Bedfordshire, Luton & Milton Keynes (BLMK) Health and Social Care

Sustainability & Transformation Plan (STP)

Local Digital Roadmap

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Contents

Preface

The following Bedfordshire, Luton and Milton Keynes (BLMK) Local Digital Roadmap (LDR) was approved by the Sustainability and Transformation Plan (STP) Steering Group on 28th June 2016. The STP quickly decided to combine the three footprint areas into a single STP-wide LDR. The STP Steering Group has overseen the development of the LDR and will drive its delivery. They firmly believe that Informatics is best delivered at the scale of the BLMK. This enables the pooling of capabilities and resources, and also allows supplier engagement at sufficient scale of importance to get appropriate engagement. To illustrate the centrality of the digital agenda within the STP BLMK's Digital Transformation Board will be one of only two programme boards determined to answering directly into the STP Steering Group.

Digitisation is seen as a critical enabler of both productive efficiency and allocative efficiency. Within institutions productivity and improvement to reduce length of stay, and reducing other unit costs of activity, whilst ensuring the best possible outcomes is fundamental to the Digital programme. However, even more critically the availability of information to clinical decisions makers means patients can be allocated to the most efficient service response. For example access to a shared care record can enable someone in a clinical hub to "hear and treat" rather than initiate an out of hours face to face care episode. The allocative efficiency enabled by informed decision making, aligned with optimal service design, is critical to our STP's sustainable future. This is recognised as being critically enabled by digitisation of key information assets such as a shared care plan.

The Local Digital Roadmap shows gaps in our capabilities, many of which are frustrating the efficiency of the health and care system. In particular the poorly enabled transfers of care are producing sub-optimal care co-ordination. This fragmentation is also under-pinned by a lack of digital data capture within some providers. In order to deliver the level of transformation required within the system, we need to move to a paradigm where the richness of data available for billing, is also available in real-time for clinical decision support. This transformation will enable care-coordination and the right decisions about next steps for our patients to be taken. However, the change management and process re-design required to deliver this programme is clearly understood and recognised by capable providers who have delivered large scale transformation within their own organisations.

The footprint has areas of real strength with good strategic alignment and leadership. There are areas where considerable progress has been made: primary care is using a contemporaneous electronic record, and has largely standardised on a single platform, shared with some community services; some secondary care providers have successfully embedded medicine prescribing and administration systems, and are using automated robotic technology within their supply chains. One hospital has no persistent paper record and extensive decision support for diagnostics, deteriorating patient alerts and prescriptions, all available at the point of care. There are also some cohorts of patients with their own personal health records, those suffering with the chronic gastroenterological condition irritable bowel disease, which have been successfully deployed and very well accepted by patients. There is growing access to patients' own GP records.

The use of information for system design, integrating predictive analytics is also maturing. The STP is working on an ambitious population health model across all 16 organisations, all of whom have already signed up to the relevant Information sharing architecture. This is developing a data-driven approach to model and predict epidemiology using actuarial models of risk. This is informing the design the optimal out of hospital services to reduce hospitalisation rates.

This LDR reflects the first iteration of what will become the BLMK Digital Plan, embedded within our STP, to enable the required system transformation. It will develop further as we define the actual programme in greater detail. The LDR does reflect mature cross-system discussions, and in fact even in its production it has strengthened and built relationships that will drive forward our Digital progress.

Mark England, Director of Reengineering and Informatics, Luton & Dunstable Hospital NHS Foundation Trust for the STP Digital Work Stream

A   Executive Summary

A1   About the Digital Roadmap

A1.1   NHS England's Five Year Forward View (October 2014) relies upon the power of information and technology to transform healthcare delivery stating that by 2020, there will be "fully interoperable electronic health records so that patient's records are paperless".

A1.2   In response, NHS England's National Information Board (NIB) set out information and technology priorities tasking Commissioners to co-ordinate the development of local digital roadmaps (LDRs) as an underpinning enabler to the development of STP vision and plans.

A1.3   Locally the need for electronic sharing of patient records has been recognised as fundamental to achieving many of the goals set out in the STP strategy and developed in this LDR.

A1.4   The scope of the LDR is therefore broader than purely addressing Paper-free at the Point of Care (PF@PoC). It now encompasses:

♦   Digitally enabled self-care

♦   Real-time data analytics at the point of care

♦   Whole systems intelligence to support population health management and effective commissioning, clinical surveillance and research.

A1.5   The LDR does not replace or replicate IM&T strategies/plans of individual organisations but seeks to collaborate to share scarce resources and best practice and create data sharing and interoperability.

A1.6   This is the first LDR for BLMK; it will be refined and expanded in subsequent iterations.

A2   Strategic context

The Vision for the STP in BLMK is:

♦   A local population that is better informed as to how they stay healthier, how they detect and act on early warning signs, how they access the health and social care system at the right point and with the appetite, capability and support to take control of their own care needs.

♦   A step improvement in the personal physical and mental health and reduction in the variance in life expectancy across BLMK.

♦   Primary, Community & Social Care is operated 7-days a week, intervening earlier, harnessing personal, community and voluntary networks, and providing care in or close to the home.

♦   A safe and clinically sustainable solution for Secondary Care Services operates across the STP footprint, 7-days a week, meeting national quality and performance standards.

♦   BLMK allocates risks and incentives in new ways that underpin prevention and health promotion of more self-care and earlier and less intensive intervention.

♦   Year-on-year, BLMK health and social care delivers within the financial means available to it.

A2.1   The BLMK STP has four Priority Planning Themes divided into 9 different work streams. Digitisation is drawn out as one of the key nine work streams [WS5] BLMK Shared Care Record, and Digitisation and is being sponsored by a Steering Group Director of Social Care. Digitisation is identified as critical to delivering the level of care coordination required for both proactive preventative primary care, but also effective reactive urgent care. High quality information will be fundamental to any move to realign incentives to implement new models of care as envisaged within the Five Year Forward View. This interwoven nature of the STP work streams and the LDR are summarised in the table below:

STP Programme to Deliver the Five Year Forward View (5YFV)	STP Work Streams with Strong Link to Digitisation	Sample of the Explicit Digitisation Linkage within STP Plans
Population-facing initiatives	WS1 - Prevention	Patient and Citizen access to their own care record, combined with high quality information about effective care planning, enables earlier more effective self-care preventing disease development and exacerbation.
Service-user facing initiatives	WS 2 Primary, Community & Social Care	Care Co-ordination is an absolute priority to enable more effective long term condition and multi-morbidity to be managed without exacerbation requiring hospitalisation. This is all predicated on Shared Care Record Access.
		Proactive primary care driven by risk stratification requires high data quality and predictive analytics
	WS3 - Urgent & Emergency Care	The channel shift from face-to-face high cost hospital attendances, to hear and treat and closer to home interventions is only enabled via shared care record access. To confidentially reduce ambulance conveyance requires informed decision makers.
Enabling initiatives	WS4 – Workforce	Within this area the STP aspires to introduce more skill-mix and potentially new roles. In order to work effectively the transfer of care between providers of care needs clear shared commented records that are available anytime anywhere. Due to staff shortages in key areas, current staff must be optimally deployed, so effective eRostering and allocation of task to mobile staff is a core capability enabled by Digitisation.
	WS6 - New models of care	Moving to new incentive models and contracting will require clear measurement of outcome and benefits.
Initiatives to reduce Footprint overheads	WS7 - Clinical support services	Designing the target operating models for Pathology, Radiology and Pharmacy across BLMK is very much an exercise of digital system enablement and exploitation.
	WS – 9 Estates Management	Through the ubiquitous access to care records, and the more effective management of disease out of hospital, and less face to face, the physical footprint required for delivery services can be reduced leading to disposable assets than can fund required capital investments.
Underpinning Analysis	EWSA – Population Health Model Analysis	Using predictive analytics and historic billing data to build a population health model, this work stream is designing the interventions that return the system to balance and optimise outcomes. This lays the foundations for digitally enabled risk based approaches to active care moving forward.

