Isle of Man Government
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Electronic Health & Care Record (EHCR) Options Appraisal

Health and Care Transformation Programme

V1.1 for publishing

Introduction

The Options Appraisal – In Scope

KPMG have been commissioned by the Isle of Man Health and Care Transformation Programme to conduct an options appraisal which will inform the decision on the future direction of the Manx Care Record.

This section sets out the objectives of the work, and the individual options that were developed, reviewed, and evaluated.

The options appraisal sought to develop and recommend a way forward for Manx Care that would deliver an integrated and shared electronic health and care record, helping to:

- Improve patient and service user experience;
- Improve working lives;
- Demonstrate the quality of care and clinical outcomes achieved;
- Allow the organisation to operate more efficiently and realise the benefits of integrated care; and
- Increase the level of its Digital Maturity.

The Health and Care Transformation Programme has continued in its aim to deliver the full package of 26 recommendations set out in the independent health and social care review conducted by Sir Jonathan Michael in 2019.

This report is aligned to Recommendation 22: *"The development and delivery of the digital strategy should go further and faster to ensure the comprehensive capture, sharing and use of information. This would enable greater integration across the system, improved monitoring and enhanced delivery of quality and efficiency-related information".*

"Recommendation 22 in particular can be facilitated by the creation of a "Manx Care Record", a single overarching digital care record that provides appropriate staff from all parts of health and care with access to key data from each relevant system used in the delivery of care in its entirety".

"The Review considered this recommendation essential to the future clinical sustainability of care, technology and information sharing not being an add-on to delivery of care but an essential element for service users, staff, operational management and strategic planning".

The options appraisal and this document will inform any future business case that would need to be produced in the event of the decision that a change is needed involving investment and procurement.

Introduction

The Options Appraisal – Out of Scope

This report presents a high-level options appraisal and presents a conclusion from this.

It does not remove the need to produce a structured business case for investment in new and / or replacement systems.

Whilst the author has included an indicative proposal for the core systems which would be within scope of the Manx Care Record, it is important that a structured process is undertaken to consider and agree the final scope that would be included within a procurement process following agreement of the strategic approach.

Typically the development of a business case (SOC/OBC and underpinning Output Based Specification) would take between 4-9 months to develop, and involve significant engagement across organisations, along with detailed economic and financial appraisal.

Whilst this report does provide a strategic direction for the way forward, given the timeframe and limited scope, it will not:

- set out the final scope of a subsequent procurement
- pre-judge the outcome of a business case process.

Executive summary

Outcome of the options appraisal

As part of our work, we: carried out over 30 hours of interviews with key stakeholders across the IoM; reviewed over 15 documents/artifacts; and fed in wider learning from over 15 other health and care organisations globally.

Work conducted as part of this options appraisal has highlighted an appetite amongst all stakeholders to make better use of technology to help our health and care services deliver a more joined-up health and care record that also facilitates the engagement of patient, service users and partner organisations.

The assessment of options generated a preferred option that would put all the organisation's clinical system arrangements "on the table" via a new "EHCR Lite" procurement process.

The "EHCR Lite" option would entail a two-step approach; firstly moving acute systems (which is considered a risk priority in 'enabling an effective shared care record') onto one core integrated system, followed by an exercise to then shape the shared care record using the primary care record information. This should be done through a phased deployment based on a criteria which should be developed at the business case stage. It will include appetite/need for change (e.g. increased requirement to share data across health and social care), risk and vulnerability of key systems (e.g. systems becoming legacy/unsupported), and improved safety and clinical outcomes.

The preferred option was evaluated across the range of criteria assessed, the benefits of which are outlined below:

Stakeholder acceptance/ appetite

This is a key success factor achieving buy-in and commitment across all key stakeholders to assure a robust procurement, implementation, and user adoption.

Moreover, the process of ensuring that meaningful use of the solutions is achieved could be engineered into any procurement ensuring aligned incentives with supplier(s). Price reductions are possible especially if competitive tension in any process is maintained.

Ability to make sure Clinicians have the right information

The solution would require early clinical engagement as part of the procurement process to help ensure the core system addresses the most pertinent issues relating to access to the right information.

Solution addresses the issue of legacy systems ageing or going out of support / end of life

This is timely as contracts are up for renewal and are under review to renew for up to two years in anticipation of the event of a move to any new solutions procurement and deployment process.

Option is achievable through a supplier with the capacity and capability to deliver

The EHCR Lite solution facilitates a wider response from suppliers.

Option provides the most control and influence over system functionality, support and developments

The EHCR Lite solution would ensure Manx Care would system functionality have control over decisions relating to and updates.

Further information on the "EHCR Lite" option is included in the Conclusions and Recommendations of this report.

Executive summary

Context of conclusion

Whilst creating the foundation of the Manx Care Record through moving the majority of acute services onto one integrated system, integrating with other systems within and beyond the hospitals, and moving some other services onto the same system in the future was identified as the preferred option in the report, the option to move all services onto the same system was considered.

Having appraised the market it is clear that no health economies have successfully moved to one single EPR across care settings.

There are many examples of where secondary care hospitals have successfully moved from paper-based records to best of breed electronic systems, and others that have moved from best of breed electronic systems to integrated EPR.

These include the following:

- Cambridge University Hospitals NHS Foundation Trust - successfully moved from best of breed to integrated (Epic).
- West Suffolk NHS Foundation Trust - successfully moved from best of breed to integrated (Cerner).
- Gloucester Hospitals NHS Foundation Trust - attempted to move from best of breed to integrated (InterSystems) but failed and replaced some systems with Allscripts.

It is also important to note that even where secondary hospitals have moved to Integrated EPRs across their estate, many of these have opted to retain and integrate some best of breed systems. For example some departmental systems are very specialised systems and trusts have opted to retain systems. For others an EPR supplier may not provide a full suite of systems, for example Salford Royal NHS Foundation Trust procured the Allscripts Sunrise system which does not provide functionality including PAS and LIMS, resulting in the trust having to retain and integrate their existing systems (DXC and Clinisys).

Other trust have chosen not to take functionality offered by their main EPR provider as they have felt that some of the suppliers departmental systems do not meet the trusts requirements, for example with Cerner, some trusts have opted not to take Cerner's maternity system.

It is therefore important that during the development of business cases, a structured and diligent process is undertaken to develop and agree the scope with input and sign off from clinical, operational and executive teams.

Recently other health services have signed contracts to move to one single health record, for example, Guernsey, however it is important to note that their single health record is being delivered through integration of a number of systems - IMS Maxims in acute and MH, and Servelec in community and child health, rather than one system.

Regions such as Devon and Cornwall, and the North East of England have implemented shared care records, but these are not on the same system – more that they take feeds, and present a view of a record from multiple systems.

The barriers to adoption of single systems across health economies include both system barriers (some settings require certain functionality not available in acute EPR systems e.g. reporting or meeting mental health act requirements), along with non system barriers including the disruption and risk that moving to one system can present.

Executive summary

Context of conclusion (continued)

Referenced below are other examples of the benefits brought about by implementing an EPR/shared care record. These include projects in the UK, Spain and the US.

ALOS reductions (Salford Royal NHS FT)	Following their implementation of Allscripts, Salford Royal NHS FT achieved an average 10.3% reduction in ALOS for elective admissions, and an average 3.4% reduction in ALOS for non-elective admissions https://www.allscripts.com/client-stories/salford-royal
Adverse Reactions (Cambridge University Hospitals NHS FT (CUH)	Cambridge University Hospitals NHS FT (CUH) estimate they prevent 850 significant adverse reactions each year with electronic allergy-related prescribing alerts in their EPR triggering a change in medication prescriptions - saving 2,450 bed days a year (equivalent to £0.98 million).
Legacy systems (Oxford University Hospitals)	Consolidating legacy systems has led to a reduction in costs, risks and improvements in data quality through having 'one source of truth' at Oxford University Hospitals https://www.ouh.nhs.uk/patient-guide/documents/epr-case-study.pdf
Sepsis (West Suffolk NHS FT)	West Suffolk NHS FT has seen a 34% reduction in the number of patients escalating to ITU as a result of earlier intervention for sepsis, supported by the Trust's EPR. CUH have achieved a 42% reduction in sepsis mortality through the use of digital technology and integrated decision support https://www.thehtn.co.uk/2019/06/12/feature-patient-safety/
High Costs Drugs (Cambridge University Hospitals NHS FT (CUH)	CUH estimate they have achieved a £600k–£800k annual reduction in financial gap between high-cost drug expenditure and income.
Paper records (Cambridge University Hospitals NHS FT (CUH)	Since implementing EPIC, CUH have saved £460,000 annually in staff time as paper patient records no longer require retrieval from the Trust's medical records library
EMPA (West Suffolk NHS FT)	West Suffolk have achieved 53% fewer pharmacy interventions required, and a significant reduction in adverse drug events causing moderate or major harm through use of EPMA.
Complaints Handling (West Suffolk NHS FT)	West Suffolk have seen a 65% improvement on performance for handling complaints within the agreed timeline.
Order comms (Kingston Hospital NHS Foundation Trust)	Kingston Hospital NHS Foundation Trust have reduced the number of Reception Staff (labs/radiology) used for booking-in tests, fewer duplicate tests and a reduction in time chasing missing information.

Context and Background: Strategy, Drivers, Existing Systems

Health and Care setting overview

The below table outlines some of the user levels across existing systems. *Source*: *PIN Information Notice (PIN) Specification for EPR.*

Systems	Details (users, sites etc.)
GPs	12 Practices (around 90 GPs including trainees and F2s). The Prison is currently set up as a practice.
Community and Mobile Working	194 users
Mental Health (inpatient, outpatient, forensic, mobile working)	440 users
Adult Social Care	492 users
Prison	1 site
Hospital	Noble's – 269 beds, approx. 1000 users
Palliative care/Charity	1 site
Out of Hours	1 site
Custody Suites	1 site
Care Homes	203 users, 8 sites
Community Pharmacy	23 pharmacies (8 independent, 10 Lloyds, 5 Clear)
MIU	1 site
Mobile Ambulance	65 ambulance users

Partner Organisations	
Organisation / Service	Description
Cabinet Office	Responsible for leading health and care transformation programme
GTS (part of Cabinet Office)	Providing digital services and infrastructure for health and care
Department of Health and Social Care	The Department strategically commissions, through this Mandate, health and social care services from Manx Care and it assures Manx Care's performance in delivering such services.
Information Commissioner	The Information Commissioner is the independent authority responsible for upholding the public's information rights and promoting and enforcing compliance with the Island's information rights legislation, which includes the data protection legislation, the Unsolicited Communications Regulations and the Freedom of Information Act.

Context and Background: Strategy, Drivers, Existing Systems

IoM Drivers

It is important to recognise the wider context and drivers regarding digitisation and Electronic Health Records (EHCR).

Guernsey & Jersey- After an extensive procurement and evaluation process over the last 18 months, the States of Guernsey Health and Social Care has announced the preferred suppliers for its new electronic patient record system, a key component of its 'My eHealth Record' transformation plans, which aims to create one electronic view of each patient. IMS MAXIMS have been selected for acute and mental health services, and Serverlec for community and child health services.

Alder Hey Hospital, Liverpool, which receives patient referrals from Manx Care for off-island treatment, became the first UK NHS Trust to achieve EMRAM Level 7 in November 2021, the highest score in the Model achieved through digitising the inpatient experience.

Jonathan Michael's Review- The Department of Health and Social Care redesigned on 1 April 2021 as a direct result of Sir Jonathan Michael's Independent Review of the Isle of Manx Health and Care System. This Review and recommendations (covered earlier in this report – slide 3) continues to be a catalyst for change and improved service provision.

