# Business Case for Cervical Screening Informatics System (CSIMS)

**Author:** Dr Rosemary Fox, Director Screening Division  
**Date:** 16 March 2015  
**Version:** v1  
**Sponsoring Executive Director:** Dr Quentin Sandifer  
**Who will present:** Dr Quentin Sandifer  
**Date of Board / Committee meeting:** 26 March 2015  

**Committee/Groups that have received or considered this paper:**  
- Cervical Screening Modernisation Project Team  
- Cervical Screening Modernisation Project Board  
- Public Health Wales Executive Team

## The Board / Committee are asked to:

- **Approve** the recommendation(s) proposed in the paper.  
- **Discuss** and scrutinise the paper and provide feedback and comments.  
- **Receive** the paper for information only.

### Link to Public Health Wales commitment and priorities for action:

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<th>Commitment</th>
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<td>Protecting the public and continuously improving the quality, safety and effectiveness of the services we deliver</td>
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**Priorities for action**

- ✔️ Include relevant priority for action(s)

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**Date:** 16 March 2015  
**Version:** v1  
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1 Introduction
This paper accompanies the business case for the replacement of the current National Health Applications and Infrastructure Services (NHAIS) informatics system which underpins Cervical Screening Wales. The business case further takes a strategic view and recommends a modular replacement pathway for all the screening programmes’ core informatics structures.

2 Background
The NHAIS informatics system on which Cervical Screening Wales (CSW) relies for programme management and delivery is antiquated and marked for decommissioning by the Health and Social Care Information Centre in England. Public Health Wales must ensure that it can continue to manage the cervical screening cohort safely in the future. This will only be possible with an alternative informatics system.

Developing a replacement cervical screening system will include developing functionality common to all the screening programmes we provide. This business case recommends that the new cervical screening informatics system is developed to become a common platform for all screening functionality.

The business case has been shared at this early stage with the National Informatics Management Board to inform forward planning.

3 Timing
The Board are asked to note the business case prior to submission to the April Board, at which point the Board will be asked to approve formal submission via the relevant WG pathways to secure the necessary capital funding.

4 Description
The cervical screening informatics system is a module within the NHAIS system. Cervical screening is a secondary use of the system taking advantage of the demographic database. The principle purpose of NHAIS is to register patients for primary care and pay General Medical Services practitioners and other NHS contractors such as pharmacists.

NHAIS has been marked for decommissioning by the Health & Social Care Information Centre in England, which means that cervical and some of the breast screening functionality will need to be redeveloped elsewhere.

There are two risks to Public Health Wales:

1. Public Health England will migrate screening functionality away from NHAIS. CSW understand there is a business case in preparation to do this.
2. The HSCIC will decide to move other related functionality away from NHAIS. This has been the strategic direction for some time and risks such as the cost of maintenance and an aging support team increase the likelihood of this happening.

NHAIS is a complex and intricately connected system which has been used in Wales since 1982, using very outdated technology (‘green screen’ – no mouse or web components) and could not be used by CSW in either of these scenarios. Without an IT system to manage the cohort of women, it would no longer be possible to offer a cervical screening programme to the women of Wales. NHAIS also manages cohort selection for Breast Screening and this too will be at risk.

The current assessment of those risks is high and, given the lead time to development, Public Health Wales must take action now to continue to deliver cervical and breast screening programmes to the women in Wales.

As replacement cervical screening system will need functionality which is common to other screening programmes (such as letter printing and access to demographic data), it is proposed to make those common functions re-useable and plan for a migration of all screening functionality across to a common platform. This means that continued use of NHAIS or its successor has been discounted as an option for the future.

There are five remaining options to mitigate the risk to cervical screening in Wales:

1. Develop a solution in concert with NHS England
2. Go to a commercial contractor to develop and support the system
3. Negotiate with NHS Scotland to use their system and develop it for use within Wales
4. Contract the NHS Wales Informatics Service (NWIS) to develop a system
5. Develop a system in-house (PHW) utilising core functionality provided by the national architecture where appropriate.

From those evaluations, two options stand out as being preferred to take forward the requirement, with another that scored well.

Further work to scrutinise and validate the scoring of options will be carried out prior to final Board submission for the approval of the preferred option.

5 Recommendation(s)

The Board are asked to receive the business case for information prior to submission to the April Board, at which point the Board will be asked to approve formal submission via the relevant WG pathways to secure the necessary capital funding.
CSW Modernisation Project - Informatics System Redevelopment

Business Justification Case

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**Director:** Dr Rosemary Fox, Director, Screening Division

**Executive lead:** Dr Quentin Sandifer, Executive Director of Public Health Services

**Date:** 12 March 2015  **Version:** 2.3

**Purpose of Document:** This Business Justification Case (BJC) has been produced in order to document the CSW IT system “case for change” and to investigate potential options for ensuring a suitable IT architecture to facilitate a sustainable and safe cervical screening programme for the women of Wales. Further, the business case takes a strategic view across the whole of the core informatics infrastructure to provide a cost-effective modular replacement pathway for other screening programmes. This will ensure reduced maintenance costs over time, more efficient development processes, greater integration across systems and reduced informatics risk.

