHS Highland.

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

**RECOMMENDATION**

This Business Case presents reason for the need for the new Patient Management System, the financial and economic case for adoption of a new PMS and associated change management activities together with options for systems and implementation approaches.

**In conclusion, this Business Case recommends:**

**Implementing a single PMS solution for the whole of NHS Highland and investigating with Intersystems options for connecting the functionality within the PMS systems of NHS Highland and NHS Greater Glasgow & Clyde so that clinicians within NHS Greater Glasgow & Clyde can have visibility of both NHS Greater Glasgow & Clyde patients and also NHS Highland patients who are on the local system. This aspect refers to our patients who are domiciled in the Argyll & Bute Operational Unit and whose referral pathways may be to NHS Greater Glasgow & Clyde services.**

This will facilitate the most dedicated patient centred system which will ensure the greatest detail of the patient journey is available for clinicians in one record and which is managed totally by NHS Highland.

**ACTION REQUIRED**

NHS Highland is requested to accept the above recommendation, including financial commitment, which will enable progress towards commencing implementation of the new PMS in April 2013.
2 INTRODUCTION

2.1 Purpose

NHS Highland accepted in principle in January 2012 that the National PMS should be implemented across the Board area. This paper establishes why this decision should now be implemented.

2.2 Current Position

NHS Highland currently operates the following Patient Administration Systems:

- iSOFT iExpress PAS – Northern NHS Highland
- ATOS Origin Helix PAS – Argyll & Bute

The iSOFT iExpress Patient Administration System (PAS) has provided good service for the last 20 years but effectively comes to its “end of life” in March 2014. PAS within NHS Highland was initially implemented to manage the tracking of paper patient health records (case notes) but has been enhanced over the years to cater for out-patient and in-patient management and waiting list functions. Similar considerations exist for the Helix PAS. A PAS is critical for the operational management of acute services. The current PAS systems can no longer support the required changes in current service and clinical needs and cannot be upgraded to support any future needs. We are now looking for formal approval to invest in an enhanced replacement system.

The nationally procured Patient Management System (PMS) provides a much more extensive patient record than the current system. PMS includes Order Communications (electronic requesting and reporting of Laboratory and Radiology tests and examinations within the acute services), Bed Management, Mental Health Administration and Complex Scheduling as part of the core package. In addition there is a tool to allow NHS Highland to develop fully integrated pages for clinical notes and information.

In addition, PMS comes with a range of optional modules which, if adopted, can all be fully integrated with the core PMS package. The optional modules include Maternity, Neonatal and A&E. The PMS Catalogue has already been used by NHS Highland to procure and implement the JAC Pharmacy System.

The procurement and implementation proposes the following system replacements and additions:

1. Replacement of the current Patient Administration Systems (PAS) with a Patient Management System;
2. Addition of an Order Communications System for the Acute Service (this is a core module of PMS); and

The system implementation will be supported by formal PRINCE 2 Programme and Project Management, management of change, extensive training and familiarisation and will provide enhanced patient information for clinicians.
Exclusion

This PMS Business Case specifically does not, at this time, include the following:

- Accident and Emergency PMS module;
- Maternity PMS module;
- Neonatal PMS module;
- Hospital Electronic Prescribing and Medicines Administration (HEPMA); and
- Casenote Scanning.

2.3 Current Requirement

Currently NHS Highland operates two different PAS systems. In Northern NHS Highland the iSOFT iExpress system is used and in the A&B CHP area the ATOS Origin Helix system is used. Both systems are functionally at “end of life”. In addition, using two different systems for clinical patient-centric data means that providing a patient centred approach to the patient record and information cannot be done at the basic patient level.

The two systems are quite different and each has strengths and weakness but share the following issues are common to both:

**SUPPORTABILITY**

**iSOFT PAS**

The iSOFT PAS was implemented within NHS Highland in 1988 and since then has been upgraded a number of times to ensure that functionality is up to date. Although the system has been upgraded, the underlying technologies are no longer ‘current’ and the system is very complex to manage.

NHS Highland is currently the only NHS Board in Scotland that is continuing with iSOFT as a supplier (NHS Greater Glasgow & Clyde are still using iSOFT, however, this will cease when they have concluded their own PMS implementation).

As a result of this significant reduction in business within Scotland iSOFT have reduced their support staff and NHS Highland is finding it increasingly difficult to get the level of support required to run a complex system such as PAS.

**Helix PAS**

The Helix system, an evolution from the COMPAS PAS is a Crown Copyright system supported and developed by ATOS Origin under a contract with NHS Scotland since 2006. A consortium of Health Boards contribute to the costs of support and development with a decreasing number of Boards participating as TrakCare PMS is implemented nationally. Whilst the associated support costs also decrease, a ‘tipping point’ will be reached as fewer Boards remain involved where continued support and development of the system is no longer financially viable.
FIT FOR PURPOSE

iSOFT PAS and Helix PAS

Although the PAS systems have been upgraded, there are areas of the system that are not ‘fit for purpose’. A major benefit of PMS is that the system is patient centred hence enabling the enhancement of patient care and safety, there are also major benefits in areas of reporting.

Modern systems are patient centred and ensure that patient tracking is easier; this obviously enhances the handling of pathway tracking particularly around 18 weeks RTT which means that staff cannot ‘break’ these pathways by mistake. Systems now are also more intuitive and user friendly to use hence reducing the amount of training required.

Modern clinical systems also have easy to use functionality for the electronic management of referrals including the ability for clinicians to electronically vet referrals.

Electronic vetting of referrals means that this process is more efficient and effective and means that referrals cannot ‘go missing’ within the system.

FUTURE INITIATIVES

The PMS is at the core of all new NHS Scotland eHealth initiatives. NHS Boards who have invested in the PMS are now looking at maximising its use by increasing both the functionality within the system as well as broadening the user base. This means that NHS Highland will find it increasingly difficult to implement new quality and clinical initiatives unless it moves to a modern, supportable system like the PMS.