A2.2   This diagram highlights the key enabling components of our digital vision.
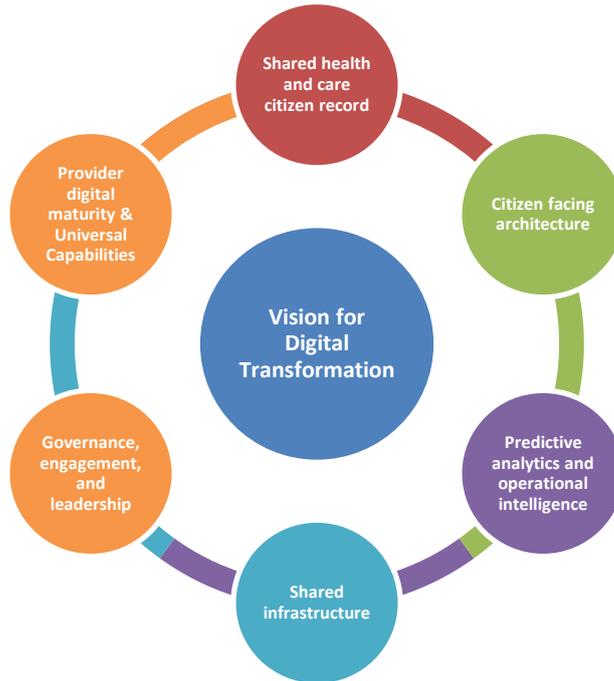
A3   Current situation

A3.1   The LDR-defined universal capabilities are not available across the entire footprint. Secondary care digitisation is very variable across the footprint with particular areas for improvement in diagnostic orders and results management, medicines optimisation via decision support for prescribing and administration, and the use of electronic clinical alerts. Some providers use well-embedded electronic alerts such as National Early Warning Scores (NEWS) to detect patient deterioration, whereas others still have paper based processes. Another area of real weakness is in the integration of records across care settings, digital standard implementation for linking systems together, and remote and assistive care. Furthermore there are significant challenges/gaps in the way that information/data is shared between clinicians, and there is little patient facing technology apart from basic access to the GP record for which take up has so far been limited.

A3.2   Each NHS trust has recently completed the national Digital Maturity Self-Assessment (DMA), which evaluates different aspects of readiness, capability and infrastructure. The LDR is especially concerned with the DMA for each of seven PF@PoC capabilities. The seven digital capabilities are: Records, Assessments & Plans; Orders & Results Management; Transfers of care; Medicines Management & Optimisation; Decision Support; Remote & Assistive Care; Asset and Resource Optimisation.

A3.3   The DMA results show that trusts are generally well-placed in terms of readiness, governance, leadership and strategy. LDH and SEPT self-assessed the strongest while East of England Ambulance Service the weakest.

A3.4   Four of the ten self-assessed well below the national average for Orders & Results Management, Medicines Management & Optimisation, Decision Support and Remote & Assistive Care. In the latter case, by way of example, no remote patient to clinician or clinician to clinician communication solution support in place and very limited remote monitoring of patients with conditions that provided a high risk of hospital admission or re-admission.

A3.5   Currently patient facing clinical data and technologies are very limited. There are some Personal Health Records held electronically for a small cohort of chronic Irritable Bowel Disease (IBD) patients who use patient-owned (Patients Know Best) portal to self-assess their condition. This is remotely monitored by specialist nurses, and has seen much reduced hospitalisation and improved outcomes and experience. Whilst citizen held paper records have been present in maternity, home based care, and some other services for some time, little progress has been made in digitising this capability, or taking this design principle into other areas of care

A3.6   Central Beds Council and Luton Borough Council's DMA's displayed positive progress in 8 of 10 areas, although their 2 key areas of poor progress; 'information sharing with other orgs' and citizen/carer access to patient records' prevent regional interoperability and patient self-management of care (Social Care DMA not available for Bedfordshire Council and Milton Keynes Council).

A3.7   DMA results from primary care GPIT showed Milton Keynes' GP network had made most progress while Luton and Beds had development gaps in 7 of the 8 areas assessed. No area had made good progress in EoL patient preference sharing and urgent/emergency care practitioner access to GP held patient risk information. All areas have put in place most of the key national capabilities but without significant practice adoption and patient take-up.

A3.8   Many local initiatives are underway which are of direct relevance to the LDR. Some of the key ones with whole-system / PF@POC implications include:

   ♦   New EPR (Cerner Millennium) that will initially be accessible to patients for appointment handling and general information via a mobile app and supports SNOWMED-CT coding. (MKUH)

   ♦   Clinical documentation system enabling clinicians to access digital patient records at POC (MKUH)

   ♦   Unified communications implementation supporting virtual MDT meetings (MKUH)

A3.9   Additionally, other new care models are being developed to transform care delivery e.g.

   ♦   A new service is being created to maximise independence through supportive technology (MIST) as new integrated community care and support service across Bedfordshire (BCCG).

   ♦   the provision of a combined clinical/patient portal to access and administer medical records (LDH).

   ♦   integrate 111 and OOH to provide a more cohesive and seamless service for patients and to align with the national direction to deliver a functionally integrated service (Luton and Beds CCGs)

A4   Capabilities

A4.1   The LDR guidance identifies 10 "Universal Capabilities" with 25 associated "Aims" which focus on fully exploiting the existing national digital assets (for example the Summary Care Record), and ensure effective local systems are in place for essential digital connectivity (for example Discharge data transmission & receipt). For each of these capabilities, NHS England expects plans to show "clear momentum" in 2016/17 and "substantive delivery" in 2017/18.

A4.2   A detailed Universal Capabilities Delivery Plan is attached as an Appendix to this document. This outlines, across the three areas of the STP footprint (Milton Keynes, Bedfordshire, Luton), the detailed Baseline and Ambitions for Universal Capability delivery in 2016/17 and 2017/18. The STP Digital Programme arising from this LDR will include a key work stream on Provider Digital Maturity and Universal Capabilities (including Primary Care) – this will include developing more substance to the UC Delivery Plan, and overseeing its implementation with organisational partners across health and social care.

A4.3   In summary, the key points for the Universal Capabilities plan are:

♦ Many relevant digital enablers are in place in primary care (e.g. SCR, tools for patient access to summary record, booking, prescriptions from GP systems, EPS, eReferrals), though utilisation and benefits are relatively limited at this stage.

♦ Some Universal Capabilities require significantly more attention and collaborative focus to ensure progress in the timescale required, for example electronic Referrals, Discharge data transmission and receipt, and End of Life preference information available to key settings of care.

A4.4 For the seven general Digital Capabilities, the overall capability trajectory (for MHUK, BH, L&D, ELFT, SEPT) indicates steady and relatively rapid progress is planned over next 3 years across all PF@PoC capability areas.

♦ No capability is expected to reach 100% by 2019, but 6/7 categories are expected to exceed 80% by 2019 (cf national target of paperless working in primary, urgent and emergency care by 2018).

♦ The weakest capability area for targeted achievement is Remote and Assistive Care – this is the area that has the most modest ambitions reflected in plans.

♦ The weakest capability area currently (baseline position) is Decision Support, but this is targeted to over-take the status of Remote and Assistive Technology.

A4.5 The information on planned digital capability developments by Providers indicates a wide range of planned / proposed solutions where a common or joint approach would be more coherent and cost-effective. These include:

♦ Methods to develop information sharing across care providers: current plans do not yet reflect a system-wide approach. The current initiatives indicated (eg MKUH and the use of the Cerner HIE capability) may present optimum ways forward, but the range of solutions suggests that a strategic options appraisal will be needed in key areas of development.