The BJC is being presented for consideration prior to submission to the Welsh Government.
### Version History

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<td>Initial draft version used for scoping discussions with the CSW Modernisation Project Board.</td>
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<td>v 0.1- 0.6</td>
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<td>Various drafts capturing discussions/comments gathered at Project Team and Informatics subgroup meetings.</td>
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<td>v 0.7</td>
<td>15/01/2014</td>
<td>Incorporating enhanced options appraisal outlining the strategic direction for discussion and adoption by the CSW Modernisation Project Board.</td>
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<td>v 1.0</td>
<td>05/08/2014</td>
<td>First version sent to the CSW Project Board, incorporating all comments and amendments accumulated during the drafting Phase</td>
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<td>10/12/2014</td>
<td>Amended following consultation with the appropriate Executive leads. Specifically;</td>
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<td>- Enhanced risk profiling,</td>
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<td>- Expanded scope to incorporate additional functionality to be shared across all screening programmes,</td>
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<td>- Greater alignment with the wider PHW strategy for future development of IT systems.</td>
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<td>12/01/2015</td>
<td>Amendments following further scrutiny meeting with Executive leads.</td>
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<td>- Clarified narrative in the case for change, explaining the fundamental obsolescence of the existing system.</td>
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<td>- An explanation of why it would be impractical to develop a single NHS Wales wide system that replicates all the diverse functionality of the existing NHAIS system.</td>
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<td>- Allow for further sensitivity analysis of option appraisal to ensure robust determination of preferred option.</td>
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1. Executive Summary

1.1. The cervical screening informatics system is developed and maintained by the Health & Social Care Information Centre (HSCIC) in England and is a module within the overall National Health Applications and Infrastructure Services (NHAIS) system.

1.2. The principle objective of NHAIS is to register patients for primary care and pay General Medical Services (GMS) practitioners and other NHS contractors such as pharmacists. Cervical screening is, therefore, a secondary use of the system taking advantage of the demographic database.

1.3. The NHS Wales Shared Services Partnership (NWSSP) is responsible for the NHAIS system in Wales and it is supported by the NHS Wales Informatics Service (NWIS).

1.4. Public Health Wales has Standard Operational Processes and Procedures (SOPP) in place with the NWSSP for the use of NHAIS and a Service Level Agreement (SLA) with NWIS to support the application.

1.5. The NWSSP pay the full cost of supporting NHAIS (including screening functionality) to NWIS since the finance was not repatriated to Public Health Wales on the dissolution of the Health Authorities.

1.6. Cervical Screening Wales (CSW) uses NHAIS to manage the cohort of women participating in the programme. NHAIS has been marked for decommissioning by the Health & Social Care Information Centre (HSCIC) in England at some point, but this will probably be an incremental activity with functionality being removed in a staged fashion. Any of these stages has the potential to make the cervical screening functionality unworkable (see section ‘2 Purpose’, below).

1.7. The risk to Public Health Wales comes from two directions:

1.7.1. Public Health England (PHE) will take the step to migrate screening functionality away from NHAIS. CSW understand there is a business case in preparation to do this.

1.7.2. The Health & Social Care Information Centre (HSCIC) take the decision to move other related functionality away from NHAIS. This has been the strategic direction for some time and risks such as the cost of maintenance and an aging support team increase the likelihood of this happening.

1.8. The current assessment of those risks is high and, given the lead time to development, Public Health Wales must take action now to continue to deliver a cervical screening programme to the women in Wales.

1.9. A fuller description of NHAIS and dependencies to organisation can be found in section ‘2 Purpose’ and section ‘3 Introduction’ below.
1.10. NHAIS is a complex and intricately connected system which has been used in Wales since 1982, using very outdated technology (‘green screen’ – no mouse or web components) and could not be used by CSW when other related functionality is removed or PHE migrates its own cervical screening functionality to another system (see section ‘4 NHAIS as an Option for Future Service Delivery’ below.)