PATIENT JOURNEY DATA INTEGRATION

NHS Highland currently operates two completely different PAS systems, this means that when activity data is produced for the whole Board and not just elements of the Board, the data from each of the PAS systems must be ‘joined’ together to give a Board view. This ‘joining’ is carried out within the recently developed NHS Highland data repository. The data structure from each PAS system is not the same thus this requires the datasets to be manipulated to allow for a complete view of NHS Highland activity. In a “Board-wide” PMS environment producing this universal view of data will be straight forward with minimal manipulation of data required.

ROADMAP TO ELECTRONIC HEALTH RECORD (EHR)

The current PAS systems in use in NHS Highland have little or no clinical functionality. They are administrative systems, not patient management systems. A cornerstone of Delivering for Health is that a fully integrated Electronic Health Record (EHR) will be key to the successful delivery of the health care that the population of Scotland requires. The PMS system is the cornerstone of the EHR.

STRATEGIC CONTEXT


This eHealth Strategy builds on the direction and achievements of its predecessor which ran from 2008 to 2011.
The Strategy reaffirms the Scottish Government’s view that information and communication technologies are important to the improvements in quality and the ambitions set out in *The Healthcare Quality Strategy for NHS Scotland* to actively support and enable quality improvements in healthcare services across Scotland.

The Strategy reinforces our move from a focus on technology products, services and their suppliers toward a focus on benefits and outcomes experienced by NHS Scotland (NHSS) professionals in helping them to re-design and improve services, and the citizens of Scotland who will benefit from those improvements. It endorses the incremental approach to information and communication technology enabled changes, and that such changes will be planned and driven from closer to the front line of service delivery and aligned more closely with the improvement planning processes in Boards and workforce development. In particular, it recognises the importance of clinical leadership and clinical engagement in developing and delivering successful eHealth initiatives.

The Strategy sets out five new strategic eHealth aims which will be developed with a focus on outcomes and real benefits delivered rather than technologies measured by the development or implementation of information and communication technology products or related services. Unlike the previous Strategy it is intended to run for six years, with **nine Scottish Spending Review 2011 (SSR11) deliverables to be achieved across NHSS by 2014**. The Strategy will be reviewed and refreshed in 2014, to concur with the next Spending Review, and deliverables for 2017 will be developed.

The Strategy has been agreed with NHSS. It is not a top down mandated set of tasks but an agreed direction and set of goals. Where it mandates it does so because NHSS has agreed with the Scottish Government that joint action is the most appropriate way forward. It uses the word “we” because of the shared nature in which the Strategy has been developed, because the expectation is that NHS Boards will work in partnership with each other and with the Scottish Government to deliver it, and because we have developed the partnership structures which underpin collective endeavour.

The eHealth Strategy has been set in the context of *The Healthcare Quality Strategy* and aims to build upon existing foundations and ensure that going forward all work is integrated and aligned to deliver the highest quality healthcare services to people in Scotland, and in doing so provide recognised world leading quality healthcare services. It sets out three Quality Ambitions which provide a consistent description of quality for NHSS, and work is underway to streamline and align all work programmes with these three Ambitions. These Quality Ambitions act as the focus for priority action for all health services.

- Mutually beneficial partnerships between patients, their families and those delivering healthcare services which respect individual needs and values and which demonstrate compassion, continuity, clear communication and shared decision-making;

- There will be no avoidable injury or harm to people from healthcare they receive, and an appropriate clean and safe environment will be provided for the delivery of healthcare services at all times;

- The most appropriate treatments, interventions, support and services will be provided at the right time to everyone who will benefit and wasteful or harmful variation will be eradicated.
To contribute to the national Strategy the suite of systems comprising PMS needs to include:

- real time electronic records that are patient centred, including a single record of their healthcare history providing up-to-date patient information at the point of treatment;
- streamlined and more accurate identification of patients based on universal use of the Community Health Index (CHI) to support improvements in patient safety;
- scheduling, whereby all required transactions and interventions, both clinical and administrative, are available ‘on-line’ including full electronic referring, vetting and appointing of patients;
- bed management functionality enabling better internal co-ordination of admission, transfer and discharge;
- integrated waiting list management features including the facility to track and monitor patients according to specialty and disease specific pathways;
- resource management functionality linked to capacity planning that enables optimum use of available facilities, equipment and staff;
- facilities that directly reduce clinical time spent on administration and reduce paper documentation;
- more integrated working with primary care, including support for electronic discharge letter production;
- improved co-ordination of discharge arrangements with primary and social care through the appropriate and secure sharing of data;
- facilities that ensure the security of person identifiable data and provide auditable traceability of access to information;
- facilities that support collaborative care between clinical professions and across agencies, such as development of patient care pathway, multi-disciplinary care records, guidelines and alerts;
- provision of better management information to support appraisal of clinicians, peer review and planning of clinical services. This will be facilitated by a robust reporting tool or set of tools. The system will also facilitate measurement of other HEAT targets including quality measures.

There is considerable importance attached to clinical ownership of the PMS system and NHS Highland will continue to encourage clinical engagement and participation in the commissioning and implementation stages.

NHS Highland’s eHealth Strategy 2009-2012 and subsequent eHealth Delivery Plan 2011-2014 highlighted the importance of the procurement of a PMS to replace the existing PAS and this has been extensively communicated. This system will provide the backbone to an NHS Highland EHR.

PMS along with the additional modules will be the largest system implementation that NHS Highland has ever undertaken.

### 3 SHORTLIST OPTIONS

The following four options have been considered for NHS Highland:

**Option A - Do nothing.** Leave current applications in place and provide in house support and maintenance once the iSOFT PAS contract has expired. This option carries very significant risks for NHS Highland. This option will incur high costs as resource will be required to continue maintenance of legacy products.
Conclusion - discounted since this posed the highest business risk to NHS Highland.