Strategic Objectives- The DHSC will be focused on the future strategy of health and social care, policy, and patient and user quality and safety and is developing seven strategic objectives:

1. Development of a five year modern, comprehensive legislative programme;
2. Assurance of service delivery in terms of quality, safety, best value and appropriateness for the service user;
3. Continued in year financial balance and the development of sustainable financial plans;
4. Developing a culture of collaboration and partnership working, equality, skills development and a focus on staff retention across the health and care system;
5. Developing (and assurance of) the Health and Care System long-term strategic plan;
6. Embedding the principle that patients and service users are fully engaged in, and at the centre of, all aspects of planning and delivery of health and care services;
7. Leading the strategic development and assurance that care has an equitable role in all areas of planning, governance and delivery.

Source *Isle of Man Government - Health and Social Care*

Context and Background: Strategy, Drivers, Existing Systems

Existing systems

There are a number of key systems in operation, including acute, primary, secondary, social, community and mental health care setting. Key systems are in the process of contract renewal as a tactical solution for a period of up to 2 years from the current contract end date. The below were identified by stakeholders as key systems but this is not a comprehensive list. The information below was sourced from various Manx Care sources including the CCIO and Live systems Team.

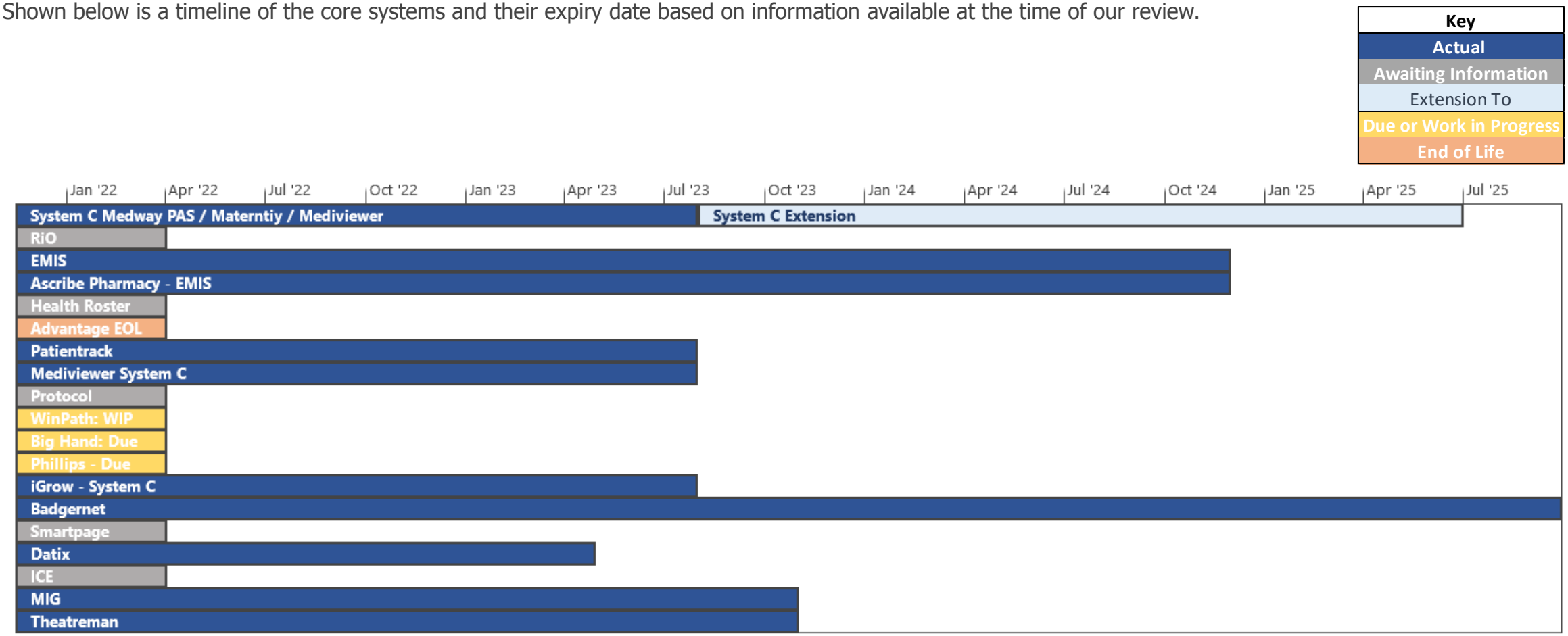
Key Legacy Systems - System Name	Supplier	Core Functions	Contract status / contract renewal status	Ongoing Total Annual Cost (£)	What Service is supported?
Medway PAS	System C	Secondary care PAS	In contract, expires July 2023, option to extend to 2025	**[REDACTED]**	Secondary care
Medway Maternity	System C	Maternity	In contract, expires July 2023, option to extend to 2025	**[REDACTED]**	Maternity services
RiO	Servelec (Access)	Mental Health, Adult Social Care	*Info not available*	**[REDACTED]**	Mental Health, Adult Social
EMIS	EMIS	EMISWeb - GP, EMIS EPR Viewer	In contract, expires Nov 2024	**[REDACTED]**	Primary Care, Community (nursing)
Ascribe Pharmacy	EMIS	Secondary care pharmacy EMM	In contract, expires Nov 2024	**[REDACTED]**	Noble's Pharmacy
Health Roster (Allocate)	Allocate	Secondary care rostering (nursing/HCA/bank)	In process of renewal for 5+5	**[REDACTED]**	Secondary care, due to expand use
Advantage	Idox Health	DAT prescribing	EOL	**[REDACTED]**	Drug & Alcohol Team
Patientrack	Alcidion	Secondary care eObs, eNoting, eAssessments	In contract, expires June 2023	**[REDACTED]**	Secondary Care
Mediviewer	IMMJ	Secondary care DHR/EDMS	Linked to System C contract: expires July 2023, option to extend to 2025	**[REDACTED]**	Mainly Secondary care, accessible from GP also
Protocol	System C	Children & Families	*Info not available*	**[REDACTED]**	C&F
WinPath	CliniSys	Lab system	In process of renewal for 10 years	**[REDACTED]**	Lab
Bighand	BigHand	Digital Dictation	Due renewal	**[REDACTED]**	Secondary care
Phillips	Phillips	Multiple: PACS, high acuity monitoring, cardiorespiratory	PACS renewal underway	**[REDACTED]**	Radiology, patient monitoring (ED, CCU, ICU, HDU areas)
IGrow	System C		In contract, expires July 2023, option to extend to 2025	**[REDACTED]**	Maternity services
Badgernet	CleverMed	Neonatal EPR	In contract, expires Sept 2025	**[REDACTED]**	Paediatrics/neonatal
Smartpage	Alcidion	Smart paging solution - clinical, portering/housekeeping, emergency response	?linked to existing Alcidion contract term	**[REDACTED]**	Secondary care, due to expand use into community
Datix	Datix	Risk management/incident reporting	In contract, expires April 2023	**[REDACTED]**	Manx Care wide
ICE	CliniSys	Order Comms	?	**[REDACTED]**	Manx Care wide
MIG	Healthcare Gateway	Document exchange from MediViewer to EMIS, SCR data into secondary care pharmacy	In contract, expires ?2023	**[REDACTED]**	Noble's Pharmacy, Noble's to GP
Theatreman	Trisoft	Theatre management	In contract, expires Oct 2023	**[REDACTED]**	Noble's Theatres
				[REDACTED]	

Redactions made to protect commercial information

Context and Background: Strategy, Drivers, Existing Systems

Existing Systems Expiry Timeline

Shown below is a timeline of the core systems and their expiry date based on information available at the time of our review.



Context and Background: Strategy, Drivers, Existing Systems

Overall Cost of Existing Systems

[REDACTED]

Live Systems support costs for previous 12 months as below:

Staff of 11	**[REDACTED]**
Software	**[REDACTED]**
Hardware	**[REDACTED]**
Misc/consumables	**[REDACTED]**

Redactions made to protect commercial information.

Governance process and approvals

Sign Off Authority

No	Governance	Forecast	Comments
1	Report - KPMG Engagement Lead Review	29/11/21	Reviewed internally with comments received and impacted
2	Report - KPMG EQCR Review	30/11/21	Reviewed internally with comments received and impacted
4	Strategic co-leads	26/11/21	Meeting scheduled 26.11 3pm
5	Manx Care Record Advisory Board	TBC	1st or 2nd week December
6	Officer Board	12/01/2022	Submit by 17th December

Options Appraisal- Approach

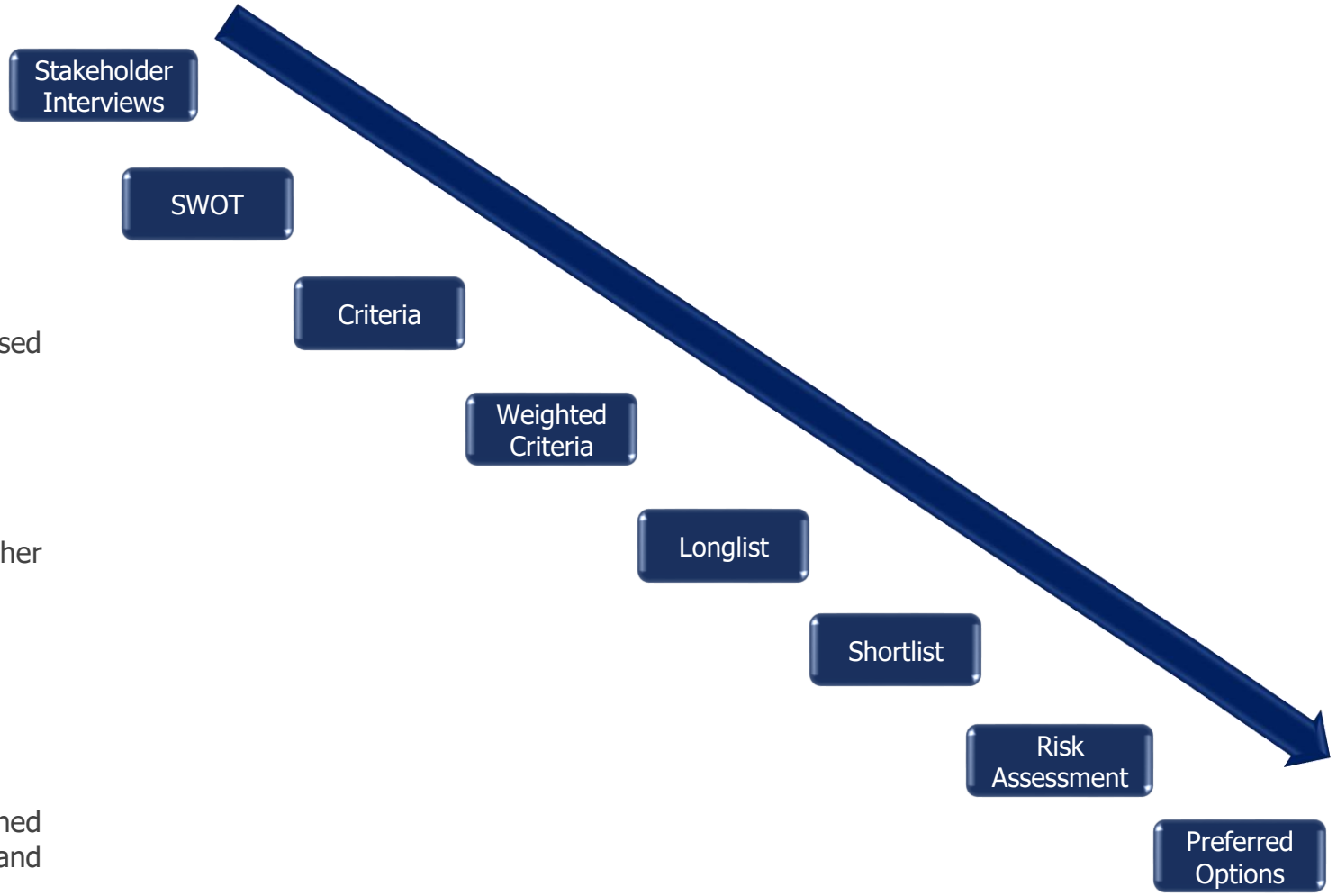
Options Appraisal

Scope of the Appraisal

The process by which a preferred option is selected is:

- Stakeholder interviews and current system assessment
- Development of SWOT analysis
- Establish and agree Evaluation Criteria by which the proposed options will be appraised*
- Agree the weighting of the Evaluation Criteria
- Objective scoring of the longlist options against the criteria
- Identification of the preferred shortlisted option(s) for further consideration
- Assessment of risk
- Confirmation of preferred option

* The Evaluation Criteria were developed from the insight gained from our experience of similar options appraisals in the UK and elsewhere and from the wide range of stakeholder interviews.