1.11. **Without an IT system to manage the cohort of women, it would no longer be possible to offer a cervical screening programme to the women of Wales.**

1.12. The development of a replacement cervical screening system will need functionality which is common to other screening programmes such as letter printing and access to demographic data. It is, therefore, sensible to make those common functions re-useable and plan for a migration of all screening functionality across to a common platform. This will have significant benefits:

1.12.1. Drastically reduce the overall annual maintenance charges for all screening systems

1.12.2. Provide a common system to facilitate allocating staff across programmes

1.12.3. Take advantage of ‘do once and share’ developments; reduces the cost and timeframe for implementation

1.12.4. Enable modern communication methods (text, email etc) with screening participants

1.12.5. Capture changes to common data once and share

1.12.6. Enable information to be accessed across programmes so that one screening programme’s interaction with a participant does not affect another programme (e.g. do not make an appointment for a mammogram when Bowel Screening Wales has just made a colonoscopy appointment for the same day)

1.13. This means that continued use of NHAIS or its successor has been discounted as an option for the future.

1.14. There are five remaining options to mitigate the risk to cervical screening in Wales:

1.14.1. Develop a solution in concert with NHS England

1.14.2. Go to a commercial contractor to develop and support the system

1.14.3. Negotiate with NHS Scotland to use their system and develop it for use within Wales

1.14.4. Contract the NHS Wales Informatics Service (NWIS) to develop a system

1.14.5. Develop a system in-house (PHW) utilising core functionality provided by the national architecture where appropriate.

1.15. These options have been evaluated and scored against relevant criteria as described in section 11.
1.16. From those evaluations, two options stand out as being viable to take forward the requirement,

1.16.1. Contract the NHS Wales Informatics Service (NWIS) to develop a system

1.16.2. Develop a system in-house (PHW) utilising core functionality provided by the national architecture where appropriate

1.17 A third option also scored highly:

1.17.1 Go to a commercial contractor to develop and support the system.

1.18 The Public Health Wales Executive Team has considered the results of the appraisal and concluded that they would benefit from a second level validation to include sensitivity and risk analysis.

1.19 This Business will be presented once again to the Board following that validation exercise along with the resulting recommendation.

2. Purpose

The cervical screening informatics system is developed and maintained by the Health & Social Care Information Centre (HSCIC) in England and is a module within the overall National Health Applications and Infrastructure Services (NHAIS) system. The principle objective of NHAIS is to register patients for primary care and pay practitioners and contractors. As such, cytology screening is an adjunct rather than ‘core’ functionality.

NHAIS will eventually be decommissioned along with screening functionality. This is not a case of ‘if’ but ‘when’ and there are increasing signs that NHS England will be using the case for HPV primary screening as a driver to migrate screening functionality away from NHAIS in the near future.

This Business Justification Case (BJC) has been produced in order to document the CSW IT system “case for change” and to investigate potential options for ensuring a suitable IT architecture to facilitate a sustainable and safe cervical screening programme for the women of Wales.

Additionally, the business case seeks to take the opportunity for laying the foundations of a cross-programme informatics infrastructure. At the present time, Screening Division has five separate IT systems servicing six programmes. Much of the functionality each programme requires is replicated across these systems and there are no links between them. Developing an infrastructure based on ‘do once and share’ will lead to rapid, cost-effective, development for new programmes and re-development of existing systems. This in turn will lead to a reduction in annual support costs since we will be paying only once for a common functions instead of multiple times as at present.

In addition to the above, it is intended that the revised architecture will include in its core design, functionality to enable patients to engage electronically with screening informatics systems:

Fig 1: proposed screening informatics module and interfaces
3. Introduction

The Screening Division, Public Health Wales, is responsible for the management and delivery of the cervical screening programme within the Principality.

The underpinning IM&T system used to facilitate the delivery of this service is the National Health Applications and Infrastructure Services (NHAIS) system. There are five instances of NHAIS within Wales.

Core NHAIS is developed by the Information Centre in England and released to Wales through an historic, undocumented, agreement. The NHS Wales Shared Services Partnership (NWSSP) pays the Information Centre a licence fee, on behalf of Welsh Health Boards, to use NHAIS.

NHAIS is a functionally rich system covering several aspects of Healthcare delivery and related administration services. The principal users of the system are Health Boards (HBs) in Wales. All NHAIS systems are managed on behalf of HBs by the NHS Wales Shared Services Partnership (NWSSP).

Technical support for NHAIS is provided by the NHS Wales Informatics Service (NWIS). The NWSSP fund this technical support for ALL aspects of NHAIS, including core screening functionality. Screening Division, Public Health Wales pay NWIS a small additional amount for bespoke development such as the SafetyNet module.