**Option B - Negotiate extension to current PAS Contract.** The original iSOFT contract was due to expire in March 2009. After negotiations, NHS Highland was able to extend the contract until March 2014. Since the national procurement of the PMS, NHS Highland has seen a reduction in the number of experienced iSOFT staff that are available to support the current PAS. Continuing with the use of iSOFT as a PAS supplier is considered a very high risk.

The support and development costs associated with the Helix PAS will increase considerably as other Boards discontinue their involvement in the Helix consortium.

Conclusion - discounted due to the high risk of operating systems with a reducing support service leading to an unreliable and unpredictable situation.

**Option C - Accept and implement the PMS procured by NHS Scotland.** This option would facilitate a joined up electronic record solution across the acute sector providing functionality and capability that has been missing from the current applications and a developing path that is in alignment with national strategy.

Conclusion - preferred option which will be flexible enough to meet NHS Highland’s current and future needs while supporting national and local strategic aims. This is the only option acceptable to the National eHealth Programme Board.

**Option D – Procure another system.** This option would allow NHS Highland to undertake their own specific procurement.

Conclusion – discounted as this would be very costly and time consuming and would not be supported nationally.

### 4 IMPLEMENTATION OPTIONS

The 6 Boards that have implemented PMS have all done so using the model of a single system for the whole Board area. NHS Highland, however, needs to consider if this is the best option given that for the Argyll & Bute CHP area there is significant patient flow to NHS Greater Glasgow & Clyde. The Argyll & Bute CHP also has visiting NHS Greater Glasgow & Clyde clinicians who will need to electronically triage NHS Highland referrals.

NHS Highland is not unique in this regard as other Scottish NHS Boards experience material cross-border flow.

To inform the process of option appraisal some basic activity analysis is as follows:

- In the three months from May 2012 6,528 electronic referrals were made by Argyll & Bute CHP GP Practices of which 44% (2,886) were accepted in Argyll & Bute CHP hospital with the remaining 56% (3,662) accepted in NHS Greater Glasgow & Clyde sites.

- A simple analysis of time to vet for this same three month period indicates 67% of referrals were eVetted within 7 days of the date of the referral.

- Over the past three years an average of 82,346 outpatient appointments have been made each year for Argyll & Bute CHP residents.
of these on average 54% (44,356) were appointed to Argyll & Bute CHP hospitals, the remaining 46% (37,990) were in NHS Greater Glasgow & Clyde hospitals;

- of those appointments in Argyll & Bute CHP hospitals 58% (25,812) were serviced by Argyll & Bute CHP consultants with 42% (18,543) serviced by NHS Greater Glasgow and Clyde consultants.

For elective and emergency episode admissions over the same three year period there were on average 26,030 episode admissions each year

- of these admissions 30% (7,703) were in Argyll & Bute CHP hospitals with the remaining 70% (18,327) within NHS Greater Glasgow & Clyde hospitals.

(Figures derived from SCI Gateway, SMR00, SMR01 and the AcaDME data mart - excludes mental health)

Argyll & Bute CHP laboratory services and the underlying information systems are integrated into NHS Greater Glasgow & Clyde.

These issues mean that the configuration of a PMS system within NHS Highland must be considered to ensure the most complete patient record. In discussions involving Northern NHS Highland, Argyll & Bute CHP, NHS Greater Glasgow & Clyde and Intersystems, three architectural designs have been identified.

Option 1

Implement a single PMS solution for the whole of NHS Highland.

Pros

- All NHS Highland patients’ activity within NHS Highland hospitals would be held within a single system hosted within NHS Highland;
- Would promote single way of working across NHS Highland;
- Can be implemented starting in April 2013 across all of NHS Highland;
- Data reporting and management will be more straight forward (no joining of data);
- Cost effective.

Cons

- Does not fit with the patient flows from Argyll & Bute CHP toward NHS Greater Glasgow & Clyde with difficulties such as liaison with outreach consultant’s secretaries/medical records staff and electronic vetting of referrals and for appointment management to their clinics in NHS Greater Glasgow & Clyde hospitals;
- NHS Greater Glasgow & Clyde activity would not be included in the Argyll & Bute CHP patient’s EHR (46% outpatient and 70% inpatient activity would be missing) ;
- Implementation of the Order Communications module within Argyll & Bute CHP would need further consideration as laboratory services are integrated to NHS Greater Glasgow & Clyde;
Complex communication arrangements will need to be established between Argyll & Bute CHP and NHS Greater Glasgow & Clyde to manage waiting times information such as 18 week RTT (ie. where Board of Referral differs from that of Treatment) and Treatment Time Guarantee;

Difficult to support other closely related systems such as the infection control system (ICNet) to provide efficient access for Argyll & Bute CHP clinicians to NHS Greater Glasgow & Clyde based activity;

NHS Highland single way of working may not be appropriate for NHS Greater Glasgow & Clyde consultants.

Option 2

Implement a dual PMS solution with Northern NHS Highland utilising servers based in Inverness and the Argyll & Bute CHP utilising a service hosted by NHS Greater Glasgow & Clyde.