Options Appraisal

Stakeholder Engagement & Interview Questions

A wide representation of stakeholders were involved in the interview process.

Interviews were conducted over several weeks across a range of key stakeholders following a structured questionnaire to ensure consistency of approach.

Each stakeholder interview provided a unique and personal perspective and experience, which when aggregated, enabled us to collate a full cross section of responses and intelligence from across the Board, Service Heads, Primary & Secondary Care, GPs, Mental Health, Social Care, The ICO, DHSC, and the Cabinet Office.

A record of the interview notes was prepared and sent to the key stakeholder providing the opportunity to amend and accept the document as an accurate representation of the points discussed at the interview.

The interview questions are given in the table opposite. Key Stakeholders Interviewed are listed on the next slide:

Question
What's your role and what is your interest in the project?
What systems do you / your team currently use?
What systems do they integrate with internally, within IoM (other care settings), and beyond IoM? e.g. Local health and care record, NHS Spine connected systems incl. Summary Care Record, Patient Demographic Service, Electronic Referrals Service), NHS App.
What are the current challenges and issues with the current systems / systems landscape?
What's needed going forward, what are the opportunities, and how will this address the current business problems and deliver benefit to citizens and to those working across the system?
What do you see as the challenges in achieving this (incudingl buy-in across other IoM partners, resistance to change, organisational disruption?)
What other opportunities do you see and how could these support the service and citizens (e.g. Patient portals/Apps, Artificial Intelligence, Telehealth, Population health)
Are there any other questions you wish to ask or points to put across?
How would you like to be engaged moving forward? Are there any other key individuals we should engage with?

Stakeholders Engaged

Redactions made to protect personal identifable data.

Interviews Held

Stakeholder	Role	Organisation	Date interviewed
[REDACTED]	[REDACTED]	Manx Care	18.10.2021
[REDACTED]	[REDACTED]	Manx Care	18.10.2021
[REDACTED]	[REDACTED]	Manx Care	20.10.2021
[REDACTED]	[REDACTED]	Manx Care	20.10.2021
[REDACTED]	[REDACTED]	Manx Care	20.10.2021
[REDACTED]	[REDACTED]	Manx Care	29.10.2021
[REDACTED]	[REDACTED]	Cabinet Office	01.11.2021
[REDACTED]	[REDACTED]	Cabinet Office	01.11.2021
[REDACTED]	[REDACTED]	Manx Care	01.11.2021
[REDACTED]	[REDACTED]	Department for Enterprise and Cabinet Office	02.11.2021
[REDACTED]	[REDACTED]	Ramsey Group Practice	02.11.2021
[REDACTED]	[REDACTED]	ICO	02.11.2021
[REDACTED]	[REDACTED]	Manx Care	22.10.2021
[REDACTED]	[REDACTED]	Manx Care	02.11.2021
[REDACTED]	[REDACTED]	Cabinet Office	02.11.2021
[REDACTED]	[REDACTED]	IOM Primary Care Network	02.11.2021
[REDACTED]	[REDACTED]	Peel Medical Centre	02.11.2021
[REDACTED]	[REDACTED]	Manx Care	03.11.2021
[REDACTED]	[REDACTED]	DHSC	04.11.2021
[REDACTED]	[REDACTED]	Manx Care	05.11.2021
[REDACTED]	[REDACTED]	Manx Care	08.11.2021
[REDACTED]	[REDACTED]	Cabinet Office	17.11.2021
[REDACTED]	[REDACTED]	Manx Care	17.11.2021
[REDACTED]	[REDACTED]	DHSC	19.11.2021
[REDACTED]	[REDACTED]	St John Ambulance	29.11.2021
[REDACTED]	[REDACTED]	Manx Care	29.11.2021
[REDACTED]	[REDACTED]	Prison	Tbc
[REDACTED]	[REDACTED]	Ramsey Group Practice	Tbc
[REDACTED]	[REDACTED]	Manx Care	
[REDACTED]	[REDACTED]	Cabinet Office	30.11.2021

Evaluation Criteria

Evaluation Criteria and Scoring

Evaluation Criteria

The Evaluation Criteria was constructed to assess the information from the interviews and analysis and from experience in similar Options Appraisal exercises to ensure robustness of the criteria. The criteria used is listed in the table on the following page along with their relative weighting.

Twelve Evaluation Criteria were designed to enable the scoring to take place. Weightings were considered, and applied to two key criteria to raise their status to a weighting of 10/100:

- Stakeholder acceptance and appetite
- Impact on working lives

All other criteria were weighted at 8/100.

A scoring system was agreed based on a three point scale as described in the table adjacent.

Evaluation & Scoring Process

KPMG have prepared an evaluation scoring position of the options based on the information from the key stakeholder interviews and our knowledge and experience. The objective going forward is to facilitate discussion and challenge across the key stakeholders to enable agreement and ratification of the preferred option and way forward.

It is important to achieve 'buy-in' from the key stakeholders to validate the findings and achieve commitment to the preferred option.

The Assessment Matrix presents the outcome of the scoring produced by the KPMG team following the interviews with key stakeholders.

Weightings were applied to the ratified scorings to produce the final weighted scoring Options Assessment.

Next Steps

The outcome of the assessment and identification of the preferred option has been reviewed with the Cabinet Office.

There will be a process of validation of the assessment and preferred option identified, engaging with key stakeholders to assure robustness of the outcome.

Score	Description
3	Excellent and completely fulfils the brief
2	Good, only minor areas unmet
1	Poor, large or critical areas of requirements unmet
0	Not acceptable - Does not meet criteria

Scoring descriptors

Evaluation Criteria

	Criteria	Description	Weighting (total 100)
Business Fit	1. Stakeholder acceptance/ appetite	This criterion relates to the ease with which the idea of the option is readily accepted by all stakeholders in the organisation, from ward to board, along with the appetite / pull from stakeholders for the option.	10
	2. Impact on working lives	The improvement to working lives and the experience of staff and patients who engage with the system. In modern healthcare, many system users spend much of their day interacting with systems. It is essential that they are easy to access, provide user friendly navigation, and allow them to access the information they need to carry out their role. E.g. reduces need for sign-on to multiple system log-in.	10
	3. Ability to align solution with business requirements e.g. Interoperability and standards	Improve Health Economy wide sharing of information through integration and/or interoperability. Enabling improved data collection, accuracy, and structured data at the point of care. E.g. encompassing data from patients treated 'off Island' in mainland England NHS Trusts.	8
	4. Ability to expand on patient participation and improve experience	Improve patient and service user experience through new models of care enabling a route to real-time scheduling, decision support and patient portal.	8
	5. Ability to deliver and demonstrate improved quality of care and clinical outcomes	Improve quality of care through solutions that support real-time analytics of data from front line and for reporting purposes.	8
	6. Ability to make sure Clinicians have the right information	Information across services will encompass the healthcare record of the patient and be available to Clinicians to enhance patient care and reduce clinical risk.	8
Technology Maturity	7. Solution addresses the issue of legacy systems ageing or going out of support / end of life	The preferred solution will enhance management of system and support and provide a level of control of contract and supplier management.	8
	8. Option is achievable through a supplier with the capacity and capability to deliver	The preferred solution is achievable through a supplier with the capacity and capability.	8
	9. The Option addresses the control and influence over system selection, functionality, support, and developments	The organisation has oversight and control of the decision process.	8
	10. The Solution supports technology standards best practice	The Solution supports technology standards best practice. For example, the solution enables mobile working, integration and facilitates enhanced use of the Spine.	8
Time and Cost to Complete	11. Time, Cost and Benefits ('value for money') to implement the solution is efficient and realistic for the organisation	The Time to procure and implement the selected solution is acceptable to the organisation. The Cost required for implementation, training, ongoing support and organisational change are acceptable to the organisation.	8
	12. Level of organisation change / disruption required is manageable by the organisation	The level of organisational change and potential for disruption is anticipated and addressible by the organisation. Care pathways will be aligned to work with the preferred solution.	8
			100

Options Appraisal

Options - Long List

There are a number of options that could be considered when deciding upon the best route for Manx Care. The options to be evaluated are described in the table below.

Options Summary

Option	Description
Option 0: Do Nothing (BAU)	Maintain the current position with multiple (six) legacy systems and minimal integration. The "Null" position.
Option 1: Do minimum- "Single Sign On with existing legacy estate"	Maintain the current position with multiple (six) legacy systems and minimal integration. Address the requirement for separate sign on / log in to each system with a "Single Sign On" solution.
Option 2: "Overarching new system to integrate to the existing legacy estate"	Maintain the current position with multiple (six) legacy systems and integrate the systems with an overarching new system interfacing with the legacy systems to provide the electronic health and care record.
Option 3: "High Level Consideration of any potential partnership / system sharing arrangements with UK NHS service providers"	Identify and develop a contractual relationship with a UK NHS service provider to partner / share the electronic healthcare system currently operated and managed by the UK NHS service provider.
Option 4: "New EHCR replacing existing systems"	Procure an electronic health and care system across all services (Acute, Mental Health, GP, Pharmacy / Prescribing etc.) to replace the existing legacy systems.
Option 5: "Phased approach- "New EHCR 'Lite' replacing some systems"	Procure an electronic health and care system "EHCR Lite" replacing some systems across services, enabling development. The scope of this option would entail a two-step approach; firstly moving acute onto one core system, followed by other non-acute systems. This should be done through a phased deployment based on a criteria which should be developed at the business case stage; it will include appetite/need for change (e.g. increased requirement to share data across health and social care), risk and vulnerability of key systems (e.g. systems becoming legacy/unsupported), etc.