♦ Patient facing technology such as Patient Portals / Personalised Health Record – from a patient perspective it will not make good sense for a plethora of portals to develop at a provider level; these are best built around a integrated care records model creating a holistic / person central personalised health record.

A5   Information sharing

A5.1 Efficient, effective, secure patient / client information sharing across organisations is key to the ambitions of the STP and of PF@PoC.

A5.2 Strategically, an options appraisal is needed to identify a long-term solution for integrated care records and personalised health records access and care planning tools for patients.

A5.3 Tactically, a joint funding bid under the Estates and Technology Fund 2016/17 has been submitted to support information sharing across Primary Care and with Acute Providers. This will pursue the information sharing capabilities of TPP SystmOne and the MiG (for EMIS and Vision practices) and improve the scope and quality of data transmission and receipt between Providers and Primary Care.

A5.4 The CCGs will also promote extension of the use of the Summary Care Record with Additional Information (SCR-AI) – this approach will provide a richer level of information for prioritised patients (e.g. End of Life, Frail Elderly).

A5.5 Progression of the interoperability initiatives will be dependent upon several enablers, including:

♦ Governance – it is recognised that revised governance and accountability arrangements will be required as will effort into securing regional information sharing agreements.

♦ Investment: a high level outline of funding estimates is shown at the end of this Executive Summary.

A6 Infrastructure and standards

A6.1 The current status and plans for the mobile working infrastructure across the footprint are mixed and summarised as:

♦ Mobile devices – the DMA scores for healthcare professionals being equipped with mobile devices to access clinical applications and information at the point of care are better than the 63% national average;

♦ Connectivity – Healthcare professionals having Wi-Fi access to clinical applications across each provider was not supported across many providers.

♦ The Primary Care Forward view programme will fund CCG's in installing WiFi in all general practices, however, there is no current evidence of associated plans in Luton and Beds. In MK, their GP Wi-Fi project will deliver Wi-Fi to all sites in 2017 .

A6.2 Currently, all NHS organisations and 4 Local Authorities have full access to the NHS secure network, N3. The council connections are termed as ad hoc connections for secondary use data i.e. not organisation wide and not linked to social care case management systems. There are no currently no initiatives to develop a STP footprint wide network e.g. a community of interest network (COIN).

A6.3 HBL-ICT also supports Herts CCG and GPIT and has involvement in Herts' STP and LDR footprint development effort. Potential future opportunities including shared data centres, regional network infrastructure, shared technical support arrangements, joint cloud initiatives, shared access to WiFi services, etc all merit cost/benefit analysis and understanding of the dependencies between them. In Milton Keynes, GPIT and CCG IT support is provided by GEM and Arden CSU.

A6.4 In the absence of a regional network infrastructure, interoperability will be more difficult to realise and therefore one of the foundation capabilities for the LDR footprint should be to evaluate the feasibility including required investment to create and maintain such an integrated regional network.

A7 Moving forward

A7.1 The digital vision of the STP is that ***by 2020 BLMK footprint citizens, patients, carers, care providers, clinicians and managers make maximum use of information to deliver the best outcomes with maximum efficiency.***

A7.2 **Priority areas for the 2016/17 are as follows**, laying the foundation for digital health across the STP:

♦ Undertake Strategic options appraisal for a BLMK shared health & care record.

♦ Progress implementation to exploit tactical short term solutions for information sharing, particularly through System One in Primary and Community Services, and with connections to Provider settings to enable access to key elements of the GP record.

♦ Plan for interoperability and a wider Health Information Exchange (HIE) implementation to lay foundations for system wide integration. This will benefit from being linked to the Local Digital Coalition (www.localdigitalcoalition.uk/) of which Luton Council is already a member.

♦ Design, procurement and detailed planning for a unified 3 campus strategy to close gaps in Secondary care digitisation.

♦ Establish a clear plan for the delivery and funding bid for universal capabilities gaps as identified in this Roadmap.

♦ Strategic options appraisal for citizen facing health & care record

♦ Pilot approaches in primary care for patient access focussing on supporting usage by the Long Term Condition cohort.

♦ Define data management infrastructure for ongoing risk stratification and care co-ordination.

♦ Review current network infrastructure linking providers and Undertake options appraisal to make case for funding of joint network infrastructure and wireless access across the health and social care estate.

♦ Develop and commence delivery of Patient & public engagement plan

♦ Develop Information Sharing Architecture for Shared Care Record developed including sign-up by all care providers, including general practice.

♦ Establish Digital programme executive and clinical leadership, governance and programme.

A8   Readiness

A8.1   The proposed governance arrangement for managing the LDR Implementation Programme is to create a Digital Programme Board across the STP footprint - Figure 17 outlines the model.

Figure [17]. Possible future LDR Governance Structure –
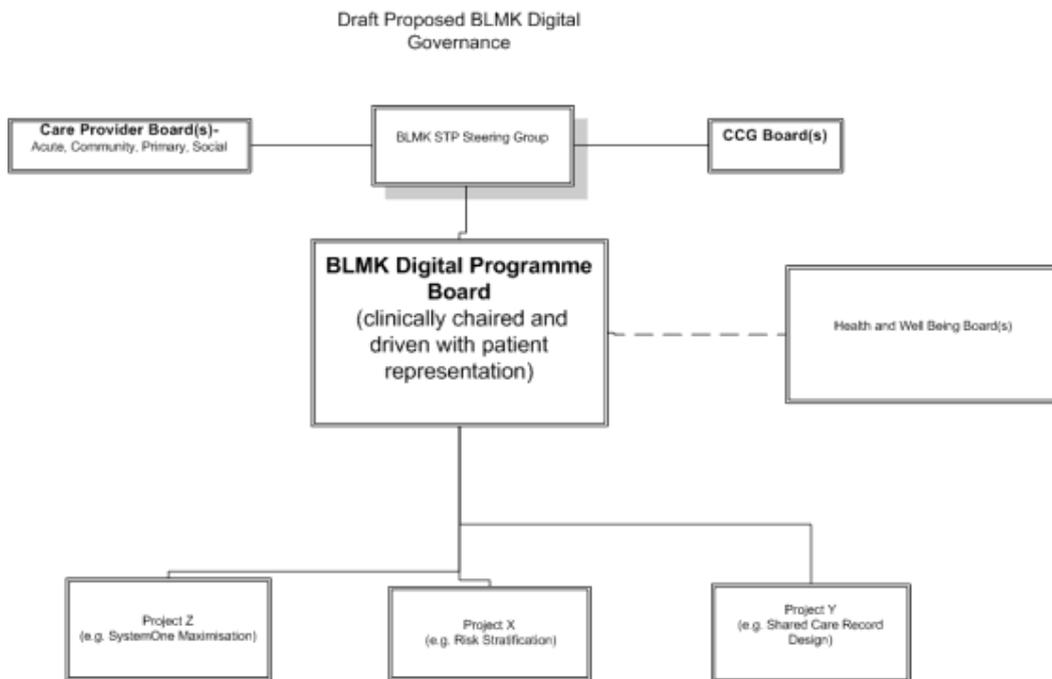
A8.2   The plans required to deliver the LDR require substantial new financial investment over and above each organisation's existing IM&T capital programme and supporting revenue streams.

A8.3   This LDR has identified several new priorities and the required investment timescale for some pre-existing priorities, leading to a likely substantial funding gap. Some of the priorities require substantial investment. The table below identifies likely capital and revenue funding requirements, along with known, anticipated and target sources of investment.

B   About the Digital Roadmap

B1   Background

B1.1   NHS England's *Five Year Forward* View (October 2014) sets the context for transformation of healthcare delivery. Many of the changes envisaged are critically dependent on the transformative power of information and technology (summarised as information management and technology (IM&T) throughout this document). One key commitment is that, by 2020, there would be "fully interoperable electronic health records so that patient's records are paperless".