Pros

- Would fit with the patient flows of Argyll & Bute CHP towards NHS Greater Glasgow & Clyde and reduce difficulties in liaison with outreach consultants secretaries and medical records staff;
- Would allow Argyll & Bute CHP and NHS Greater Glasgow & Clyde clinicians to have single system of working providing
  - the most efficient pathway management e.g. electronic vetting between Argyll & Bute CHP and NHS Greater Glasgow & Clyde based activity where clinicians service clinics in both locations supporting the most efficient management of waiting times such as 18wk RTT & Treatment Time Guarantee;
  - more transparency regarding patient choice of appointments especially for those existing clinics where capacity is already an issue (ie. both outreach clinic in Argyll & Bute CHP and NHS Greater Glasgow & Clyde clinics would be accessible in same system);
- Provides comprehensive EHR for Argyll & Bute CHP patients as NHS Greater Glasgow & Clyde activity, clinical letters etc will be available within Argyll & Bute CHP;
- Implementation of the Order Communications module within Argyll & Bute CHP would be implemented in line with laboratory services and the underlying information systems integrated to NHS Greater Glasgow & Clyde;
- Provides the most efficient means of supporting other closely related systems such as the infection control system (ICNet) and Chemocare (Argyll & Bute CHP is part of West of Scotland Cancer Network (WoSCAN) not North of Scotland cancer Network (NoSCAN));
- Co-ordinated approach to appointing, adding to waiting lists and admissions whether patient activity occurs in Argyll & Bute CHP or NHS Greater Glasgow & Clyde;
- Argyll & Bute CHP’s involvement in the NHS Greater Glasgow & Clyde TrakCare will facilitate access to other NHS Greater Glasgow & Clyde systems such as their clinical portal which hold important clinical information on Argyll & Bute CHP patients;
- Reduced number of users with TrakCare calls to be fielded by the NHS Highland eHealth Service Desk;
- Enhances the clinical pathway communication and interface between secondary care and primary care clinicians;
Discussions with NHS Greater Glasgow & Clyde senior management has approved in principle a single integrated TrakCare system.

**Cons**

- NHS Highland patients would not be held in one single system;
- NHS Highland would have responsibility for all patients records but would not have control over all the systems they populate;
- NHS Highland data within the NHS Greater Glasgow & Clyde would be tagged as NHS Greater Glasgow & Clyde activity therefore national and local reporting will be more complex;
- Service Level Agreement has to be agreed and be defined with NHS Greater Glasgow & Clyde hosting of the NHS Highland Argyll & Bute CHP service. No cost information or detail of NHS Greater Glasgow & Clyde commitment for this option is available and at this stage there is, therefore, medium/high risk regarding implementing this option;
- Due to the lack of agreement with NHS Greater Glasgow & Clyde no start date for implementation is currently available although this would be expected to commence following the implementation of the last site in NHS Greater Glasgow & Clyde before the implementation resources dissipate, their TrakCare rollout is scheduled for completion in March 2013;
- May be more costly than option 1;
- Argyll & Bute CHP will need to adopt NHS Greater Glasgow & Clyde working practices which although consistent with consultant’s normal working practices may be different to some of NHS Highlands

**Option 3**

Implement a single PMS solution for the whole of NHS Highland and investigate with Intersystems options for connecting the functionality within the PMS systems of NHS Highland and NHS Greater Glasgow & Clyde so that clinicians within NHS Greater Glasgow & Clyde can have visibility of both NHS Greater Glasgow & Clyde patients and also NHS Highland patients who are on our local system. This option is being considered as a National development sponsored by NHS Lanarkshire (who also have significant patient flows into NHS Greater Glasgow & Clyde) and with possible funding being available via the Scottish Government. Workshops are currently being arranged to progress this work NHS Highland is involved.

**Pros**

- All NHS Highland patients’ activity within NHS Highland hospitals would be held within a single system hosted with NHS Highland;
- Would promote single way of working across NHS Highland;
- Can commence implementation starting 1 April 2013 across all of NHS Highland,
- Data reporting would be more straight forward (no joining of data);
- Potential for system to be configured to accommodate patient flow requirements of the Argyll & Bute CHP.

**Cons**

- Implementation of the Order Communications module within Argyll & Bute CHP would need further consideration as laboratory services and the underlying information systems are integrated to NHS Greater Glasgow & Clyde;
• Dependent upon Intersystems development of the necessary functionality and may incur extra cost;
• Significant activity occurring for Argyll & Bute CHP patients within NHS Greater Glasgow & Clyde might still not be visible as part of the EHR (46% outpatient and 70% inpatient activity);
• May affect clinical pathway and communication between primary and secondary care;
• May be difficult to support other closely related systems such as the infection control system (ICNet) to provide efficient access for Argyll & Bute CHP clinicians to NHS Greater Glasgow & Clyde based activity;
• Whilst this potentially provides a solution it is not known what is achievable but will require development or configuration of both the NHS Highland and NHS Greater Glasgow & Clyde implementations to deliver the necessary integration and is assessed as high risk at this stage;
• May be more costly than option 1.

For all options the migration of current NHS Highland data will be undertaken.

RECOMMENDATION

NHS Highland to commit contractually to Intersystems for the provision of TrakCare on the basis of a single implementation.

MANAGEMENT OF CHANGE

PMS has the potential to enable a wide range of business change that will realise significant benefit to NHS Highland. Commitment from senior management and clinicians to undertake and manage these business changes is essential to realise the full benefits that PMS can enable as the technology alone will not deliver the desired benefits.

Key stakeholders for each business change area will be engaged in developing the change management plans. This will require ‘buy-in’ and commitment from senior representatives in all areas including clinical, operational and service improvement.

Developing the change management plans will involve:

• Being clear on objectives and service requirements driving the PMS;
• Identification of stakeholders affected by change;
• Communication of the benefits of change;
• Analysis of current processes;
• Redesign of new processes; and
• An agreed action plan for implementing change including addressing skill mix and training.

Change management plans will be essential to deliver the significant benefits that will be realised through full exploitation of PMS.
The NHS Highland Quality and Efficiency plan is built upon the foundation principles of Reduce Harm, Manage Variation and Reduce Waste.

The PMS implementation will be clinically led and eHealth supported so that it is focussed on delivering benefits to patients, clinicians and the service.

It is acknowledged that advances in eHealth systems alone will not deliver the objectives of this without parallel changes in culture, clinical behaviour, business practice and process and capacity. Implementation of PMS will, therefore, interface with the improvement programmes within the Highland Quality Approach which are already underway including service redesign. PMS implementation will be the catalyst and enabler of further fundamental service redesign.