Options Appraisal- Outcomes

Key Themes Identified

Key Issues & Opportunities Highlighted

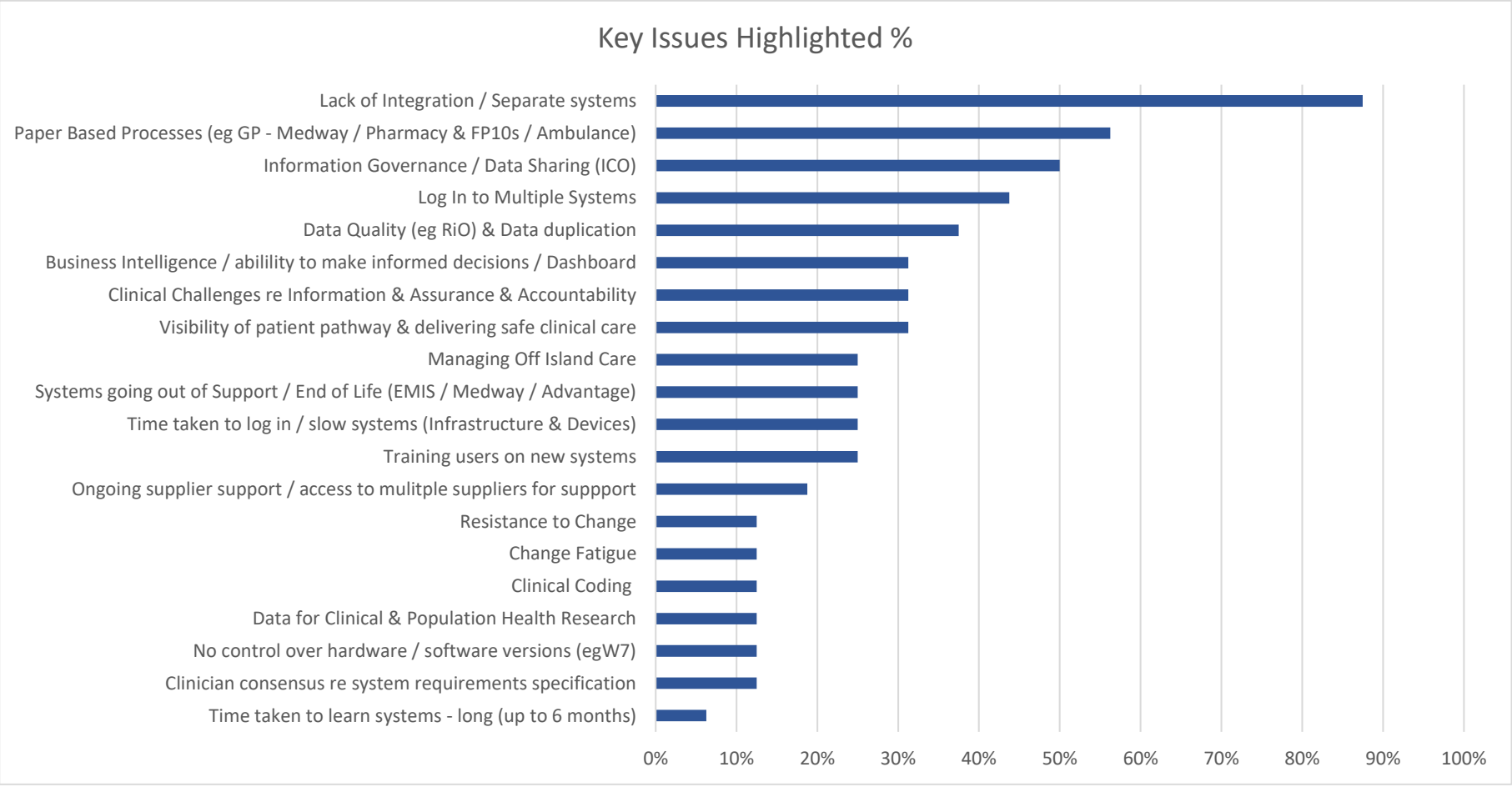
Each stakeholder interview allowed the particular perspective and experience to enable a full cross section of responses and intelligence to be gained across the Board, Service Heads, Primary & Secondary Care, GPs, Mental Health, Social Care, The ICO, DHSC, and the Cabinet Office.

A record of the interview notes was prepared and sent to the key stakeholder providing the opportunity to amend and accept the document as an accurate representation of the points discussed and conclusions reached at the interview.

A summary of the key issues was produced to show the types of current issues experienced by the key stakeholders, using a phrase to describe the key issue raised. The number of citations across the issues was assessed as a percentage of the number of interviews held with the key stakeholders. Similarly, a summary of the key opportunities identified by key stakeholders was produced. This information has been used to develop the SWOT diagram and the Evaluation Criteria. This is contained on the proceeding slides.

Key Themes Identified

Key Issues Highlighted



Key issues identified concerned the lack of integration and separate systems, information governance and attitudes and approach to data sharing.

Paper based processes, particularly in pharmacy and ambulance services, were raised as a pertinent issue impacting both process efficiency and quality of patient care.

Practical considerations such as the need to log in to multiple systems were also raised, highlighting the frustrations felt by some staff in their everyday working.

Access to timely and accurate management information and business intelligence were raised as issues hindering the ability to provide full visibility of the patient pathway for clinicians. Linked to this were issues around data quality and data duplication.

Data: Percentage of citations from sixteen key stakeholder meetings

Key Themes Identified

Key Opportunities Highlighted

The key themes were broad in range. On the whole, a patient and service user-centred theme was identified. There was a particular focus on patient access, telehealth and population health as opportunities to follow-on after establishing a single care record. The opportunity for a single care record, streamlined system, single sign on, and enhanced management information were also highlighted.

There was also a positive 'appetite for change' expressed, with stakeholders stating an overall enthusiasm for embracing change for the better of patients and ways of working.

Better use of the spine and mobile working enablement were further opportunities referenced.

Stakeholders also recognised that a single care record with improved ways of working and patient and service-user experience would enhance the island's reputation to assist recruitment and retention of staff.

Alignment to the NHS England Mental Health Act was highlighted as an opportunity.

Capture of this granular information from the stakeholder interviews has facilitated the construction of the SWOT diagram and the design of the Evaluation Criteria.

Data: Percentage of citations from seventeen key stakeholder meetings

Commentary from Experiences from Elsewhere

Discussion & Observations

Commentary from Experience

The views expressed from the key stakeholder interviews were, in the main, consistent with the typical views and challenges expressed, and indeed encountered, at commencement of previous EHCR / EPR journeys to procurement and implementation.

From experience, examples highlighted below were encountered, and addressed, across previous EHCR programmes that echo the feedback expressed from the key stakeholder interviews:

- **Resistance to change** and hesitation regarding adoption of the new system and new ways of working, largely due to familiarity with the legacy systems and processes / workaround
- Data migration complexity caused by use of **multiple legacy systems** which did not integrate, had data duplication, and use of workarounds such as spreadsheets
- **Unsupported** legacy systems that were only partially used, abandoned, however still incurring licence costs per annum
- Pre-Requisite **Upgrade of the network and connectivity** across the organisation and all sites where the service would be adopted i.e. upgrade PCs and laptops to support the new EHCR / EPR system including upgrading the estate to current windows operating and supported version, and purchase of new equipment to increase Device to User ratio and enhance accessibility
- **Non-integrated legacy** pharmacy system with no access to drugs file and no linkage between prescription and dispensing. No integration to the EHCR system, and extensive use of FP10s and a paper-based system operated with extensive use of fax machines to pharmacies.

Key Differences- IoM perspective

- Enthusiasm for change expressed across all key stakeholders as they acknowledge and indeed emphasise the weaknesses in the current EHCR estate; our work was considered a positive movement to embrace change and 'evolution'
- Information Governance and Information Sharing was highlighted for attention, but very important to enable smooth effective sharing which would enhance 'holistic' care
- Lack of control over the procurement and upgrade of the IT network / connectivity / devices / software versions as this sits with Government Technology Services
- Management of 'Off Island Care' and sharing data and patient journey across other organisations

Key Themes Identified

The Case for Change

There was a consistency of views and opinions expressed across the stakeholders interviewed regarding the status and issues of the current legacy estate and the need for change.

Key stakeholders across the IoM expressed the view that everyone needs to be understanding and engaged with the process for selection of a suitable option / procurement of any system and implementation.

Early engagement through the interview process was acknowledged as part of this process with key stakeholders.

DHSC "Intent Document" – Visioning health care in the 21st Century focused on technology and mobile phone & tablet device on which to manage and deliver health care. The Manx Care record initiative is a key enabler for this vision.

Barriers to Change

Work undertaken to date has identified a number of barriers to change to achieve a Manx Care Record. These are as follows:

- Attitudes to information governance and information sharing, as well as patient access to the care records
- Ascertaining supplier solution to deliver the preferred solution
- Budget arrangement – Business Case to the Treasury
- Historic disinvestment in IT
- Organisational – more clarity required around responsibility between health and care IT and GTS Infrastructure provider
- Training and skills to access information from the systems
- Clinician consensus regarding system requirements specification
- Solving the process for recording Off Island Care Record
- Business Case Focus on CRB (Cash Releasing Benefits) as priority, with a 5 year payback 'invest to save' case
- Perception that large IT projects lose sight of the benefits they are to deliver due to the length of time it takes to implement
- Experience of Implementations are some 6-7 years ago (RiO & EMIS) where supplier promises were not always seen to be delivered
- Ensure the parties fully understand the journey they are entering into and the implications of that on time /costs /distraction /other re implementation

Key Themes Identified

Information Governance

Throughout the course of work and stakeholder interviews undertaken to date, attitudes and perspectives pertaining to information governance have been made pertinent.

Information governance - Clinicians' Perspective

Information governance and data sharing were identified as key success factors to enable a Manx Care Record. Clinicians cited a number of examples of information governance constraints:

- Patients and service users do not have access to their own data to be able to make informed decisions about their care pathway
- Limited visibility of the entire patient pathway to enable delivery of safe patient care
- Limited data available for population health research
- Clinical challenges around accountability and assurance

Information governance - DHSC Perspective

Wider sharing of primary, secondary and medical information across the network to support the vision and 'intent document' in preparation by the DHSC.

Information Commissioner's Office (ICO)

An introductory meeting was held with the ICO to commence early engagement and obtain feedback on the Manx Care Record.

The ICO was supportive of the need to share appropriate information with the appropriate health and care professionals to support direct care, and the need to capture information for secondary uses (research, planning etc) but acknowledged that any decision will require processes to change, DPIAs, policy, ensure safeguards. Acceptance that any implementation will have implication for Information governance and security, ways of working, patient participation

To bring this to life, an example of the implementation of an emergency clinical system was highlighted, whereby the deployment was attempted but not adopted, largely as the required level of business change was not put in place. This was was cited as an example of such projects not being delivered successfully.

Options Appraisal

SWOT Analysis and Findings from Interviews: Strengths & Weaknesses

Before fully evaluating the options against the agreed criteria, a SWOT analysis on the current architecture was carried out and is shown in the diagram below. This helps demonstrate the challenges options need to address. The SWOT Analysis has been informed by engagement with key stakeholders across the IoM (refer to stakeholder listing on page 16) and by KPMG's internal knowledge of the market.