Fig 2: current NHAIS Informatics systems and interfaces
4. NHAIS as an Option for Future Service Delivery

Screening

This business justification case rejects the continued use of NHAIS for screening programmes for the following reasons:

- NHAIS is now into its fourth decade as an operational system. It is ‘green screen’ technology with none of the attributes one would expect of a modern IT system.
- It is a largely undocumented system in a lot of its technical aspects and requires the personal knowledge of an aging support team. This carries consequent risks for its longer-term viability.
- It is not possible to effectively take forward a strategic aim for greater patient interaction with services (such as text and email).
- The system is unattractive for IT staff wishing to make a career within the industry; staff recruitment and retention is an issue.
- Increasing divergence of policy and pace of change between Wales and England poses a risk to shared systems and services.
- It would not be possible to fully integrate the system into Public Health Wales’ informatics strategy.
- It would not be possible to realise potential efficiency savings in respect of administrative effort.
- It presents and increased clinical risk through difficult to maintain software and lack of integration with other screening systems and services.
• There is no defined strategy in Wales for continuing to update NHAIS with demographic changes from primary care; the strategy is to send those updates to the Welsh Demographic Service (WDS). Without such updates, the utility of NHAIS for screening will degrade within a matter of weeks after they cease.

Other NHAIS Functionality

Some of the above points will also apply to other NHAIS functionality such as GMS payments and transfer of medical records.

It is not within the purview of this document to assess the risk to those services nor how the responsible organisations should respond. However, in responding to those risks, it is highly likely that any changes will have an impact on the ability of NHAIS to deliver screening services.

In removing screening functionality from NHAIS, there will be a consequent impact on other functionality:

• Screening requires a direct patient contact (through invitation and results). During that contact, patients will notify Public Health Wales of changes to their demographic data. PHW will act on those changes and update NHAIS accordingly. Without screening, there will be a loss of updates being made to patient demographic records

• The Quality Outcomes Framework (QOF) payment part of GMS payments references cervical screening data for that element of remuneration. If screening were removed from NHAIS, this element would need to be addressed

5. Developing Screening Functionality as a part of Overall NHAIS Replacement

Use of NHAIS for screening was a tactical decision rather than a strategic one – there was no alternative demographic database available at the time.

Subsequent screening programmes have used the Welsh Demographic Service (WDS) as the database of choice since it provides the logically correct services for all-Wales screening.

It would not be an effective, nor logical, option to develop screening functionality on an NHAIS replacement. Indeed, the term ‘NHAIS replacement’ itself is probably incorrect since it is highly unlikely that there will be a like-for-like replacement. Functionality will be migrated to more suitable vehicles, albeit with some logical links between them.

Having screening functionality on a system other than one that is directly related to the operational aspects of screening would also be highly ineffective from a business perspective since it would require operational, service and contractual agreements with a consequent increase in administration in costs.

It would also be necessary to factor in the pace of change for each of the organisational aspects of the required services. It is already evident that some
changes are required sooner than others and this would be logistically difficult to move forward.

6. Strategic Context
The Screening Division, Public Health Wales, has made the decision to include the potential development of the replacement IT system within the scope of the ongoing Cervical Screening Wales Modernisation Project. Investment in an IT system will fundamentally support the transformation and modernisation of the screening programme in Wales.

7. National Context
The Welsh Government is initiating a project to re-launch the eHealth agenda. Referencing the following reports/documents;

- Together for Health, 2011
- Programme of Government
- Achieving Excellence – the quality delivery plan for the NHS in Wales, 2012 - 2016
- ‘Trusted to Care’, May 2014
- Delivering Local Health Care, 2013
- NHS Wales Delivery Framework, 2013-14
- Commission for Public Services Governance and Delivery, 2013
- Prudent Healthcare
- 1000 Lives Programme, 2010
- Francis Report into failings in Mid Staffordshire NHS Trust
- Delivering Safe Care, Compassionate Care NHS Wales, August 2013
- The Robert Powel Investigation, October 2012
- Delivering a Digital Wales, 2011
- Informing Healthcare, 2003 /04
- i-Care; Information, Communications and Technology in the NHS, 2013
- Together for Health Public Information Delivery Plan, 2012
- Disease specific Delivery Plans.

The project brief considers that the above reports/documents emphasis the need to:

- Provide high quality, real-time information to clinicians about their patients, at the point of care delivery in order to safely, effectively and efficiently manage health and care interactions.
- Ensure that information plays a positive role in informing the public; supporting individuals to make informed choices and decisions about their care and treatment leading to improved opportunities for self care, self management with access to kite marked patient information.
• Develop an integrated system for health and care with common information standards, interoperability of IT systems and where ever feasible common systems. This approach will enable consistent working practices and support seamless working by health and care workforce to make care closer to home a reality for patients.

• Promote and improve communication between professionals to ensure continuity of care and support involvement and communication with patients and their families.

• Transform and re-orientate the NHS to deliver patient focused, compassionate, safe care from a learning organisation that uses information and communication tools effectively to highlight and learn from incidents, near misses and inadequate performance.