Lean methodology has been adopted by NHS Highland as an important tool to support its commitment to more clearly define patient pathways and remove avoidable delays and/or steps that fail to add value. Work is underway to further promote and embed Lean, working with staff on specific work programmes to streamline pathways, remove or limit service variation, increase efficiency and deliver improved productivity. The relationship will evolve with joint working on initiatives to deliver mutual objectives to the benefit of NHS Highland and the introduction of PMS will serve to support and enable these business changes.

From a benefits perspective, extensive work has been undertaken to assess the potential of the selected solution. NHS Highland expects to realise benefits from PMS and the changes to business processes under a number of broad headings which will directly contribute to delivery of patient services that are efficient, effective, timely and safe.

Seven key benefits driven by the foundation principles of Reduce Harm, Manage Variation and Reduce Waste have been identified that will be realised through implementation of PMS. These are:

1 Improve Patient Care – Patient Journey Correctly Reflected – Pathway Improvement

- A significant challenge for NHS Highland is delivery and sustained achievement of 18 weeks Referral to Treatment (RTT). The proposed replacement PMS will be central to achieving that objective. At present there is no electronic capability to link different stages of the patient journey to enable performance measurement of that journey to take place. PMS will have the functionality to enable NHS Highland to measure delivery of the guarantee that from receipt of GP referral to treatment will not exceed 18 weeks (admitted and non admitted patients).

Clinical champions will work with the implementation team to achieve the necessary changes in behaviour and practice to deliver a sustainable solution to 18 weeks RTT with robust monitoring and reporting capabilities as part of the new system.
There is considerable importance attached to clinical ownership of the system and NHS Highland will continue to encourage clinical engagement and participation in the commissioning and implementation stages. A clinical focus group has already been established to take these elements forward.

- A major component of the Highland Quality & Efficiency Framework is that of the development of patient pathways. This will be a key driver and enabler to manage variation and reduce potential for harm. The current PAS system does not lend itself to this approach as it is not an integrated system, this will be rectified with PMS implementation.

2 Access to Care

- Scottish Care Information (SCI) Gateway is an electronic communication system that enables General Practitioners to send referrals electronically to secondary care services. SCI Gateway has been used by NHS Highland and other Scottish NHS Boards to minimise delays in receipt of referrals as well as improve the quality of communication. It has not been possible to integrate electronic referral management by clinicians into the existing PAS systems. This system limitation has resulted in referrals being transferred onto paper to facilitate consultant vetting. The new PMS system will enable full integration of referrals. This integration will improve and enable the referral management process by eliminating paper based processes that exist at present. This will minimise the inevitable human error element and release staff time for other tasks and/or redeployment.

- Full referral integration with PMS will eliminate the risk of ‘lost’ referrals, avoid transcription errors and improve the timeline at this first stage of the patient journey. Consultant vetting will be undertaken ‘on line’ with savings made in staff time enhancing clinical governance. It will also enable information on receipt of referral and action taken to be communicated back to the General Practitioner.

- The waiting times targets within cancer pathways and the 18 RTT Programme are a challenge. Every delay in processing of referrals, triage and administration can result in delays to treatment and at times additional cost, through waiting list initiatives.

In summary, the current PAS systems are not integrated with other clinical systems and so the “linkages” between various parts of a patient pathway can be broken or unseen.

- PMS will bring together a number of features that support changes to how care is delivered. Integrated Care Pathways (ICP) define what steps are completed, when and in which order to provide the appropriate care for a condition or set of conditions. PMS will provide a number of features including order communications and scheduling that are available to ensure that appointments for tests and care interventions are booked in the right sequence and at the right time. This will deliver a number of benefits once definition of each ICP is concluded.
• The ability to track patients on time-lined patient pathways will improve compliance with agreed patient pathways and reduce unnecessary delays. Access to relevant and timeous patient information will provide the opportunity for improved communication between NHS staff and stakeholders including patients, carers, relatives and other care providers.

• Use of PMS features will release staff time on management of waiting lists. The performance of the Referral Management Service will also be improved through access to improved referral information. The requirement to track patient interventions will reduce with direct access to comprehensive patient information through PMS.

• Improved management information including waiting list and referral to treatment will enable NHS Highland to more effectively manage delivery of waiting time guarantees in the context of 18 Weeks Referral to Treatment (RTT) and Treatment Time Guarantees (TTG). Staff time will be saved through avoidance of manual information collection with the potential for improved planning in use of resources through increased efficiency and improved productivity. Improved information will also inform further development of clinical job plans.

3 Bed Management and Discharge Planning

• PMS implementation will improve patient admission, patient tracking and discharge of patients in secondary care. The functionality of PMS will enable patients to be tracked throughout their hospital stay with identification of all relevant clinical interventions. In addition, PMS will provide the capability to improve discharge planning that enables a patient’s predicted length of stay to be monitored and managed from admission to discharge.

• Increase in the use of predicted and/or planned length of stay in a patient pathway will facilitate patient flow and improve the patient pathway. PMS functionality will release staff time in sourcing empty beds and provide the opportunity to more effectively maximise use of beds and, through appropriate intervention, improve bed efficiencies including length of stay. This functionality also facilitates improved compliance with infection control procedures and will provide a learning process for staff that offers the potential for improved efficiency, output and quality of care. In addition, PMS implementation will improve communication with patients and carers and inform effective bed management and discharge planning.

4 Patient Safety

• The lack of universal clinical visibility of where patients are within the hospital environment at any point in time can cause significant issues with regards to patient flow and patient safety. Patients can be moved from ward to ward for clinical reasons but the medical staff may be unaware or lack visibility of where patients are in the system at any point in time. This lack of current information can result in “safari ward” rounds which, at best, is inconvenient but, at worst, can result in patients not receiving the timely medical care they require.
PMS will enable the Community Health Index (CHI) number to be the single Master Patient Index (MPI) across NHS Highland. The CHI number is the current NHS Scotland unique patient identifier.