STRENGTHS

- Talented Leaders dedicated to success
- Strong experience in Electronic Medical Records demonstrated
- Consistency of Inputs and perspectives
- Very knowledgeable and experienced team across health and care
- Experience gained from both IoM and NHS in England
- Local autonomy
- Political support from Sir Jonathan's report and recommendations
- Cabinet office government enterprise strategy for economic growth includes focus on health & care being well run and a good place to work for doctors and nurses relocating
- Already working with leading NHS England Trust at Alder Hey Hospital, Liverpool, awarded EMRAM Level 7 (Electronic Medical Records Adoption)
- Management understanding of the challenges and the opportunity

WEAKNESSES

- Multiple Systems
- Multiple Data entry record duplication
- Separate Logins for each systems across settings
- Mobile working & devices not supported (EMIS)
- Certain systems used for extended purposes (RiO Mental Health System used for Adult Care)
- Spine used for demographics & GP Transfer & NN4B/NHAIS only
- Little or no business intelligence from the legacy systems (Medway only)
- No budget allocated to / held by health and care - no route to apply for funding for new schemes
- Lack of a strategic approach to replacing or extending systems & poor contract management
- Clinical coding process
- User competence / training
- Legacy IT (infrastructure/ Devices / Software versions)

Options Appraisal

SWOT Analysis and Findings from Interviews: Opportunities & Threats

Before fully evaluating the options against the agreed criteria, a SWOT analysis on the current architecture was carried out and is shown in the diagram below. This helps demonstrate the challenges options need to address. The SWOT Analysis has been informed by engagement with key stakeholders across the IoM (refer to stakeholder listing on page X) and by KPMG's internal knowledge of the market.

OPPORTUNITIES

- Suppliers may respond positively to the opportunity to deliver to an integrated health care organization
- Learning from other countries e.g. NI
- Opportunity to be exemplar study for others ICSs
- Opportunity for radical approach
- Indicative feedback suggests suppliers are open to sharing costs
- Developing this solution may provide an opportunity to address existing issues around data sharing
- To engage Clinicians early in the process
- To develop consensus for the way forward and establish shared priorities

THREATS

- Legacy Systems going out of support
- Certain systems at 'end of life' (Medway & EMIS)
- Clinical Risks remain if continue not to have full patient record history
- Reluctance to share information across organization & country boundaries (data sharing agreements)
- Level of culture change required
- External events or pressures impact on timescales due the attention required and ability of stakeholders to deliver the change under such circumstances
- The cost of the preferred option and ongoing costs may be high.

Key Strengths & Weaknesses

SWOT

Further information on the SWOT is provided below.

Key Strengths

Consistency of Inputs: The views expressed across all the key stakeholder interviews demonstrated a consistency of input regarding the challenges and opportunities for the organisation.

Very knowledgeable and experienced team across health and care: Experience gained from both IoM and NHS in England.

Political support from Sir Jonathan's report and recommendations (18th April 2019): Report designed to be a "catalyst for change" for delivery of health and care, driving the digital strategy.

DHSC vision for a new model of delivery via the mobile phone and tablet device: An "Intent Document" presenting the vision is in preparation. The Manx Care record is a key enabler to the DHSC vision.

Cabinet office government enterprise strategy for economic growth includes focus on health & care.

Key Weaknesses

Multiple Systems / Sign-On / Data Duplication: Sign On / Log In can be required several times a day especially if moving locations and PC / device with the need to log in individually up to six systems with duplication of data. Single Sign On was highlighted as a potential first step for ease of access.

Mobile working & some devices not supported Mobile working is not supported on all systems across health and care. Interviews also highlighted that system and device upgrades would be beneficial to users in order to better support the demands of modern health and care.

Little or No Business Intelligence from the Legacy Systems: Fragmented nature of data and information across multiple systems do not facilitate timely and accurate management information and informed business decisions.

Training Locums / Bank / Agency / New Staff: The time to train a locum or new staff on the multiple systems currently in use can be lengthy.

Paper Based systems: Prescribing (FP10s) – gaps in process prescription, system entry, and dispensing. Ambulance service is paper based.

Key Opportunities & Threats

SWOT

Further information on the SWOT is provided below.

Key Opportunities

Opportunity for a radical approach: An integrated health care record across all services presents an opportunity for a radical approach to deliver the vision and benefits

Suppliers may respond positively to the opportunity: The opportunity to deliver an integrated health care system may be an attractive opportunity for key suppliers. Suppliers are open to sharing cost as IoM are quite unique and present an opportunity to be "exemplar study".

Population Research: Per interview with the Medical Director, the unique size of the islands population and the information / data held across the systems could possibly be used to support statistical medical research and analysis if such data was more readily available.

Early engagement of Clinicians in the process: Positive views expressed to engaging with the design / supplier selection process

Key Threats

Legacy Systems going out of support / End of Life: Systems going out of support / end of life. Medway & EMIS are end of life (EMIS is to be EMIS X). Contract status often advised near the contract end date making a "distressed purchaser" with little buyer power to negotiate best value

Clinical Risk: Clinical risk if continue not to have the full patient record history. Multiple data entry and multiple systems across the service increase the risk. This point was raised as a key issue in Medical / Primary / Secondary Care interviews.

Increase concern by Clinicians: Using multiple systems negatively affects user experience and affects quality of work & patient care.

Reluctance to share information across organisation and country boundaries: Initial engagement with the ICO with a focus to ensure appropriate control, process, and safeguards are in place.

Budget requirement: Multi year investment will be required for procurement of the system, maintenance and upkeep of the system

Options Appraisal - Results

Longlist options appraisal: Results

Results

The results from the evaluation of the longlist of options is shown adjacent.
Option 5 (new EHCR Lite) scored the highest overall, closely followed by Option 4. Further detail on the rationale of this scoring is contained on the proceeding pages.

Assessment Criteria	Weight (Qualifying)	Option 0: Do Nothing	Option 1- Do Minimum: "Single Sign On with existing legacy estate"	Option 2: "Overarching new systems to link to the existing legacy estate"	Option 3: High level consideration of any partnership system sharing arrangements with UK service providers"	Option 4: "New EHR replacing existing systems"	Option 5 : Phased approach- "New EHR 'Lite' replacing some systems"
1. Stakeholder acceptance/ appetite	10	0	10	20	20	20	30
2. Impact on working lives	10	0	10	10	20	30	20
3. Ability to align solution with business requirements e.g. Interoperability and standards	8	0	0	8	16	24	16
4. Ability to expand on patient participation and improve experience	8	0	0	8	16	24	16
5. Ability to deliver and demonstrate improved quality of care and clinical outcomes	8	0	8	8	24	16	16
6. Ability to make sure Clinicians have the right information	8	0	0	16	24	24	24
7. Solution addresses the issue of legacy systems ageing or going out of support / end of life	8	0	0	0	16	24	24
8. Option is achievable through a supplier with the capacity and capability to deliver	8	0	16	16	16	8	24
9. The Option provides the most control and influence over system functionality, support and developments	8	0	8	8	8	24	24
10. The Solution supports technology standards best practice	8	0	0	8	16	16	16
11. Time, Cost and Benefits ('value for money') to implement the solution is efficient and realistic for the organisation	8	0	8	16	16	16	16
12. Level of organisation change / disruption required is manageable by the organisation	8	0	16	16	8	8	16
Weighted scores	100	0	76	134	200	234	242

Longlist Options Appraisal - Results

Rationale - Evaluation Criteria 1-4

The rationale for the evaluation scoring was recorded at the time of the evaluation process and is evidenced here, adjacent to the Assessment Criteria No 1-4:

		Long list options to assess: Scores						
Assessment Criteria	Weight (Qualifying)	Option 0: Do Nothing	Option 1: Do Minimum: "Single Sign On with existing legacy estate"	Option 2: "Overarching new systems to link to the existing legacy estate"	Option 3: "High level consideration of any partnership system sharing arrangements with UK service providers"	Option 4: "New EHCR replacing existing systems"	Option 5 : Phased approach- "New EHCR 'Lite' replacing some systems"	Rationale
1. Stakeholder acceptance/ appetite	10	0	1	2	2	2	3	Option 1 does not fulfil the brief – there are perceived benefits to clinicians to streamlining sign on, but this could be better achieved via the other options. Option 4 could score '3' however option 5 would better fit feedback from interviews around appetite for change.
2. Impact on working lives	10	0	1	1	2	3	2	Option 1 would have minimum impact and delivers minimal benefits. Option 2 is unclear as it is dependent on the available partners & capability. Option 4 was deemed to be the strongest because of its potential to achieve full integration.
3. Ability to align solution with business requirements e.g. Interoperability and standards	8	0	0	1	2	3	2	Option 4 scored the highest score based on the ability to be able to have full clinician participation in the requirements specification. Score of 2 for Option 5 because of the transition period and some underlying systems may still remain. Option 1 does not fulfil the criteria.
4. Ability to expand on patient participation and improve experience	8	0	0	1	2	3	2	Option 1 does not expand on patient participation. Option 4 scores highest because it offers greatest scope to fulfil this requirement. Option 5 scores 2 because of longer transition period/phased integration and the impact this will have on patient and service user experience.

Longlist Options Appraisal - Results

Rationale - Evaluation Criteria 5-8

The rationale for the evaluation scoring was recorded at the time of the evaluation process and is evidenced here, adjacent to the Assessment Criteria No 5-8.

		Long list options to assess: Scores						
Assessment Criteria	Weight (Qualifying)	Option 0: Do Nothing	Option 1: Do Minimum: "Single Sign On with existing legacy estate"	Option 2: "Overarching new systems to link to the existing legacy estate"	Option 3: "High level consideration of any partnership system sharing arrangements with UK service providers"	Option 4: "New EHCR replacing existing systems"	Option 5 : Phased approach- "New EHCR 'Lite' replacing some systems"	Rationale
5. Ability to deliver and demonstrate improved quality of care and clinical outcomes	8	0	1	1	3	2	2	Option 3 scored highest as it should provide ability to share patient data off island and for research purposes- an opportunity expressed in many stakeholder interviews. Options 1 and 2 deliver minor opportunities to deliver improved clinical outcomes and care.
6. Ability to make sure Clinicians have the right information	8	0	0	2	3	3	3	Option 3 should provide more data points with the partnership organisation. Options 4 and 5 would enable core systems would link thereby enabling clinicians access to the right information. Option 1 does not fulfil the brief.
7. Solution addresses the issue of legacy systems ageing or going out of support / end of life	8	0	0	0	2	3	3	Option 4 has the potential to address all legacy systems. Option 5 would be undertaken as systems expire and thus addresses this constraint. Options 1 & 2 remain reliant on the legacy systems and will need a replacement or renewal programme and therefore do not fulfil the criteria.
8. Option is achievable through a supplier with the capacity and capability to deliver	8	0	2	2	2	1	3	Option 5 is achievable. For option 3, it is unclear whether there are potential system partnerships available. Option 4 carries a high level of risk- there is potential lack of availability and ability of one supplier to do this (no success stories).

Longlist Options Appraisal - Results

Rationale - Evaluation Criteria 9-12

The rationale for the evaluation scoring was recorded at the time of the evaluation process and is evidenced here, adjacent to the Assessment Criteria No 9-12.

		Long list options to assess: Scores						
Assessment Criteria	Weight (Qualifying)	Option 0: Do Nothing	Option 1: Do Minimum: "Single Sign On with existing legacy estate"	Option 2: "Overarching new systems to link to the existing legacy estate"	Option 3: "High level consideration of any partnership system sharing arrangements with UK service providers"	Option 4: "New EHCR replacing existing systems"	Option 5 : Phased approach- "New EHCR 'Lite' replacing some systems"	Rationale
9. The Option provides the most control and influence over system functionality, support and developments	8	0	1	1	1	3	3	Options 1, 2 and 3 provide similar levels of control and ability to influence support and functionality. Options 4 and 5 would enable procurement that provides control over functionality and decision making.
10. The Solution supports technology standards best practice	8	0	0	1	2	2	2	Option 1 does not fulfil the brief. Option 2 may have the potential to fulfil some best practice standards. The remaining options carry similar levels of best practice, each different in their own right. Option 4 could be scored higher if a robust competitive procurement is achievable.
11. Time, Cost and Benefits ('value for money') to implement the solution is efficient and realistic for the organisation	8	0	1	2	2	2	2	The options will all require time and cost to implement. One could argue the benefits from Option 3 could be scored higher, however could be countered by the higher potential cost.
12. Level of organisation change / disruption required is manageable by the organisation	8	0	2	2	1	1	2	Options 1, 2 and 5 have the potential for the least disruption if managed well. Option 3 & 4 are potentially more complex and disruptive.