• Use data and other intelligence confidently and competently for the pursuit of quality and continuous improvement.

• Ensure close alignment between the health needs of the local population and the planning and delivery of health and care services.

• Deliver safe, high quality services, which demonstrate efficiency, productivity and value for money. As in other sectors, investment in information and enabling technology will be crucial to deliver the benefits.

• Become more focused on consistency of outcomes both for individuals and collectively for the population of Wales. The public, the NHS, third sector and Welsh Government need information on the outcomes that result from health and social care and information about how well the system is operating.

• Demonstrate not only that “...we are doing the right thing, in the right way, in the right place, at the right time and with the right staff” but that we are using the right information and the right technology fit for the purpose of delivering integrated, safe, high quality, prudent health and care in the 21st century.

• Maximise innovation and use of the latest developments in Apps, wearable devises, cloud technology etc. which are capable of revolutionising care delivery and patient experience.

• Collaborate and work in partnership with other agencies, locally, nationally and internationally, with NWIS and the national programme for Informatics, with Universities and the private sector leaders in digital health technologies.

The strategic requirement for informatics with Screening Division, Public Health Wales have been developed with the strategic aims above as guiding principles

8. Case for Change

Business needs

Migration of NHAIS functionality: NHAIS was first implemented in Wales in 1982 and has undergone much development and several changes of technical architecture.
The IM&T strategy in England is to move to a centralised demographic database (the Person Demographic Service – PDS). The over-arching intention is that there will be one ‘gold standard’ demographic service for use within the NHS in England.

The core functionality of NHAIS is a demographic module directly updated from GP systems. The strategy is, therefore, to switch updating from GP systems to the PDS and eventually decommission all NHAIS systems.

Thus, the migration plan is:

The ‘end-game’ is dependant on all functionality on NHAIS being replicated elsewhere. The key functionality currently on NHAIS includes:

- General Medical Service payments
- Cervical Cytology Screening
- Breast Screening cohort management
- Transfer of Medical Records
- Blood & Organ donor registration & update services
- NHS primary care registration

The Information Centre has well advanced plans to bring in a second phase of its ‘spine’ services, including plans for assessing when to restart the projects leading to the decommissioning of NHAIS.

Welsh NHAIS systems are configured to update the Welsh Demographic Service (WDS) in addition to the PDS. A dependency for Screening Division is that Welsh GP systems, including those English GP practices with Welsh patients, must update the WDS in the same way as described for the PDS above. NWIS are fully aware of this requirement and are planning a project to deliver it.
Screening Division uses the WDS to select eligible cohorts for the Bowel Screening Wales (BSW) programme and the Wales Abdominal Aortic Aneurysm Screening Programme (WAAASP).

**Existing service risks**

**Policy Changes:** With different administrations in Wales and England, there is scope (which increases as those administrations mature) for different healthcare and screening policies (Wales, for instance, operates a resident policy, whilst in England it is registration based).

It is also likely that where new screening policies are agreed across the Home Countries, they will be implemented at different times and in different ways, such as linking with IT systems unique to each administration.

It is increasingly essential, therefore, that Wales has control of its own screening IM&T applications to enable Screening Division to respond effectively, and efficiently, to changing policies.

**NHAIS Termination:** The demise of NHAIS has been spoken of in England for the last 8 or 9 years, this has generated an attitude that it will never happen, or not happen in the near future.

However, at a meeting of the English NHAIS Cervical Cytology User Group held on 01/10/2013, this process was seen to escalate. It was agreed at the meeting that, due to cutbacks and consequent loss of experienced staff, certain core screening functions in NHAIS will be hardcoded into the system. This will result in the core software diverging further from that required in Wales; future releases will require far more development from NWIS to ensure that Welsh core functionality can be maintained.

The decommissioning of the English NHAIS does require a considerable financial resource, but the maintenance of the current IM&T services are also very expensive. At some point, the business case for migration will be reviewed critically in England and activity accelerated.

There is increasing activity within the screening programmes in England to move away from the existing systems (NHAIS) and we are aware they are currently pursuing a ‘proof of concept’ approach to building the case for change. The implementation of HPV primary screening is being used as a driver for that change as England view the current systems to be inadequate for that purpose.

Further indications from NHS England, within the NSCP Systems Redevelopment: Initial discovery report, suggests that operational continuity is being put at risk by a policy of rationalising Primary Care Support Services without modernising NHAIS. The document also confirms that business case planning is taking place with the aim of producing a Strategic Outline Case for a replacement system in late 2014.