Use of CHI will improve the patient experience through improved transfer of information including demographic information thereby reducing the number of times patients are asked for the same information. It will enable patients to be identified with more efficient and effective matching of health records. Use of CHI will also improve data quality and reduce duplicate records. Improved electronic tracking of patients will reduce the number of duplicate tests and investigations undertaken.

Appointment booking processes are currently linked to Case Reference Numbers (CRN) that are linked to hospital sites. This limits flexibility as patients are booked to the hospital associated with their Case Record Number. Use of CHI will increase the ability to implement flexible booking.

5 Communications

Communication within healthcare is crucial, and in particular communication between clinicians and clinical systems. The development of recording of the patient journey through PMS will facilitate better communication based on greater information being available for decision making at the right time and the right place.

Order communications in PMS eliminates paper based diagnostic requests and results reporting. Order communications will enable clinical information to be transmitted more quickly between primary and secondary care and within secondary care, and facilitate information sharing to the benefit of the patient. Order communications will eliminate registration errors related to transcription.

In addition, order communications will provide visibility of previously ordered diagnostic tests and results. This has the potential to reduce unnecessary or duplicate tests. Bar code labels and scanning will replace hand written forms. This change will release laboratory staff time for other tasks. Electronic solutions will replace paper reports with consequent savings in staff time and use of paper consumables.

Access to electronic discharge letters will improve the flow of information and ensure that information is available to community and primary care colleagues at point of patient discharge. This will enable continuous care to be delivered to the patient at home or in a community setting. It will also, as required, facilitate the booking of patient transport.

6 Efficiency

PMS will ensure that the CHI number is the single Master Patient Index (MPI) across NHS Highland. This is in line with NHS Scotland requirements.

Order Communications (electronic requesting and reporting of Laboratory and Radiology tests and examinations within the Acute Services) as detailed above will streamline processes.
• Pathway development and compliance monitoring as detailed above will bring efficient ways of working which can be monitored.

• Delivery and sustained achievement of 18 weeks Referral to Treatment (RTT) as detailed above. In addition PMS comes with a range of optional modules (at additional cost) which, if adopted, can all be fully integrated with the core PMS package and will add benefits to care and enhance reporting capabilities.

• PMS will provide functionality that will reduce dependency on paper and paper based case notes. PMS will enable NHS Highland to start the migration in the direction of a paper-less organisation. Significant resources are currently expended in storing, moving and handling paper records. A commitment to reduce paper will enable resources to be released for alternative use and may encourage the move to scanning of casenotes to a more comprehensive paperless record.

• PMS through order communications, access to electronic letters and the ability to electronically link different parts of the patient journey will reduce reliance on paper. Integration of SCI Gateway to PMS to SCI Store electronic referrals will further promote the commitment to a paper light organisation.

• Clinical information held electronically will reduce current difficulties of accessing fragmented, and on occasions episodic, paper records held on different sites. Paper records can be lost or mislaid. Missed files can occur that may impact on the quality of care delivered. Electronic patient record solutions help eliminate lost records and offer improved quality of care. Maximising use of PMS offers the opportunity to deliver an equitable and effective service regardless of where the patient presents.

7 Service Planning

• Accurate, timely service planning is crucial to maintaining service delivery across NHS Highland, in particular with the change in demographics and patient need.

The PMS solution will deliver an integrated clinically focussed data set that will underpin service planning decisions.

• The PMS will be an enabling system for all of NHS Highland’s strategic objectives by supporting the realisation of:

  1. Improved capacity and demand;
  2. Improved patient safety, traceability and identity management;
  3. Improved availability of clinical information and business intelligence;
  4. Improved end to end patient pathway and processes;
  5. Improved communications and ordering process; and
  6. Improved clinical management of patients.
APPENDIX A (ECONOMIC AND FINANCIAL APPRAISAL)

BACKGROUND

This section sets out the economic and financial analysis in support of the projected investment. It considers:

- the available sources of funding;
- the affordability of the proposed investment;
- the financial Risks; and
- the economic analysis.

FUNDING SOURCES

Key Assumptions regarding Funding Sources

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

- the Scottish Government will provide capital to cover the cost of the software licences on an unsupported capital basis;
- NHS Highland will provide capital to cover the costs of hardware and infrastructure;
- NHS Highland will use supported capital, where available, and the impact of funded capital charges is taken into account;
- NHS Highland will capitalise implementation costs where appropriate and where funding is available;
- a flexible package of funding from Scottish Government eHealth is available and is allocated to NHS Highland on the basis of supplier cost profiles. NHS Highlands apportionment is £1.7m; and
- the payment profile of NHS Highland will be the subject of final ‘sign off’ between the Board and Intersystems at Call-off contract stage.

A financial summary relating to implementation costs and the forward revenue consequence is provided below. A more detailed ten year forecast of the financial implications, recurring and non-recurring, is also attached as Appendix F.

This forecast has been used as the basis of assessing the affordability of the project for NHS Highland.

The financial requirement for the period of implementation spanning two years is as follows:

**Capital Costs**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersystems costs (Implementation Services)</td>
<td>£1,450,000</td>
</tr>
<tr>
<td>Hardware Cost</td>
<td>£ 500,000</td>
</tr>
<tr>
<td>Local Project costs (Largely staffing)</td>
<td>£ 842,000</td>
</tr>
<tr>
<td><strong>Total cost over 2 years</strong></td>
<td><strong>£2,792,000</strong></td>
</tr>
</tbody>
</table>
The Scottish Government Health Department (SGHD) has responded to NHS Highland and confirmed that some central funding will be available towards implementation. We have been informed that this funding will be a total of £1,700,000 leaving £1,092,000 to be funded from NHS Highland resource over the two year implementation period.