Shortlist Options Appraisal

Options Short List

The Options Short List identified from the Evaluation Scoring consists of:

Option	Description
Option 4: "New EHCR replacing existing systems"	Procure an electronic healthcare system across all services (Acute, Mental Health, GP, Pharmacy / Prescribing) to replace the existing legacy systems.
"Option 5 : Phased approach- "New EHCR 'Lite' replacing some systems"	Procure an electronic healthcare system "EHCR Lite" replacing some systems across services, enabling development. The scope of this option would entail a two-step approach; firstly moving acute onto one core system, followed by other non-acute systems. This should be done through a phased deployment based on a criteria which should be developed at the business case stage; it will include appetite/need for change (e.g. increased requirement to share data across health and social care), risk and vulnerability of key systems (e.g. systems becoming legacy/unsupported), etc.

Shortlist Options Appraisal

Options Shortlist - Risk Assessment

A detailed qualitative risk assessment (likelihood and impact on cost, quality and timescale) for the option(s) is set out covering the following assessment criteria:

- **Procurement & Commercial**

  Concerned with supplier, product procurement and the contracts associated with that: areas such as the configuration of the EHCR, integration with other clinical systems and set-up of the electronic record in digital form;

- **Deployment**

  Concerned with implementation of the new system and changes to processes: areas such IT Infrastructure set-up as well as securing clinical and executive buy-in to the initiative;

- **Operational**

  Concerned with the impact on the operational areas of the organization: areas such as cancellations due to lack of records, risks to patient care, compliance failures etc.; and

- **Termination**

  Concerned with the risk of early project termination: due to supplier commercial failure, organisation default or other reasons.

The risks presented here are to facilitate a comparison between, and quantitative evaluation of, the shortlisted option(s).

Shortlist Options Appraisal

Risk Assessment Scores

The Risk Assessment has been performed on the Options Shortlist to assess the risk on the four key categories and a total of 24 individual risk elements.

The assessment is made to ascertain the probability of the risk occurring for that risk element, and assessing impact on cost, quality, and time, as per the risk framework in the "Five case business case".

The risks presented here are to facilitate a comparison between, and quantitative evaluation of, the shortlisted options.

This assessment concludes that the Preferred Option 5 (EHCR Lite) as identified from the Evaluation Scoring carries the second lowest risk after Option 3 (partnership arrangement).

The risks associated with the implementation of Option 5 are moderate. However, they are not scored as high as some of the other options. Activities to mitigate these risks would be presented in the Business (Management) Case which would follow should the Board decide to proceed.

		Option 4- "New EHR replacing existing systems"	Option 5 - "Phased Approach - New 'EHR Lite' replacing some existing systems"
ID	**Description of risk**	**Score**	**Score**
A - Procurement & Commercial Risks			
A1	The system does not meet the requirements in the specification or deliver Business Fit with the organisation's needs.	6.6	1.3
A2	Potential for non-provision or inadequate funding of the lifetime costs of the solution due to circumstances outside of the organisation's control	4.0	2.7
A3	The risk of inappropriate system choice is affected by the potential for lack of integration and / or full interfacing as it is possible that a single vendor solution may not be able to satisy for the full requirements of the organisation's Strategy	6.6	2.7
A4	Agreement on requirement across the organisation may result in a protracted procurement stage or delay in the decision for a preferred vendor	3.3	2.7
A5	Securing organisation-wide consensus, commitment and mandate for the preferred option	3.3	1.3
A6	Business case approval processes take longer than expected or funding is not available or withheld.	3.3	2.7
A7	ICT infrastructure and internal service provision is unable to support solution	3.3	2.0
A8	Lack of clinical engagement leading to poor ownership of procurement decision	1.3	1.3
A9	Inability to adhere to procurement project timetable (lack of available resources, too many suppliers, suppliers not able to meet proposed dates)	2.7	1.3
A10	Poor supplier response / lack of competition	6.7	1.0
A11	The procurement exercise fails due to legal advise that the process was not sound or one or more of the suppliers successfully challenging the process	1.3	1.3
B - Deployment Risks			
B1	Lack of technical implementation skills in the organisation to deliver against planned rollout profile resulting in delay and cancellation of planned migrations	4.0	3.3
B2	Lack of available organisation resources to identified Programme and project teams and associated actions	4.4	2.7
B3	Full Clinical engagement is key to the successful creation and implementation of the Strategy. It is imperative that full clinical involvement is maintained from the beginning throughout the planning, procurement, evaluation and deployment phases	4.0	2.7
B4	The existing IT infrastructure will require a thorough review as to the most appropriate method and related architecture to ensure users have the requisite levels of performance, accessibility and availability of a new Clinical System solution. Technical or Financial restrictions placed upon selection of appropriate technologies may impact the ability to deliver the solution with appropriate levels of performance.	6.6	2.7
B5	Scale of operational change within the organisation may be underestimated and require additional resources to progress implementation	6.6	2.7
C - Operational Risks			
C1	Unplanned service disruption resulting in loss of user-faith in the service causing procurement or multiple local solutions over time	2.0	1.3
C2	Improved availability of clinical information through the use of patient accessible portal technologies increases the risk relating to privacy and patient access	3.3	3.3
C3	The organisation's direction and scope for provision of services and the supporting methodologies including the electronic recording of information may be affected by any statutory change dictated by the ICO (eg Data Sharing Agreements), DHSC, or Department of Health or NHS policy. This may represent a change in the requirements such that it negatively impacts does not meet revised policy requirements.	4.0	2.7
C4	Unplanned or advanced cancellation of services by incumbent system supplier prior to implementation / transition schedule being completed	2.7	1.3
C5	Data discrepency or data gaps and duplications in the system(s) have implications for increased clinical risk and associated incidents.	2.0	1.3
D - Termination Risks			
D1	The Supplier defaults on the contract resulting in a need to make continued provision of service and "step in" arrangements	1.3	1.3
D2	Incur additional costs from early termination of legacy contracts	3.3	2.7
D3	Legacy systems go out of support or end of life before the replacement system is fully implemented, or requires re-sequencing of the service go live(s) to prioritise for the system & service users	2.7	2.7
		89.5	**51.0**
		2nd	**1st**

Lower score represents lower risk

Conclusions

Conclusions

Conclusion – The Preferred Option – Option 5 – New EHCR Lite

The preferred option concluded from the Options Appraisal Process is

Option	Description
"Option 5 : Phased approach- "New EHCR 'Lite' replacing some systems"	Procure an electronic healthcare system "EHCR Lite" replacing some systems across services, enabling development. The scope of this option would entail a two-step approach; firstly moving acute onto one core system, followed by other non-acute systems. This should be done through a phased deployment based on a criteria which should be developed at the business case stage; it will include appetite/need for change (e.g. increased requirement to share data across health and social care), risk and vulnerability of key systems (e.g. systems becoming legacy/unsupported), etc.

The "EHCR Lite" option encompasses the following:

- Procure and implement a semi-integrated **core EHCR system** across the hospitals to replace many existing systems (where feasible and benefits of doing so are proven) – in particular those which are out of support or present clinical and or operational risk – to include PAS and other core departmental systems
- Establish integration between core system and other systems which do not form part of core system
- Establish the most holistic solution that works for the island's health and social care (e.g. GPs practices will remain out of the core system scope)
- Procure a separate Electronic Patient Care Record (EPCR) for ambulance services which integrates with the core EHCR. As a minimum, enable ambulance services access to read and write to the core EHCR by providing integrated devices and network.
- Assess Partnership arrangements where available/applicable (e.g. to enable electronic patient record sharing with Alder Hey systems), removing the need for patients to carry patient notes
- Consider how the existing single sign-on software could be extended and applied across health and social care systems
- Provide patients with appropriate access to their care record via a patient portal
- Establish a set of shared principles for the procurement, deployment and day to day operations of the Manx Care Record

Conclusions

Conclusion – The Preferred Option – EHCR Lite

Rationale

Engagement across secondary care indicates that existing systems are not fit for purpose including that they:

- Do not integrate well with other systems both within and beyond acute
- Do not have single-sign on and do not provide a good user experience
- Do not provide the data required to run a modern health and care service
- Still require some manual/paper based processes
- Are unsafe

Scope

IoM should move to an integrated EHCR across secondary care as the foundation of the Manx Care Record. This is expected to include

- PAS
- Theatres
- Request and reporting
- Maternity
- ED
- Chemotherapy
- Orthopaedics

Scope may extend to other areas depending on functionality offered by EHCR vendors, for example other acute systems could include pathology and radiology. Where a departmental system is not in-scope it will be important for the EHCR provider to include integration to and from these systems. The EHCR must also integrate well with other systems beyond the hospitals such as those used in primary care, mental health, prisons, social care, ambulance, and other acute providers where patients present for treatment such as Alder Hey. Patient portal should also be included within scope.

We would also strongly recommend implementation of an electronic EHCR for ambulance which can integrate with systems used in other care settings. Other services beyond acute may move onto the same system over time.

Conclusions

Conclusion – The Preferred Option – EHCR Lite

Scope (continued)

Non-functional requirements would also be set out including data analysis, information governance, information security, service management etc.

Benefits

Benefits of an integrated system include:

- Improved patient experience
- Patient records ownership
- Improved data quality
- Improved safety
- Improved efficiency of care delivery
- Improved clinical outcomes.

Benefits are unlikely to be achieved until at least 12 months following implementation, and even then we would expect to see a phased return of benefits over the next 2 years.

Finalising scope and future development

- Whilst at this stage we can make recommendation of which services may or may not move onto the EHCR (e.g. we do not recommend primary care), further analysis needs to be conducted.
- The final decision on scope should be made as part of the development of a business case, in conjunction with clinical, operational and executive teams across health and care, and will also be influenced by supplier offerings as part of procurement.
- Consideration should also be given to the disruption and likely adoption (or not) of moving some services onto the same solution - in many cases the costs (financial and other) can outweigh the benefit.