**Wales will be unable to respond quickly to an English led project for the decommissioning of NHAIS and this is a significant risk for Public Health Wales.** It is essential therefore, that Screening Division undertakes the planning for the replacement of the cytology and
breast screening functionality that currently resides on NHAIS as soon as possible.

**Niche technology**: NHAIS is developed in Caché software from Intersystems. Although Caché has a sizeable user base world-wide, the pool of available development resources within the NHS is very small.

Given the limited life-span of NHAIS and the restrictive (from the point of view of career development) nature of the technology, recruitment of staff to support the system is very difficult.

Ten years ago, the team that supported NHAIS in Wales had an establishment of 5 full-time staff. Currently, there are 2 full-time staff in that team. This in itself is a concern for Screening Division.

Given that a new starter will have to learn the business requirements underpinning NHAIS, the functionality of the application and Caché, there is a considerable lead time from employment to useful resource; probably about 12 months.

This slow turn-around is a significant risk to support services. To reduce this risk, **it is essential that the application is re-written in more mainstream software that can be easily supported and less susceptible to staff turnover**.

**Technical infrastructure**: Wales has a different ‘national’ IM&T infrastructure than England. Products in England are developed to their internal standards and technical architecture. When deployed in Wales, those products either require considerable modification, or cannot interface easily with core Welsh services (such as the Welsh Clinical Portal - WCP).

In the past, this has not been much of an issue due to the limited number of services within the Welsh architecture. However, that is now changing with the development of the WCP, Laboratory Information Management System (LIMS) and messaging services.

Given this, new and replacement systems should be developed to be compliant with the Welsh architecture if CSW are to take advantage of its functionality (see the National Architecture Design Board – NADB - in Appendix A).

### 9. Investment Objectives

In general terms, it is essential that any solution delivers a sustainable, safe, and value for money system for use in the delivery of the Welsh cervical cancer screening programme, and other current and future screening programmes.

Additionally, it is envisaged that the development will take the opportunity of migrating basic breast cancer screening cohort selection from NHAIS thus removing the last direct dependency Wales has on NHAIS for screening. Indirectly, demographic details will still be sourced from NHAIS through the WDS, but migration activity here is within the purview of the NHS Wales Informatics Service (NWIS).

The other objectives are:
- Decrease the overall annual support charges for screening informatics systems
- Create a system which has the same look and feel across all screening programmes. This will aid staff transferability and increase job satisfaction
- Enable patients to engage electronically with screening informatics systems
- Enable screening programmes to be aware of possible conflicts in patients interactions in other programmes
- Enable effective and efficient development of new screening programmes using the ‘do once and share’ model

Criteria used to score potential solution options are listed below:

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<th>Ref.</th>
<th>Investment Objective / Selection Criteria</th>
<th>Weight</th>
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<td>1</td>
<td>Solution must provide a sustainable model</td>
<td>20</td>
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<tr>
<td>2</td>
<td>Solution must support Breast Cohort</td>
<td>8</td>
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<td>3</td>
<td>Centralised System - one for all of Wales</td>
<td>15</td>
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<tr>
<td>4</td>
<td>Solution must be consistent with the general approach taken by NHS Wales in appropriate areas of IM&amp;T development including patient engagement</td>
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<td>5</td>
<td>Solution must continue to support effective business processes and facilitate further development as necessary</td>
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<tr>
<td>6</td>
<td>Solution must allow new screening programmes to develop as easily as possible and other screening systems to migrate to the new infrastructure.</td>
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<td>7</td>
<td>Current policy and procedural differences between English and Welsh screening programmes must be carried forward</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>Solution must be able to respond to any future differences with at least the same efficiency as present arrangements allow</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Solution must have access to a high quality, Welsh resident, population database</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>Solution must maintain electronic links with England in order to access eligible clients and screening results for patients moving in to, and out of, Wales</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>Interfaces with other Welsh clinical systems, such as pathology, radiology, child health and colposcopy, must not be compromised</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>Interfaces with all appropriate systems should be developed, or expanded upon, where appropriate</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td>Solution must allow access to an extraction of appropriate datasets, at specific periods in time, for local evaluation by Screening Division</td>
<td>10</td>
</tr>
<tr>
<td>14</td>
<td>Solution should be able to take advantage of electronic communication with other Home Countries if this becomes available</td>
<td>5</td>
</tr>
<tr>
<td>Ref.</td>
<td>Investment Objective / Selection Criteria</td>
<td>Weight</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>15</td>
<td>‘Exit’ strategies from old systems must ensure that all previous data is stored in a manner which is easily retrievable</td>
<td>8</td>
</tr>
<tr>
<td>16</td>
<td>Data which is not moved from a legacy system, but which is subsequently deemed necessary, must have a defined upload path.</td>
<td>8</td>
</tr>
<tr>
<td>17</td>
<td>Where appropriate, information systems for individual screening programmes should be able to assess the status of a patient within other screening programmes.</td>
<td>5</td>
</tr>
<tr>
<td>18</td>
<td>Must be easy to develop, and maintain, to be compliant with the Welsh Language Act and Welsh language requirements of the Trust</td>
<td>5</td>
</tr>
<tr>
<td>19</td>
<td>Supplier must have appropriate infrastructure to deliver and support the system without compromising other programmes.</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>190</strong></td>
</tr>
</tbody>
</table>
10. Potential Solutions