Revenue Costs

Although NHS Scotland has purchased a National license for PMS the associated capital charges are the responsibility of each NHS Board. For NHS Highland this means an annual charge of approx. £240,000 as well as a further capital charge of £100,000 per annum as a revenue consequence of the capital funded hardware. The annual support costs for PMS are approx. £686,594, additional to this hardware support and staffing costs are £173,000.

The total annual revenue costs of PMS are therefore approx. £1,199,594. This figure can be offset by the current cost of supporting the iSOFT PAS (Northern) and Helix PAS (Argyll & Bute). The annual cost of support for these systems is £323,442 which leaves a revenue funding gap of £876,152 per annum.

Summary of Costs

Capital

NHS Highland to fund £1,292,000 over the next two years.

Revenue

NHS Highland to fund £876,152 increase in revenue costs

The following funding sources have been confirmed:-

Capital Funding

SGHD Capital Funding to cover the capital cost of the software licences from Intersystems. This totals £2.4m plus VAT for NHS Highland.

Notes

- Capital charges have been calculated using a depreciation period of 5 years for hardware and 9 years for software/implementation costs. The period for software licences/implementation costs is based on discussions with external auditors to a Consortium Board and the potential length of the contract. i.e. the current advice is that the contract could be extended up to 13 years;

- All other costs will be charged against revenue funds. This will include supplier maintenance and support costs, the local Managed Technical Service costs, capital charges on hardware, software licences and supplier implementation, and NHS Highland internal implementation costs

- VAT costs have been allowed for at 20% in line with the rate expected to apply at contract call-off. This will apply to software licence costs and hardware for the purposes of the calculation of capital charges.
• VAT can be reclaimed on service contracts. VAT is payable on hardware purchases.

The Intersystems costs are at a September 2012 price base and will be subject to indexation, where appropriate, under the contractual arrangements.

6.4 Financial Risks

Most of the financial risks have been eliminated following the comprehensive national briefing and tendering process. This process has included considerable discussion with suppliers and due diligence to test implementation plans and requirements. It has resulted in a fixed price, subject to the Consortium working together with Intersystems in the agreed approach.

Scottish Government eHealth expects that national value will be reflected through the maximisation of shared solutions and interoperability and the adoption of business as usual mechanisms of co-operation.
APPENDIX B

PROGRAMME MANAGEMENT

NHS Highland has established a governance infrastructure that will be responsible, on behalf of the NHS Board, for the delivery of the programme of work facilitated by the PMS in line with the Highland Quality Approach. The programme will be undertaken in accordance with the NHS Scotland approved approach to Managing Successful Projects and will adhere to the PRINCE 2 methodology.

The Programme will be clinically led with a strong focus on enabling benefits for patients. It has been recognised that the PMS Programme is more about service change than the information system implementation. The Information Systems are seen as an enabler of a wider change programme. For this reason, the PMS Programme Board will be chaired by a Non-Executive member of NHS Highland Board and will consist of the following members:

- Medical Director as the Executive Director with clinical responsibility;
- The Chief Operating Officer as the officer responsible for operational areas most initially impacted by the proposed change programme;
- Director of Nursing with responsibility for staff involved mostly in Order Communications and Bed Management;
- Head of Business Transformation responsible for the service review required to meet NHS Highlands needs;
- Head of eHealth as the Manager responsible for the staff involved in facilitating this implementation;
- Head of Finance and Planning;
- Patient representative;
- Partnership representative;
- Supplier.

The Programme Director will attend the Programme Board to provide the main programme reporting.

A Programme Advisor will be a member of the Board with a responsibility for programme assurance, contractual issues, government eHealth reporting and programme promotion.

The Programme Board will be supported by workstreams of Benefits, Communications and Training and Development.

The Programme Management Board will report to NHS Highland Board.

Members of the Programme Board will report and communicate with their relevant professional groups within NHS Highland and at Scottish Government level.

In addition to the Programme Management Board, a project sub-structure has been established to ensure that appropriate delivery accountability is established and stakeholder involvement is in place.

From a contract management perspective, arrangements are established to ensure that the implementation, acceptance and ongoing operation of the PMS aligns with both supplier and customer obligations set out in the Framework and Call Off Contracts.
NHS Highland will embed risk management in its Programme Governance Framework. This approach will accord with the principles of Risk Identification and Management recommended by the UK Government Office for Government Commerce approach to ‘Managing Successful Projects’.

A risk within the context of the PMS project is classified as any uncertain event which, if occurred, would have a positive or negative impact on the project.

Specifically, a Risk Register has been created to ensure that identified risks are captured and routinely reported to the Programme Board. It will be the responsibility of the Programme Board, as the main governance body associated with the PMS Programme, to ensure that risks are assessed, recorded, mitigated and appropriately managed. This approach to risk management will operate in parallel with the risk management approach that is well established within NHS Highland and the approach to risk assessment will include the NHS QIS Risk Matrix.