Conclusions

Conclusion – The Preferred Option – EHCR Lite

Risks

Whilst there are many benefits associated with the move to a new EHCR and integration across care settings, the procurement and deployment is a sizeable undertaken and there are a number of key risks:

- Senior level buy-in and sponsorship
- Sufficient clinical capacity to engage in the development of business case, requirements and evaluation of tenders
- Supplier capacity
- Sufficient capacity to deploy across organisations
- Change management required including changes to day-day processes and pathways and to adopt new ways of working
- Sufficient funding to successfully procure, deploy and maintain systems

Conclusions

Conclusion – The Preferred Option – EHCR Lite

Considerations on scope

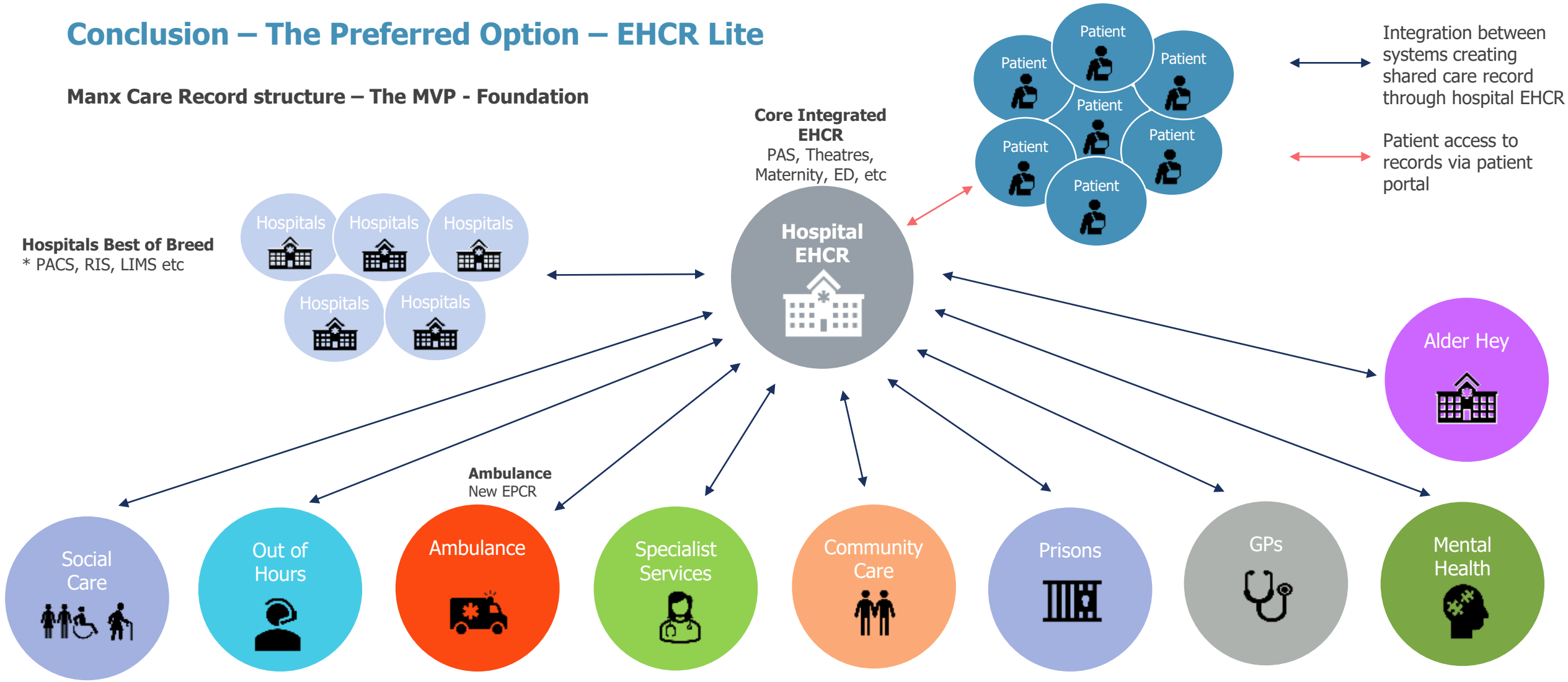
At this stage we have made recommendations of what is and what is not included in scope based on the limited engagement we have had, limited analysis, and bringing in experience from other trusts.

- The final scope does need to be agreed on as part of the development of a structured business case, and even then we would recommend that the IoM does leave the window open to suppliers providing 'options' on what they can provide either immediately, or as part of additional functionality/modules further on in the contract.
- This current piece of work is designed as a high level options analysis to support IoM to come to an agreement on the direction of travel to take into a strategic outline case and outline business case.
- Fundamentally we recommend the IoM replaces the core of the existing acute systems with one single integrated EPHCR solution, which integrates with a small number of systems within the trust, and systems across other care settings.
- The direction of travel will be to bring more systems onto the integrated system in time as contract approach their end, but work will still be needed to assess whether or not those systems should come into the integrated EHCR, or should continue as best of breed and integrated.

Conclusions

Conclusion – The Preferred Option – EHCR Lite

Manx Care Record structure – The MVP - Foundation



More best of breed systems and systems across other care settings will be consumed within EHCR over time. Integration with other services e.g. SCR and Covid App may also form part of MVP

Conclusions

Conclusion – The Preferred Option – EHCR Lite

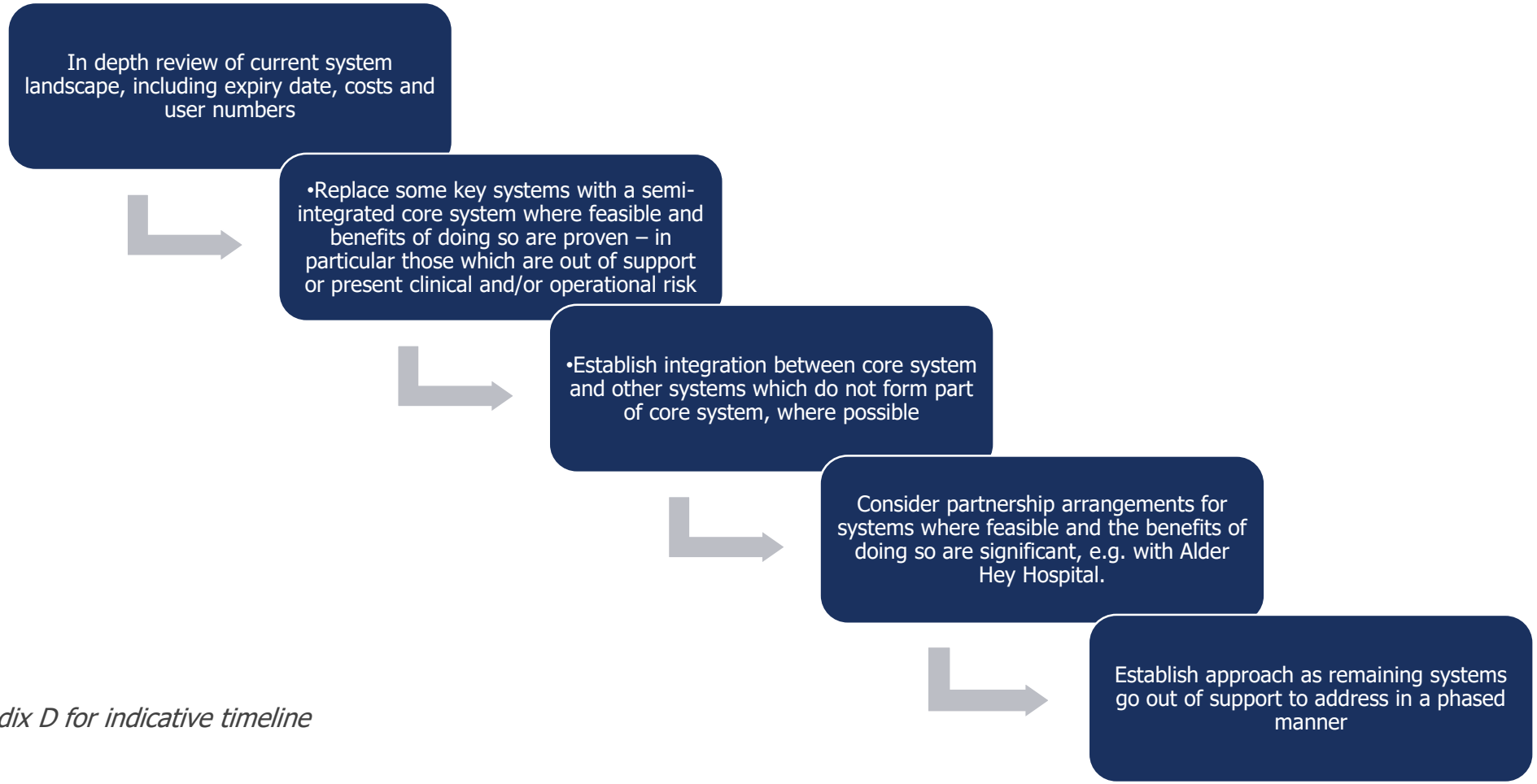
Not in scope

Rationale for not including General Practice in core scope

- GP system in use is well established, is fit for purpose and users we engaged do not wish to move from current system.
- No EPR / EHR provider currently provides an EPR solution across all care settings. Whilst there are some GP system suppliers (e.g. TPP) which can extend to some care settings (Mental Health and Community), there is no referenceability of their systems extending into secondary / acute care.
- Integration of an EPHCR with GP system suppliers can be achieved through data sharing standards, without the need to be on the same system. Integration is important as it enables GPs to view electronic information (treatments, medications, symptoms, test results, referrals etc from secondary care etc) of patients who present for treatment at the practice, and allows clinicians in other care settings to view electronic information from general practice.

Conclusions

Option 5 in Practice- Process flow chart



See Appendix D for indicative timeline

Conclusions

Recommendations

The conduct of this study has highlighted an appetite amongst all stakeholders to make better use of technology to help the organisation deliver more joined-up health care record that also facilitates the engagement of patient and partner organisations.

The assessment of options generated a preferred option that would put all the organisation's clinical systems arrangements "on the table" via new "EHCR Lite" procurement process.

The preferred option was evaluated across the range of criteria assessed. The preferred option scored highest against the following criteria:

1. Stakeholder acceptance/ appetite

This is a key success factor achieving buy-in and commitment across all key stakeholders to assure a robust procurement, implementation, and user adoption.

Moreover, the process of ensuring that meaningful use of the solutions is achieved could be engineered into any procurement ensuring aligned incentives with supplier(s). Price reductions are possible especially if competitive tension in any process is maintained.

6. Ability to make sure Clinicians have the right information

The solution would require early clinical engagement as part of the procurement process to help ensure the core system addresses the most pertinent issues relating to access to the right information.

7. Solution addresses the issue of legacy systems ageing or going out of support / end of life

This is timely as contracts are up for renewal and are under review to renew for up to two years in anticipation of the event of a move to any new solutions procurement and deployment process.

8. Option is achievable through a supplier with the capacity and capability to deliver

The EHCR Lite solution facilitates a wider response from suppliers.

9. Option provides the most control and influence over system functionality, support and developments

The EHCR Lite solution would enable Manx Care would have control over decisions relating to system functionality and updates.

Code of Conduct

Ways of operating and enablers to change

Ways of operating throughout the business case development and procurement

Based on our experiences of EHCR implementations elsewhere, we have developed the following code of conduct which will help form the basis for ways of operating throughout the next stages of the business case development and procurement.

- Establish strong clinical leadership/champions
- Generate Board commitment at executive level
- Establish buy-in across the wider organisation and bring people on a journey
- Invest for the future (infrastructure, support & maintenance agreements, change and configuration management)
- Train and upskill staff to use the systems and embed best practice

Key Enablers to Change

- 'Buy-in' of the preferred option across the organisation is key to successful procurement, implementation, and adoption
- Financial commitment to fully fund the implementation and ongoing costs of system license, support, IT, & Training
- Information Governance alignment with Data Sharing, balancing the needs of data governance with data sharing requirements
- Communications both internal and external for staff and patients to achieve engagement with the objectives
- Structured Procurement Process to enable robust supplier identification and selection, fulfilling the specification of the preferred option

Cont.

- Early Clinical engagement to ensure clinical requirements of the preferred option are specified, evaluated, and evidenced by the supplier
- Care Processes & Change management to align with preferred option
- IT infrastructure review of network & connectivity, supported & supportable devices, software versions to support the preferred option
- Resource for the procurement and implementation stages of the delivery programme
- Co-produce requirements specification with stakeholders from across the island in conjunction with availability of solutions on the market

High level consideration- total cost of ownership

High level consideration- total cost of ownership for 5 year view

Current state:

The current 5 year cost of ownership with the existing systems landscape, based on the current £1.82m per annum costs over a five year period would be circa £9.1m (assuming a similar expenditure on IT upgrades by Manx Care over this time period). This excludes costs incurred by GTS for IT Services that are 'zero cost' to Manx Care.