B1.2   In response NHS England's National Information Board (NIB) set out a series of IM&T priorities (in *Personalised Health and Care 2020. Using Data and Technology to Transform Outcomes for Patients and Citizens. A Framework for Action,* (November 2014)). Amongst its recommendation, the NIB identified the need for "development of local roadmaps for digital interoperability to be published in 2016". Commissioners have been tasked with coordinating the development of local digital roadmaps (LDRs).

B1.3   A signed-off LDR is a condition for accessing investment for technology enabled transformation. Progress in delivering the commitments and aspirations in the LDR will become part of commissioner and provider assurance, assessment and inspection regimes.

B1.4   The "footprint" for this LDR covers the following organisations:

- Bedfordshire CCG
- Luton CCG
- Milton Keynes CCG
- NHS Luton and Dunstable Foundation Trust
- NHS Milton Keynes University Hospital Foundation Trust
- NHS Bedford Hospital Trust
- NHS East London Foundation Trust
- NHS South Essex Partnership University Foundation Trust
- NHS Central & North West London Trust
- NHS Cambridgeshire Community Services Trust
- NHS South Central Ambulance Service Trust
- NHS East of England Ambulance Service Trust
- Milton Keynes Council
- Bedford Council
- Central Bedfordshire Council
- Luton Council

B1.5   The LDR covers the BLMK Strategy and Transformation Plan (STP) footprint.

B2   Purpose

B2.1   Production and agreement of the LDR is intended to be the first stage towards supporting the health economy to become 'paper-free at the point of care' with systems interoperability across organisations. By definition achieving fully interoperable electronic health records requires high levels of collaboration and coordination amongst local stakeholders. The LDR is the vehicle through which some of the necessary collective milestones and issues become codified and agreed.

B2.2   Locally the need for e-sharing of patient records has long been recognised as fundamental to achieving many of the goals set out in STP strategies including the digitisation work streams. Hence this requirement is a significant component of the STP strategy that has been developed in parallel with this LDR. Section F outlines the local approach and plans for interoperability across the health and care community. The LDR allows these plans to be further aligned with each organisation's current status, priorities and plans with regard to e-records.

B3   Scope

B3.1   The scope of the LDR is broader than just the original remit to address Paper-free at the Point of Care (PF@PoC). It now encompasses:

♦   PF@PoC – for information used both within and shared between organisations

♦   Digitally enabled self-care

♦   Real-time data analytics at the point of care

♦   Whole systems intelligence to support population health management and effective commissioning, clinical surveillance and research.

B3.2   The level of detail required in this first iteration of the LDR varies according to the topic. Specifically, for those issues not related directly to PF@PoC the direction of travel over the next 5 years will be described, but they will not be considered in any depth. The trajectory over the next 3 years for the broad "capabilities" across the system which are intrinsic to PF@PoC will be considered in some detail. For certain specific issues (the so-called Universal Capabilities), which encompass PF@PoC goals over the coming 12-24 months, considerable levels of new detail are required.

B3.3   It is not intended that the LDR replaces or replicates IM&T strategies and plans of individual organisations. Rather, the LDR focuses on the common themes across the footprint where collaboration is either desirable (e.g. to achieve economies of scale, to share scarce resources, to share best practice) or essential (e.g. cross-organisational data sharing and interoperability).

B3.4   It should be noted that, whilst building on STP plans, this is the first LDR for BLMK. As such, it is not necessarily comprehensive. Therefore the LDR will evolve, being refined and expanded in subsequent iterations.

B4   Development and endorsement of the Roadmap

B4.1   This roadmap has been developed across the partnership of health and social care organisations in the BLMK STP footprint (see list in Section [B1.4]), supported by South Central and Western Commissioning Support Unit (SCWCSU). For each organisation, the development involved provision and analysis of documentation, completion of pro-formas, participation in workshops, bilateral discussions, and review of draft LDR documentation. To-date, only very limited liaison with relevant H&WB's has taken place although this is recognised and is to be addressed in the next phase of LDR planning and delivery. Patient and public engagement is also recognised as not being as extensive as it needs to be, and a priority for the LDR delivery is to develop and implement a more effective approach to patient / citizen engagement, particularly on records sharing and consumer digital health.

B4.2   Alignment of the LDR with the developing STP has been ensured through close collaboration with the STP development team, as well as the informatics communities.

B4.3   An early draft of the LDR was shared with partner organisations across the footprint for comment and input before the finalisation of the submission.

B4.4   This version of the LDR has been endorsed and signed-off by designated governance arrangements of each of the three CCG's (Beds, Luton and Milton Keynes) and the BLMK STP Steering Group.

C   Strategic context

C1   Sustainability and Transformation Plan

C1.1   The BLMK STP describes how the local health system will address existing gaps in relation to: care and quality, finance and efficiency, health and wellbeing.

The Vision for the STP in BLMK is

♦   A local population that is better informed about how they can stay healthier, how they can detect and act on early warning signs, how they can access the health and social care system at the right point and with the appetite, capability and support to take control of their own care needs.

♦   A step improvement in the personal physical and mental health of the local population, so that years are added to life, and the variance in life expectancy across BLMK narrows markedly.

♦   A reinvigorated, technology-enabled, integrated and professionally sustainable model of Primary, Community & Social Care operates across the STP footprint, 7-days a week, intervening earlier and in a less intensive way, harnessing the contribution of personal, community and voluntary networks, and maximising health and social care provided in or close to the home.

♦   A safe and clinically sustainable solution for Secondary Care Services operates across the STP footprint, 7-days a week, meeting national quality and performance standards.

♦   Informed by leading-edge population health analytics and New Models of Care innovations, such as Accountable Care, health and social care bodies across BLMK allocate risks and incentives in new ways that align with, and indeed, underpin, the STP vision of prevention and health promotion, of more self-care and of earlier and less intensive intervention in out-of-hospital settings.

♦   Year-on-year, the BLMK health and social care economy lives within the financial means available to it.

C1.2   The BLMK STP has four Priority Planning Themes:

♦   Population-facing initiatives

♦   Service-user facing initiatives

♦   Enabling initiatives

♦   Initiatives to reduce Footprint overheads

C1.3   Figure 1 below shows the high level STP model for how digital transformation will support the overall goals for reducing the 3 gaps:

Figure [1] STP Transformational goals and associated solutions
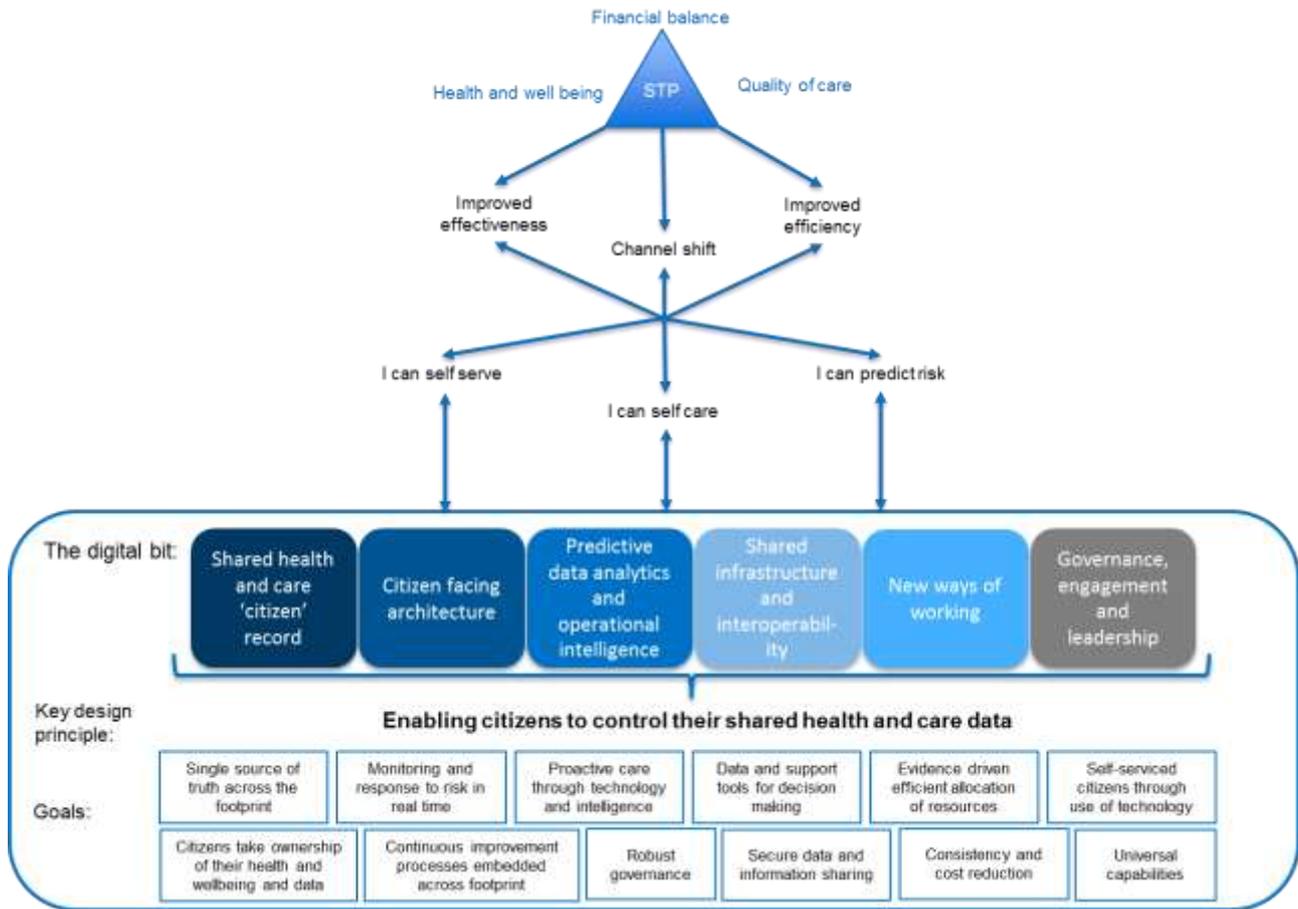
C2   Commissioning Strategies

C2.1   A number of CCG-level strategies in Bedfordshire, Luton, and Milton Keynes are in place or draft which have significant technology dependencies. Whilst these strategies may develop and / or be modified in the context of the STP priorities, these area-based strategies provide a good indication of the emergent priorities and approaches that require digital-health enablement. The strategies and key plans reviewed in preparation of this LDR include:

♦   Bedfordshire Primary Care Strategy

♦   Bedfordshire & Luton Integrated Urgent Care (111 and Out of Hours) Re-procurement

♦   Bedfordshire Integrated Adults Community Services 2016/17 & beyond (draft).

♦   Bedfordshire OBC Maximising Independence through Supportive Technology (MIST).

♦   QIPP Programme across the 3 CCGs - 2016/17.

♦   Milton Keynes Transforming Primary & Integrated Care Services Strategy - "Care Closer to Home" 2015-2018

♦   Milton Keynes Mental Health Strategy 2014-17

♦   Milton Keynes Primary Care Development Strategy 2013-15

♦ Milton Keynes Strategic Summary & Year 1 Operational Plan 2016-2017

♦ Luton Health and Social Care System Five Year Strategy

♦ Luton Urgent and Emergency Care Strategy 2015-2017

♦ Luton 'Primary Care - What does Good look like?' presentation to HWB

C2.2 Common service-transformation themes from these plans that have clearly identifiable technology dependencies include:

♦ integrate primary care within the wider redesign of urgent care services, and to work towards ensuring that a consistent triage platform

♦ Targeted improvements in clinical outcomes for people living with long term conditions, particularly diabetes, respiratory and cardiovascular conditions.

♦ Embed personalised care planning and proactive case management for people with complex health and social care needs.

♦ reduce unwarranted variation in all aspects of quality and to bring measurable standards up to those of the best in local and national general practice

♦ embed prevention and early intervention in Primary Care practice

♦ establishment of multi-disciplinary primary care teams

♦ Support practices to trial and evaluate different models for managing same-day appointments

♦ Risk stratification and case finding – segmenting a population and provide person-centred care to those most in need recognising resource constraints

♦ Multi-disciplinary team working –health and care professionals working together to support people with complex care needs that have been identified through risk stratification and case finding

♦ Personalised care and support planning – the key vehicle by which health and care professionals work together with patients and carers to meet their needs

♦ Targeted / Personalised self-management plans, outreach telephone support, digital health solutions, individual and group education (MIST).

♦ Promotion of self-care / patient education

C2.3 The common technology-enablers apparent to support delivery of these service transformation methods are:

♦ Data management systems and end-user access to risk stratification and case-finding tools.

♦ Digital services enabling 'channel shift' to support patient demand-management and triage for primary & urgent care

♦ Information sharing across care teams, enabling joint care-planning and co-ordination.

♦ Personalised Health records access for patient / clients, enabling digital interaction with care-teams, self-management care-planning and support, and sharing of patient-collected data.

♦ At scale primary-care technology operations, enabling cross-practice sharing of records and patient booking.

♦ Patient-to-professional digital access, via choice of video or phone consults where appropriate.

♦ Professional-to-professional digital access, enabling specialist advice and input to be obtained.

These and further digital enablers are explored further below in section C3, and key priorities identified later in the document.

C3   Digital technology as change enabler

C3.1   It is recognised locally and nationally that the kinds of transformative change set out in the STP cannot be achieved without realising many of the opportunities afforded through extensive deployment of digital technology.

C3.2   More recently NHS England's *General Practice Forward View* (April 2016) emphasises the importance of greater use of technology to connect primary care with others, for the sharing of best practice, for greater online access for patients and to deliver new modalities for provision of advice and support for patients and the public.

C3.3   Figure [2] identifies some of the opportunities for IM&T to enable transformation as defined within the STP. This is not intended to be comprehensive, but rather illustrative.