Table

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying implementation resource</td>
<td>Early creation of an implementation plan. Detailed discussion with supplier during November and December</td>
</tr>
<tr>
<td>The service cannot absorb the level and pace of change in practice required to</td>
<td>Early service engagement and implementation planning to assess impact. Make links with other service change programs (LEAN &amp; RTT) to ensure that activities are aligned</td>
</tr>
<tr>
<td>deploy PMS</td>
<td></td>
</tr>
<tr>
<td>Implementation Timeline and “Go Live” may not fit NHS Highland requirements</td>
<td>Detailed discussion with supplier and other Boards to determine running order and readiness</td>
</tr>
<tr>
<td>Costs may be higher than anticipated making the programme unaffordable</td>
<td>A robust governance process is in place centred on the business case to ensure that cost control is established in accordance with agreed financial allocations</td>
</tr>
<tr>
<td>Inability to provide continuity of operational requirements during the systems</td>
<td>A detailed plan will be developed that ensures all transition risks are identified. Operational service engagement in, and understanding of risks will be a feature of the plan</td>
</tr>
<tr>
<td>transition period</td>
<td></td>
</tr>
<tr>
<td>The number of concurrent users increase after year 1 incurring additional costs</td>
<td>Develop implementation plans and model the concurrent use required. Plan for early implementation of all likely functionality by end of year 1 after go live</td>
</tr>
<tr>
<td>Anticipated benefits are not delivered</td>
<td>Develop benefits realisation plan. Assign benefits owners and monitor against the plan. Ensure benefits realisation is integral to implementation plans</td>
</tr>
</tbody>
</table>
APPENDIX C (BACKGROUND TO NATIONAL PROCUREMENT)

In September 2006 the NHS Scotland eHealth Strategy Board agreed that a national approach should be taken to the procurement of a Patient Management System (PMS). This decision was taken in recognition that PMS represents an important cornerstone of the National eHealth Strategy, and that all but one of the existing NHS Board commercial contracts was due to expire between 2008 and 2010.

A consultation exercise was undertaken with each NHS Board to understand their current systems and future requirements. The term PMS was adopted to describe the overall solution and was delineated into ‘core’ and ‘optional’ modules. This would enable Boards to define their individual requirements according to a set of predefined modules.

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

The OBC was approved by the National eHealth Strategy Board in June 2007 with the following actions:

- the document to be circulated for wider consultation to NHS Boards;
- the project to move forward to the requirement definition stage;
- production of an Output Based Specification (OBS) which would allow NHS Scotland to provide suppliers with sufficiently detailed information about its requirements.

The OBS defines the requirements for the national PMS system and associated services, and identifies requirements in terms of compliance with national standards for interoperability, interfacing, national statistical and clinical coding, and information governance. The OBS also sought to ascertain a budgetary cost for the programme.

At the National eHealth Strategy Board meeting, in January 2008, it was agreed that PMS should progress to procurement.

The preferred model of procurement was that it should be led by ‘stakeholder’ Boards and that the ensuing supplier choice should result in the award of a Framework Contract to be entered into by National Services Scotland on behalf of all Boards. A consortium of NHS Boards led by NHS Lanarkshire and involving NHS Ayrshire & Arran, NHS Borders, NHS Greater Glasgow & Clyde and NHS Grampian was formed to lead the procurement Programme. A Commissioning Brief was formally issued to the PMS Consortium Management Group at its first meeting in January 2008.

Fundamental to the procurement approach has been a focus on patient benefits and a requirement for clinicians to be central to the procurement process. With this in mind, comprehensive stakeholder involvement processes was designed into the procurement project and upwards of 200 stakeholders including clinicians from all relevant disciplines have been engaged in the programmes governance, the requirements specification and the evaluation process.
The Procurement Process was conducted in accordance with U.K. Government Office for Government and Commerce best practice and followed the ‘Competitive Dialogue’ approach. This engaged the Consortium Team in an iterative engagement process that refined supplier responses to the ‘best fit’ in accordance with the Output Based Specification.

**Outcome and Current Position**

The outcome of the procurement has resulted in the award of a Framework contract to Intersystems Corporation. The Intersystems contract will provide financially and economically viable solutions and services compliant with NHS Boards’ current and perceived future needs. Intersystems Corporation have worked with the Consortia Boards and have implemented the core system in NHS Borders, NHS Grampian, NHS Ayrshire & Arran, NHS Lanarkshire and are working with NHS Greater Glasgow & Clyde on their implementation.
APPENDIX D (CONTRACTUAL FRAMEWORK)

The overall contractual framework consists of a Framework Agreement, which National Services Scotland (NSS) signed on behalf of the NHS in Scotland, and which allows Customers (NHS Scotland 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 negotiated with Intersystems, 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 supplier. 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 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 3 month period from the date when the System goes live.

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 Clinical Support Tools (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 CST development will be a key milestone in Intersystems Implementation Plan with Boards and that the 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;
• a right for the Board to terminate the Call Off Contract if Intersystems fails to deliver on time.

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 Relationships

The legal relationships between the various parties can be summarised as follows:
SUMMARY OF MAIN PROVISIONS OF THE CONTRACT

➢ Term and Termination

The term of the Call Off Contract is to be agreed at the time of calling off, but Intersystems have 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 have 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 Freedom of Information (FOI) clauses in the Call Off Contract and Intellectual Property (IP) infringement.

➢ Intellectual Property

The overall position in relation to intellectual property rights (IPR) is as follows:
- Intersystems retains ownership of its pre-existing IPR and licenses 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;
- 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.

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. NHS Highland has agreed a licence allocation of 0.3 licences per acute hospital bed. This accords with supplier experience elsewhere. It should be noted, however, that this agreed licence position will be reviewed after a period of 12 months from the go-live date. Any additional use of the system at that date will result in an up-rating of licence entitlement at no additional cost to the Board.

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 NHS Boards 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.
## APPENDIX E

### NHS HIGHLAND HIGH LEVEL PMS IMPLEMENTATION PLAN

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| **PHASE 3**                           |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Bed Management Go Live               |     |     |     |     |     |     |   |     |     |     |     |     |     |

| **PHASE 4**                           |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Order Communications Preparation     |     |     |     |     |     |     |   |     |     |     |     |     |     |
| Order Communications Go Live         |     |     |     |     |     |     |   |     |     |     |     |     |     |

| **PHASE 5**                           |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Review and Final handover to Operational |     |     |     |     |     |     |     |     |     |     |     |     |     |
### Appendix F
NHS Highland Patient Management System Business Case
Financial cost, funding and requirement 2012/22

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Costings at 2012/13 values