The Informatics Subgroup of the Cervical Screening Wales Modernisation Project has identified five realistic options to re-develop the IM&T system for Cervical Screening Wales:

The traditional “Do nothing” or “Do minimum” options have not been included as this would represent some form of NHAIS retention which, for reasons outlined in sections 3 and 4 above, is not a viable option going forward.

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Option title</th>
<th>Option detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>NWIS</td>
<td>Negotiate with NHS Wales informatics Service (NWIS), to develop a replacement IT system</td>
</tr>
<tr>
<td>Option 2</td>
<td>Home Country (existing)</td>
<td>Implement a solution which is already running in another Home Country. It is inevitable that some change will be required for Welsh requirements</td>
</tr>
<tr>
<td>Option 3</td>
<td>Commercial System</td>
<td>Contract a commercial company to develop a bespoke system for use in Wales</td>
</tr>
<tr>
<td>Option 4</td>
<td>Home Country (future)</td>
<td>Partner with another Home Country that does not currently have a solution</td>
</tr>
<tr>
<td>Option 5</td>
<td>In House</td>
<td>Develop the system from within Public Health Wales resources. In reality, this means recruiting additional staff and potentially making effective use of contractors</td>
</tr>
</tbody>
</table>

The following table shows an initial assessment of the advantages and disadvantages for these options:

| Option 1: NWIS - Negotiate with NHS Wales informatics Service (NWIS), to develop a replacement IT system |
|---|---|
| **Advantages** | **Disadvantages** |
| Trusted partner having already developed BSIMS & ASIMS | NWIS currently have dedicated Caché developers that will need to be re-trained or allocated elsewhere. |
| Can re-use some of the software already in place for BSIMS & ASIMS | Specification from scratch; requires considerable effort to develop requirements |
Utilising experience already gained by the development of ASIMS and BSIMS will enable the development of a central screening system which can offer core functionality to existing and future systems.

Competing requirements on a national level may make resource availability unpredictable.

Will have expert knowledge available for the National Architecture Design Board (NADB) process.

Less flexibility on change than in-house development.

Inter-NHS Service Level Agreements (SLAs) simpler to define than commercial contracts. Key Performance Indicators for the standards expected during development and system performance thereafter, will be agreed with NWIS. Payment for the development will take place on a timescale based phased basis dependant on progress.

Will not facilitate consolidated maintenance and development costs for multiple systems.

Future changes are confined to Welsh requirements.

Procurement processes for the ASIMS and BSIMS developments both made strong cases for spending the development funds within NHS Wales. Precedent has been set.

Development time can be minimised as NWIS already has a sound knowledge of screening operational practices and workflows.

Option 2: Home Country (existing) - Implement a solution which is already running in another Home Country. It is inevitable that some change will be required for Welsh requirements

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>System is in place and operational, although this is currently limited to</td>
<td>May require a commercial tender exercise including legal advice.</td>
</tr>
<tr>
<td>one Home Country (Scotland).</td>
<td></td>
</tr>
<tr>
<td>Commercial contracts, if necessary, are formal and have more enforceable</td>
<td>Little experience of the NADB process, or Welsh IM&amp;T architecture. Requires</td>
</tr>
<tr>
<td>dispute resolutions than NHS SLAs.</td>
<td>additional resources from Screening Division.</td>
</tr>
</tbody>
</table>
Design work mostly complete; requires some changes for the Welsh programme. | May present the same risks as current shared Wales and England systems and services do.

Will require additional amendments/modules to cater for the Welsh programme.

Access to system base coding is very unlikely to be agreed with any sharing arrangement. This would replicate, and increase, the lack of independence currently experienced.

Any minor or major developments would be subject to system change management processes designed for the host nation. As a result, required “Welsh” developments could not be certain of approval.