Option 5 EHCR Lite:

Metrics from other programme experience show a wide range of up to £4m per annum license costs for higher-end and larger scale systems. A five year total cost of ownership based on 2500 – 3700 user numbers would be in the range £7.5m - £20m based on the system costs and an estimate of procurement and implementation costs, assuming a five year deployment programme. The estimate of the total cost of ownership would be developed as part of the preparation of the business case, and further ascertained as the competitive procurement progresses and supplier costs are evidenced.

The figures indicated should therefore be viewed as a guide only at this stage, however they are based on key metrics from similar procurements and deployment programmes.

Please note these costs are indicative only, as a full business case, and associated modelling, would be required in order for an accurate cost of ownership to be developed. This would be a follow-on activity upon the acceptance and agreement of this options appraisal.

Costs of Ownership	5 Yr System Cost	Implementation Cost	Indicative Total Cost (5 Yr)
Low Case	£5m	£2.5m	£7.5m
Medium Case	£10m	£3m	£13m
High Case	£15m	£5m	£20m

Low case is smaller Shared Care Record integration wrapper
Medium case is EHCR Lite
High case is EHCR full

The above does not include additional costs such as exiting existing contracts and uplift in infrastructure. These costs would represent circa 20% of the above '5 yr system cost' noted above.

Appendices

Appendix A - Glossary

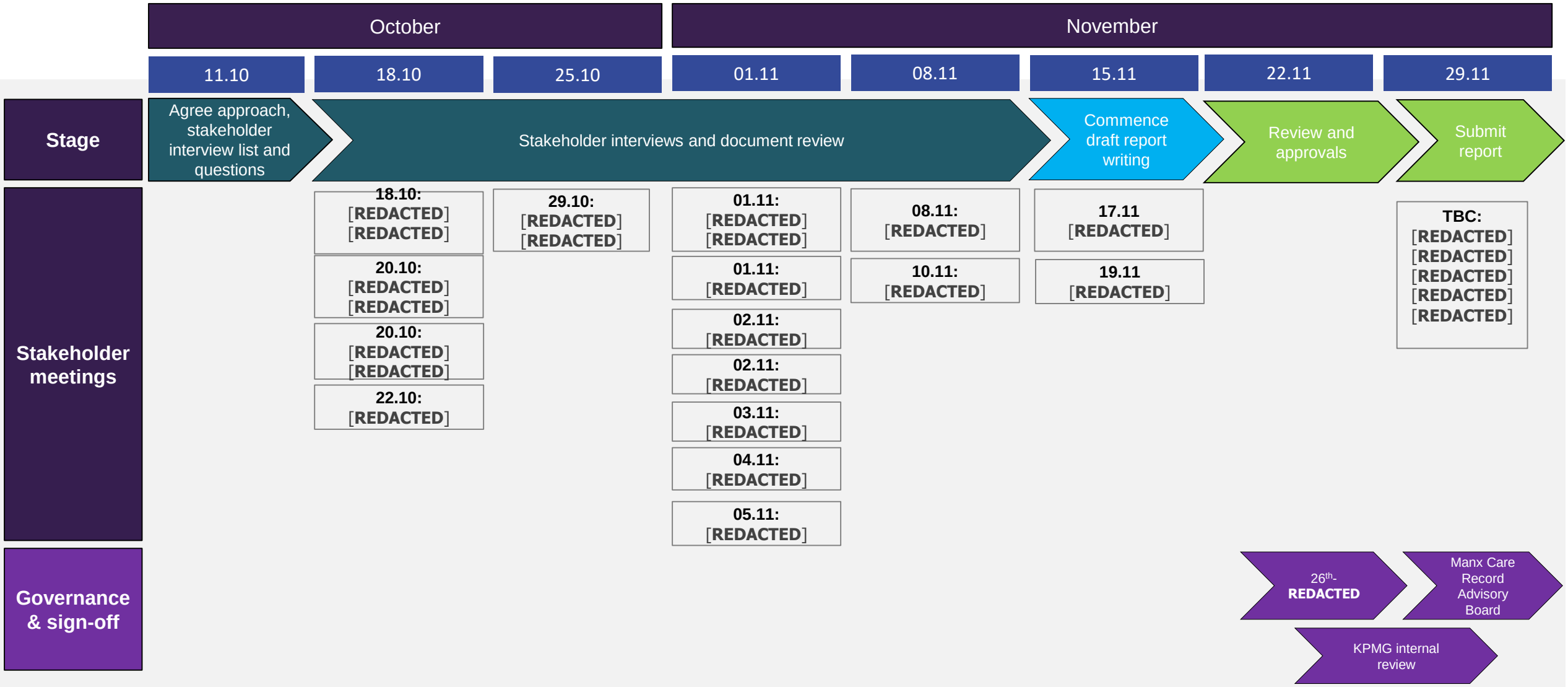
Glossary of Terms

Term	Description
EPR (or EHR)	Electronic Patient Record (or Electronic Health Record) - a single record/system containing comprehensive information about a patient's medical status and supporting care processes
EHCR	Electronic Health and Care Record – a single record/system containing comprehensive information about a patient's medical status and supporting care processes
EPMA	Electronic Prescribing and Medicines Administration
PAS	Patient Administration System – system to support the administration of patients including recording demographics and appointments
CDMI	Clinical Digital Maturity Index - a measure of digital maturity of clinical processes and systems.
OBC	Outline Business Case - business case to secure approval to proceed to procurement
FBC	Full Business Case - business case following procurement to secure approval to purchase from the preferred supplier and to sign contracts
LDR	Local Digital Roadmap - plans to support the STP through Digital
GDE	Global Digital Exemplar - initiative recognising the most digital maturity Trusts in the country. Those at HIMSS level 5 moving to level 7

Appendix B- Longlist Options Risk Assessment Scores

ID	Description of risk	Option 2- "Overarching new system to integrate to the existing legacy estate" Score	Option 3- "High level consideration of any potential partnership / system sharing arrangements with UK NHS Service Providers" Score	Option 4- "New EHR replacing existing systems" Score	Option 5 - "Phased Approach - New 'EHR Lite' replacing some existing systems" Score
A - Procurement & Commercial Risks					
A1	The system does not meet the requirements in the specification or deliver Business Fit with the organisation's needs.	3.3	2.7	6.6	1.3
A2	Potential for non-provision or inadequate funding of the lifetime costs of the solution due to circumstances outside of the organisation's control	3.3	1.3	4.0	2.7
A3	The risk of inappropriate system choice is affected by the potential for lack of integration and / or full interfacing as it is possible that a single vendor solution may not be able to satisy for the full requirements of the organisation's Strategy	5.5	4.4	6.6	2.7
A4	Agreement on requirement across the organisation may result in a protracted procurement stage or delay in the decision for a preferred vendor	4.4	2.7	3.3	2.7
A5	Securing organisation-wide consensus, commitment and mandate for the preferred option	2.7	2.7	3.3	1.3
A6	Business case approval processes take longer than expected or funding is not available or withheld.	2.7	2.7	3.3	2.7
A7	ICT infrastructure and internal service provision is unable to support solution	3.3	1.3	3.3	2.0
A8	Lack of clinical engagement leading to poor ownership of procurement decision	1.3	1.3	1.3	1.3
A9	Inability to adhere to procurement project timetable (lack of available resources, too many suppliers, suppliers not able to meet proposed dates)	3.3	1.3	2.7	1.3
A10	Poor supplier response / lack of competition	2.7	3.3	6.7	1.0
A11	The procurement exercise fails due to legal advise that the process was not sound or one or more of the suppliers successfully challenging the process	1.7	1.0	1.3	1.3
B - Deployment Risks					
B1	Lack of technical implementation skills in the organisation to deliver against planned rollout profile resulting in delay and cancellation of planned migrations	2.7	1.7	4.0	3.3
B2	Lack of available organisation resources to identified Programme and project teams and associated actions	3.3	3.3	4.4	2.7
B3	Full Clinical engagement is key to the successful creation and implementation of the Strategy. It is imperative that full clinical involvement is maintained from the beginning throughout the planning, procurement, evaluation and deployment phases	2.7	1.3	4.0	2.7
B4	The existing IT infrastructure will require a thorough review as to the most appropriate method and related architecture to ensure users have the requisite levels of performance, accessibility and availability of a new Clinical System solution. Technical or Financial restrictions placed upon selection of appropriate technologies may impact the ability to deliver the solution with appropriate levels of performance.	3.3	1.3	6.6	2.7
B5	Scale of operational change within the organisation may be underestimated and require additional resources to progress implementation	1.3	2.7	6.6	2.7
C - Operational Risks					
C1	Unplanned service disruption resulting in loss of user-faith in the service causing procurement or multiple local solutions over time	2.7	1.3	2.0	1.3
C2	Improved availability of clinical information through the use of patient accessible portal technologies increases the risk relating to privacy and patient access	3.3	1.3	3.3	3.3
C3	The organisation's direction and scope for provision of services and the supporting methodologies including the electronic recording of information may be affected by any statutory change dictated by the ICO (eg Data Sharing Agreements), DHSC, or Department of Health or NHS policy. This may represent a change in the requirements such that it negatively impacts does not meet revised policy requirements.	2.7	2.7	4.0	2.7
C4	Unplanned or advanced cancellation of services by incumbent system supplier prior to implementation / transition schedule being completed	3.3	2.7	2.7	1.3
C5	Data discrepency or data gaps and duplications in the system(s) have implications for increased clinical risk and associated incidents.	4.4	1.0	2.0	1.3
D - Termination Risks					
D1	The Supplier defaults on the contract resulting in a need to make continued provision of service and "step in" arrangements	1.3	1.7	1.3	1.3
D2	Incur additional costs from early termination of legacy contracts	1.3	1.3	3.3	2.7
D3	Legacy systems go out of support or end of life before the replacement system is fully implemented, or requires re-sequencing of the service go live(s) to prioritise for the system & service users	4.4	2.7	2.7	2.7
		71.0	**49.7**	**89.5**	**51.0**
		3rd	**1st**	**4th**	**2nd**

Appendix C- Options Appraisal Programme of work- Plan on a page



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Appendix D - Timeline

Indicative Timeline

Timeline	Activity
January 2022	IoM Chief Secretary formal acceptance of EHCR Options Appraisal and Recommendation
February 2022	Development of: • Outline Business Case (assume SOC not required) – This will include agreement of scope – (incl. replace, consider replacing, not replacing) • Output Based Specification • Procurement documentation incl FTS (will include external legal review)
June 2022	Approval of OBC and agreement to launch procurement
July 2022	Procurement launch
August – September 2022	Evaluation of bidders and commence development of Full Business Case
November 2022	Selection of preferred bidder
December 2022	IoM Chief Secretary formal acceptance of EHCR Full Business Case and agreement to sign contract
January 2023	Contract signature and start of initiation
January 2024	Core go-live – expectation that core benefits will start to be realised 12 months from launch, with a phased approach (e.g. 25% of maximum year releasable benefit in year 2, 50% in year 3, 75% in year 4, 100% year 5 onwards
January 2024 – January 2026	Phased “switch on” of further functionality / modules as appropriate as other existing systems reach end of contract / support
January 2033	End of contract (assuming 10 year contract)



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To get in touch with the Transformation Programme Management Office (TPMO) contact us at HealthandCareTransformation@gov.im

For up to date information about the programme, please visit our website by clicking here.

Thank you

for your support in making this a success