Figure [2].
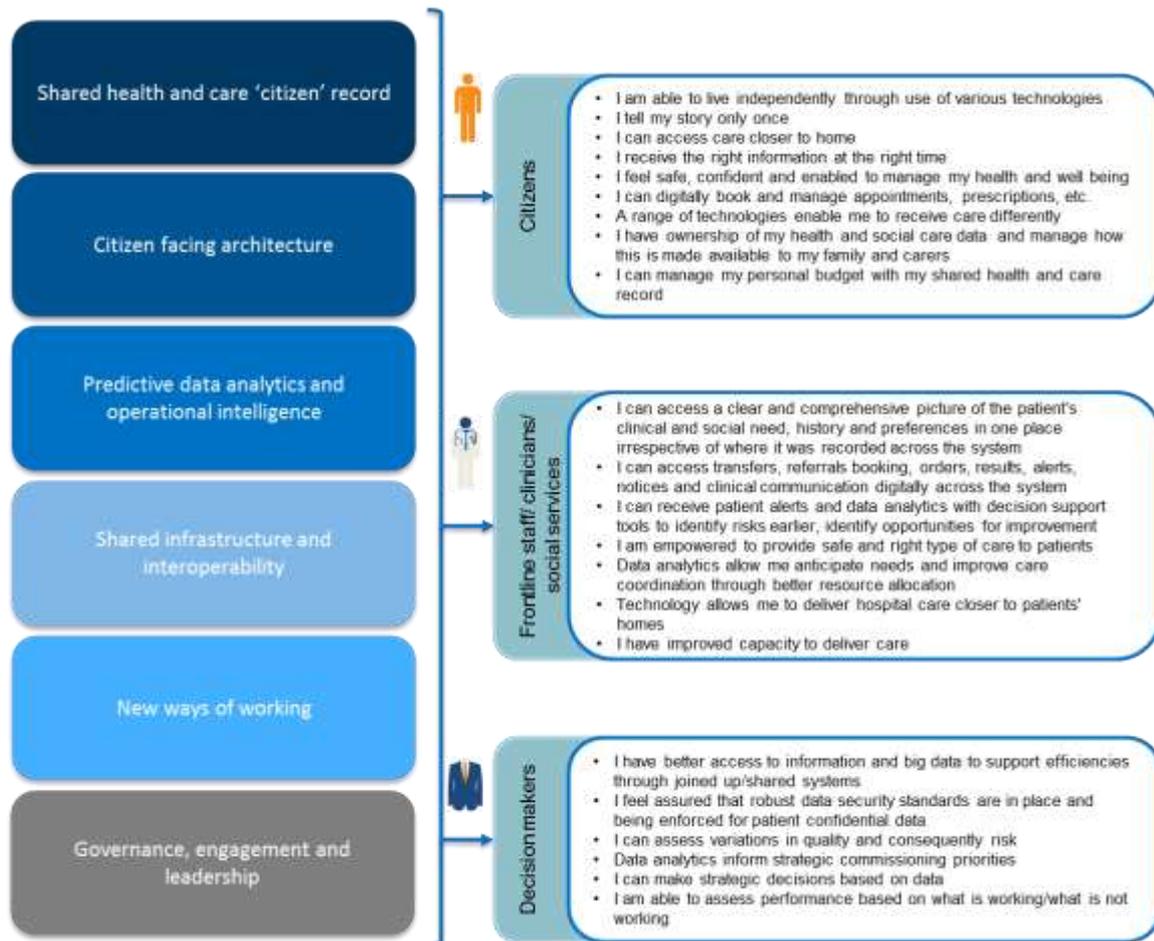
C3.4   This LDR and STP Digital work-stream is informed by the recent work of the Nuffield Trust on Delivering the Benefits of Digital Health Care. This identifies seven key areas where there are major opportunities to drive improvement in health and care, and a set of technology enablers where there is reasonably strong evidence of impact and benefit. The dependency relationship between these benefit themes and enables is summarised below:

Figure [3] – Delivering the benefits of Digital Health; enablers
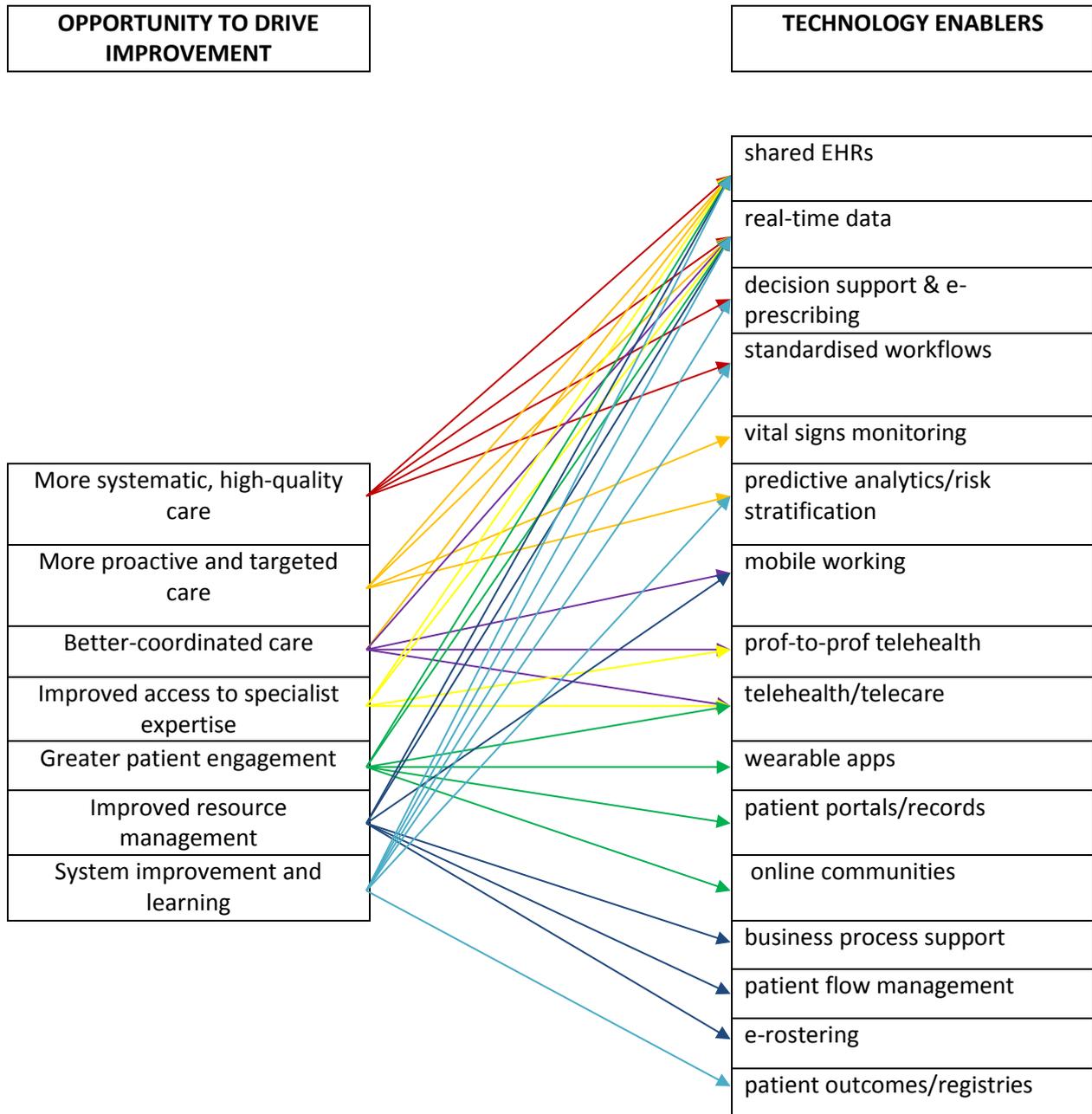
C3.5   The plans outlined in this LDR and the STP Digital work-stream aim to develop an evolving digital ecosystem across the footprint of BLMK that increasingly enables the delivery of the benefits themes through a coherent set of technologies that work together successfully and address key gaps in digital capability.

C4   Vision for digitally enabled transformation

C4.1   As Figure [2] illustrates, digitally enabled transformation is an essential component for addressing the challenges faced by the local health and care system.

C4.2   The overarching vision of Digital Transformation for the BLMK footprint is citizens, patients, carers, care providers, clinicians and managers make maximum use of information to deliver the best outcomes with maximum efficiency –

   ♦   Decisions are made continually at many different levels of the system: in the home, the sheltered housing kitchen, the social care contact centre, the acute hospital bedside, the emergency department cubicle, the ambulance control centre, the clinic re-scheduling telephone call, the practice manager's office, the Health and Well-Being or Trust Board. All these decisions are made by different stakeholders in the system: citizen, patient, carer, clinician, care workers, nurse specialist, social worker, manager, director and director, politician. All of these areas and people need the most robust reliable information their decisions.

   ♦   The vision will focus on major themes of digital transformation, including records sharing, citizen-facing technology, data and analytics, and shared infrastructure, all designed to support the pathway goals of the Sustainability and Transformation Plan.

C4.3   Figure [4] highlights the key enabling components of our digital vision.The goals and issues associated with PF@PoC, Information Sharing, Infrastructure, Governance and Readiness are described further in later sections. Issues associated with Analytics and Decision support, and Citizen / Patient / Client-facing technologies are addressed, briefly, below.