Less flexibility on change than in-house development

**Option 3: Commercial System** - Contract a commercial company to develop a bespoke system for use in Wales

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial contracts are formal and have more enforceable dispute resolutions than NHS SLAs.</td>
<td>Development from scratch; requires considerable effort to specify requirements</td>
</tr>
<tr>
<td>Requires a commercial tender exercise including legal advice. Probable OJEU phase.</td>
<td></td>
</tr>
<tr>
<td>May have little experience of the NADB, or Welsh IM&amp;T architecture, process. Will require additional resources from Screening Division.</td>
<td></td>
</tr>
<tr>
<td>May present same risks as current shared Wales and England systems and services.</td>
<td></td>
</tr>
<tr>
<td>It is inevitable that any new commercial partners will require considerable additional time to build knowledge surrounding screening operational practices and workflows</td>
<td></td>
</tr>
<tr>
<td>Less flexibility on change than in-house development</td>
<td></td>
</tr>
</tbody>
</table>
### Option 4: Home Country (future)
Partner with another Home Country that does not currently have a solution

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>May be cost-effective as a shared system</td>
<td>Will require extensive negotiations between the Home Countries AND the commercial supplier (if used)</td>
</tr>
<tr>
<td></td>
<td>May be unacceptable to the supplier for separate assurance processes (such as NADB in Wales and CAP in England)</td>
</tr>
<tr>
<td></td>
<td>Development change control processes are likely to be more complicated and lengthy than other options.</td>
</tr>
<tr>
<td></td>
<td>Other Home Countries are at different stages of progress and may not fit into the timetable for Welsh services.</td>
</tr>
<tr>
<td></td>
<td>Wales has additional requirements over and above a call/recall service. Requires separate negotiation and control.</td>
</tr>
<tr>
<td></td>
<td>Future development will be compromised depending on change control procedures.</td>
</tr>
</tbody>
</table>

### Option 5: In House - Develop the system from within Public Health Wales resources.

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>More control, easier to adapt to changes.</td>
<td>This means identifying or recruiting additional staff and making effective use of contractors.</td>
</tr>
<tr>
<td>Head of Informatics (Screening) has significant knowledge of the NADB process.</td>
<td>Require up-skilling of current staff.</td>
</tr>
<tr>
<td>Significant experience of the screening programmes, IT infrastructure and pathways.</td>
<td>Would still require some input from NWIS to link to national systems and services</td>
</tr>
<tr>
<td>Strategically important to Public Health Wales as would increase cross organisational informatics working.</td>
<td></td>
</tr>
</tbody>
</table>
Employing staff directly would greatly accelerate the re-development of existing systems.

Accelerated re-development would accrue annual maintenance savings earlier.

11. Option Scoring

The Informatics Subgroup of the Cervical Screening Wales Modernisation Project scored each of the above options against the Investment Objectives. Indicative capital, non recurring revenue, recurring revenue and lifetime costs were developed for each option. Net Present Value (NPV) and Annual Equivalent Costs (AEC) were extrapolated from these lifetime costs.

A value for money appraisal, combining the weighted quality score and the weighted price score, with price and quality having a 50:50 split was performed. The outcome of the option appraisal process identified two options as standing out from the others:

- Contract the NHS Wales Informatics Service (NWIS) to develop a system
- Develop a system in-house (PHW) utilising core functionality provided by the national architecture where appropriate

A third option also scored highly:

- Go to a commercial contractor to develop and support the system.

In order to further differentiate between these options, additional analysis was carried out to expand on the strategic investment objectives outlined in section 0.□ - 0.□ above.

Lifetime costs for the 2 highest scoring options were expanded to include the maintenance and system development of the functionality currently found in the following Screening Division IT systems:

- Aneurysm Screening Information Management System
- Bowel Screening Information Management System
- Cervical Screening Information Management System
- All Wales Newborn Hearing Screening & Newborn Bloodspot systems
- National Breast Screening System
- CaNISC functionality

The premise of this analysis was to compare the current, primarily NWIS based, system maintenance and development strategy with PHW gaining the capacity to undertake these systems developments and then manage the maintenance internally.
This exercise suggested that financial savings could be achieved if Public Health Wales were to take the strategic decision to adopt an in-house approach to IT systems development/maintenance. In addition, the greater flexibility provided by managing the development cycle in-house, would enable the organisation to achieve strategic investment objectives including:

- Decrease the overall annual support charges for screening informatics systems
- Create a system which has the same look and feel across all screening programmes. This will aid staff transferability and increase job satisfaction
- Enable patients to engage electronically with screening informatics systems
- Enable screening programmes to be aware of possible conflicts in patients interactions in other programmes
- Enable effective and efficient development of new screening programmes using the 'do once and share' model

However, the scores of the favoured options remained close to each other, and the Executive Team of Public Health Wales has recommended a further validation of scores to include a sensitivity analysis and a risk analysis. It is anticipated that this will be completed in time for the results to be presented to the April Board with a preferred option identified.

12. **Recommendation**

The Board is asked to receive this paper for information and note that the final business case will be submitted to the April Board meeting for decision.