Figure [4]. Key Enabling Components

C5   Citizen / patient / client-facing services

C5.1   Currently patient facing clinical data and technologies are very limited. There are some Personal Health Records held electronically for a small cohort of chronic Irritable Bowel Disease (IBD) patients who use patient-owned (Patients Know Best) portal to self-assess their condition. This is remotely monitored by specialist nurses, and has seen much reduced hospitalisation and improved outcomes and experience. Whilst citizen held paper records have been present in maternity, home based care, and some other services for some time, little progress has been made in digitising this capability, or taking this design principle into other areas of care.

C5.2   Appropriate use of technology for direct access by citizens / patients / clients has the potential to:

♦   Reduce demand on services by better informing citizens about healthy choices and appropriate use of services

♦   Empower patients / clients to become partners in choices concerning their healthcare and social care (no decision about me without me)

♦   Enable patients / clients to take great responsibility and control for managing their own health and care

♦   Offer a wider range of channels through which support and advice can be provided, which are more convenient, accessible and efficient than conventional face to face contacts, allowing the possibility of new models and settings of care.

C5.3   The range of potentially relevant information services and technologies is wide. They include:

♦   Patient / client access to / ability to view and to add to their own records

♦   Telehealth in support of self-management, especially for those with chronic conditions

♦   Online tools, smartphone apps which can provide tailored advice and support

♦   SMS text alerts such as appointment reminders

♦   Social media, e.g. peer group support networks

♦   Websites to provide information about and signposting to services available

♦   E-consultations, video-consultations

♦   Telecare, including the "internet of things", i.e. alerts from smart household appliances of vulnerable people.

C5.4   It is recognised that all of these have their place in supporting the STP goals, and there currently is some relevant activity in relation to most. Areas of particular priority for the next year or two are:

♦   Significant increase in patient access to and use of their primary care based electronic health record (see further detail in Section E).

♦   Developing use of clinical decision support and real-time data applications that enable clinicians to be guided in key referral and care management.

♦   Providing integrated remote triage and care services using a mix of tools such as records access, video-consultations, remote monitoring (see examples in Section F).

♦   Development of tools and services that directly support self-care management for patients with long-term conditions, for examples via a Personalised Health Record (PHR), linking to an integrated clinical care record, and providing a set of functionality for care-planning, interaction with care professionals, and interactive health data via self-monitoring.

C5.5   The provision of universal free Wi-Fi for patients across the NHS estate (see Section G) may act as an enabler for patients to become more engaged in digital tools generally, and specifically those that support health and well-being including condition specific support groups and social networks, apps that help monitor conditions and support the concept of a 'digital prescription'. The funding referenced in The General Practice Forward View will be key to delivering this across the footprint.

C5.6   Given the emphasis placed, in the STP and in local plans, on greater self-care and self-management, this aspect of the LDR Programme probably will need greater focus and increased scale than currently is the case.

C6   Real-time data analytics at the point of care

C6.1   The availability of extensive patient-level data in real-time (or near real-time) offers the possibility of analytics and decision support at the point of care. This data may be held in specialist or sector-specific systems or they may, increasingly, be integrated across the whole system (see below).

C6.2   Point of care clinical decision support has been used for many years within primary care (e.g. for prescribing) and is becoming more widespread in trusts as EPR capabilities are deployed (covered by "Decision Support" in Section E on capabilities).

C6.3   As well as supporting patient-level clinical decisions, integrated real-time data offers opportunities for real-time demand management by tracking activity across the whole system to, for example, raise alerts when urgent care capacity is likely to be breached. System resilience being electronically monitored in the way some Acutes might monitor flow via an Operations Centre is an aspiration. These are new application areas which will increasingly become feasible as the scale and scope of real-time digital records becomes reality.

C7   Whole systems intelligence

C7.1   The bringing together of financial, operational and clinical outcome data centred around patients provides an opportunity for deriving whole system intelligence to support population health management, effective commissioning, outcome based contracting, planning, clinical surveillance, service re-design and research. This, in turn, should enable more effective prioritisation and targeting of resources, increased opportunities for joint initiatives and finding common solutions.

C7.2   A core goal of the STP is to improve the integration of services around the patient, and whole systems intelligence is critical to this – by refocusing analysis of service use and resources around the patient, rather than on organisations / services.

C7.3   To support the STP development, a specific population-based model has been created with third party input from Optum for the BLMK footprint. This model uses local, regional, and national UK data, accompanied by a proprietary longitudinal data base of health and clinical experiences to build a population dynamics projection from the baseline position for the BLMK local area (numbers, demography, epidemiology, etc.). This has provided insights on prevention opportunities, risk-stratification of health care needs, care resource consumption, and future capacity requirements.

C7.4   For Bedfordshire CCG, pseudonymised patient level data is already available for secondary care services and certain other services, in the data warehouse managed by SCW CSU. The CSU also holds demographic and public health datasets, performance information and contract monitoring reports. Within the DSCRO (Data Services for Commissioners Regional Office), the CSU is able to obtain identifiable data and undertake linkage between data sets, subject to appropriate data sharing arrangements being in place. Hence, the CSU repository provides a rich source of information which is already used to support population based analytics (e.g. risk stratification for proactive case management of high risk/cost patients). There is considerable scope to extend the use of these linked data sets (and the inclusion of further patient/client level data sets such as community, primary care, social care).

C7.5   The STP-wide approach to data-integration, integrated population health analytics and risk stratification needs to be reviewed to develop an agreed joint model.

C7.6   The further development of patient / client record sharing / interoperability (see Section F) has the potential to enable integrated population analytics, using data which has been brought together for use at the point of care. As commissioning and planning of services becomes more focused on the patient, there is likely to be a convergence of strategic analysis based on both repository data and real-time analytics.

C7.7   Some of the challenges / issues to address for the future, to allow further exploitation of this intelligence (e.g. in support of demand management, service re-design) are overcoming current concerns regarding confidentiality / IG, data quality and standards, user awareness and training. Each of these is touched on later in this report.

D   Current situation

D1   Digital Maturity

D1.1   Each NHS provider has recently completed the national Digital Maturity Self-Assessment (DMA), which evaluates different aspects of readiness, capability and infrastructure. The findings are summarised in Table [5]. Although too much emphasis should not be placed on the actual percentage score, the green shading is used to highlight where organisations are above the national average.

D1.2   The LDR is especially concerned with the current maturity for each of the seven PF@PoC capabilities (highlighted in bold in Table [5])– explained further in Section E2. The DMA baseline shows that each trust is generally well-placed regarding readiness, governance, leadership and strategy. NHS Luton & Dunstable Hospital FT (LDH) and NHS South Essex Partnership University FT (SEPT) self-assessed the strongest while East of England Ambulance Service scored well behind the curve.

D1.3   For other PF@PoC capabilities, there is a mixed picture. Four of the ten strong Provider footprint, self-assessed well below the national average in the areas of Orders & Results Management, Medicines Management & Optimisation, Decision Support and Remote & Assistive Care. In the latter area, by way of example, there was no use of online tools to support remote patient to clinician and clinician to clinician communication. In addition, there was very limited remote monitoring of patients classified with conditions that provided a high risk of hospital admission or re-admission. These areas of the DMA were felt to be symptomatic of the absence or immaturity of cross-system initiatives spanning primary and secondary providers.

Table [5]. DMA scores for the BLMK footprint

Area	Nat Av	Luton & Dunstable NHS FT	MKUH NHS FT	Bedford Hospitals NHS Trust	East London NHS Foundation Trust	South Essex Partnership University NHS Foundation Trust
Strategic Alignment	76%	100%	70%	85%	75%	100%
Leadership	77%	100%	90%	80%	80%	95%
Resourcing	66%	100%	80%	55%	80%	85%
Governance	74%	100%	85%	70%	80%	100%
Information Governance	73%	88%	75%	88%	67%	100%
Records, Assessments & Plans	44%	61%	50%	30%	0%	67%
Transfers Of Care	48%	73%	81%	34%	41%	85%
Orders & Results Management	55%	88%	56%	42%	35%	64%
Medicines Management & Optimisation	30%	91%	9%	65%	0%	43%
Decision Support	36%	65%	8%	31%	31%	70%
Remote & Assistive Care	32%	25%	42%	33%	92%	75%
Asset & Resource Optimisation	42%	65%	40%	60%	55%	75%
Standards	41%	29%	29%	28%	46%	70%
Enabling Infrastructure	68%	89%	64%	45%	84%	89%

Area	Nat'l Av	Central & North West London NHS FT	Cambs Community Services NHS Trust	Care UK	South Central Ambulance Service NHS Trust	East of England Ambulance Service NHS Trust
Strategic Alignment	76%	85%	75%	100%	58%	38%
Leadership	77%	95%	80%	100%	85%	0%
Resourcing	66%	55%	85%	95%	75%	55%
Governance	74%	85%	75%	95%	75%	55%
Information Governance	73%	71%	75%	96%	75%	75%
Records, Assessments & Plans	44%	36%	83%	81%	57%	43%
Transfers Of Care	48%	54%	68%	88%	61%	62%
Orders & Results Management	55%	17%	59%	75%	14%	
Medicines Management & Optimisation	30%	26%	28%	88%	29%	8%
Decision Support	36%	12%	63%	100%	22%	38%
Remote & Assistive Care	32%	0%	0%	58%	50%	0%
Asset & Resource Optimisation	42%	20%	17%	63%	56%	56%
Standards	41%	36%	73%	83%	75%	31%
Enabling Infrastructure	68%	45%	82%	84%	75%	88%

D1.4   A national DMA tool has also been created by the Local Government Association (LGA) and ADASS for social care (adult and children) providers. It follows the same broad headings as the NHS assessment with specific questions more pertinent to social care. Local Authorities were requested to complete and return their assessments in May 2016.

D1.5   In the BLMK STP footprint, 2 of the 4 Local Authorities accountable for Social Care have shared their responses with us; Central Beds and Luton Borough Council. Bedfordshire Council are unlikely to complete their response before the LDR submission deadline although they have been encouraged to complete and share it to help complete the regional Social Care digital status picture and it help inform future priorities and deployment schedules.

D1.6   Central Beds and Luton Borough Council's assessments display positive progress on 8 of the 10 response areas. The 2 areas of poor progress, significant in relation to regional interoperability and patient self-management of care were 'information sharing with other organisations' and citizen/carer access to patient records'.

Table [6]. Social Care Current Status

Social Care Digital Maturity Assessment
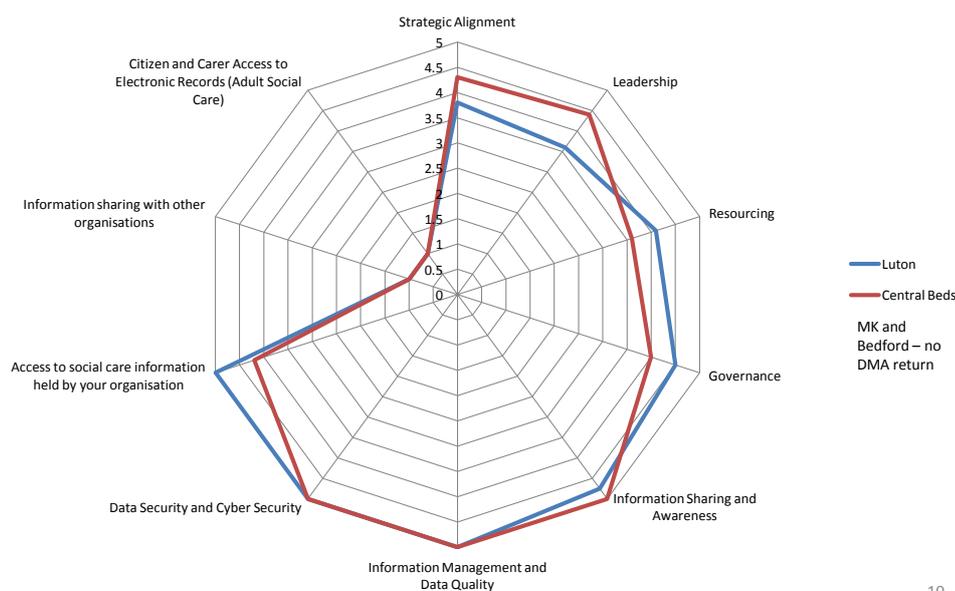
D1.7   The Primary Care IM&T landscape for the BLMK footprint may be summarised as:

- ♦ SystmOne, EMIS and Vision are the three clinical systems being used in practices across Beds, Luton and MK.
- ♦ Use of centrally provided NHS/HSCIC systems such as the Electronic Prescription Service, the Repeat Prescription Ordering Service and eReferrals are in widespread use but with large variation across practices.
- ♦ Practices use different combinations of online information systems and resources.
- ♦ The use of patient-facing systems such as on-line appointment booking is minimal and patchy
- ♦ Practices have purchased local medical equipment to support the needs of their patients, many of which use software running on in-premise practice IT.
- ♦ There is a wide range of non-clinical software in use within the practices, including software to manage the practice back office requirements, such as: payroll, financial accounts, etc.

♦ Data connectivity is via the secure N3 network (maintained by HBL-ICT in Beds & Luton and by GEM and Arden CSU in Milton Keynes).

D1.8 A similar, national Digital Maturity Assessment exercise has been conducted for primary care in relation to GPIT. Some information is known, locally, about the availability and usage of systems and IT infrastructure within general practices. The current status in relation to provision of digital services for patients and other initiatives is summarised in Table [7]. The table contains status commentary for eight of the ten Universal Capabilities described by NHSE as relevant to Primary Care. Where it's been made available, this table provides information on the take-up and usage of digital capabilities by patients.

D1.9 The Milton Keynes area has made most progress to-date whilst both Luton and particularly Bedfordshire require further development in 7 of the 8 areas. Neither area has made good progress in EoL patient preference sharing and urgent/emergency care practitioner access to GP held patient risk information. All areas have put in place most of the key capabilities e.g. ePrescriptions, eAppointments, etc but have not been able to resource the significant public awareness campaigns and practice and patient support effort necessary for adoption and to accelerate take-up.

Table [7.1]. Primary Care Current Status

Capability	MK	Luton	Beds
1. Access to GP medication records across care setting	Available via SCR in secondary care including Pharmacy, via SystmOne in primary care and community settings	Available via SCR in secondary care including Pharmacy, via SystmOne in primary care and community settings	Available via SCR in secondary care including Pharmacy, via SystmOne in primary care and community settings
2. Clinicians in urgent care/emergency can access key GP information for patients identified as most likely to present	EPaCCS visible by Community & mental health services, not available for secondary care. SCR in secondary care	Paper system - paper print out sent with the patient or faxed.	Information not available
3. Patients can access their GP record	Patient Online Service available in 100% of practices but all services not utilised	Patient Online Service available in 100% of practices but all services not utilised	Patient Online Service available in 100% of practices but all services not utilised
4. GPs can refer electronically to secondary care	RMS uses eRS, currently 66% utilisation for 1st Outpatient appts	36% utilisation of eRS for 1st out patient appointment	Majority of practices using eRS - no utilisation percentage?
5. GPs receive timely discharge summaries from secondary care	Unstructured non-CDA compliant Electronic Discharge Summaries from A&E sent through DTS / MESH to TPP SystmOne. Inpatient discharges sent via secure mail	Structured discharge summaries sent electronically. 88% from Jan to Mar 2016	65%, exceptions being maternity neonatal endoscopy ophthalmology from legacy systems
8. Professionals across care settings made aware of EoL preference information	EPaCCS visible by Community & mental health services, not available for secondary care	Not available for all patients/Rely on patient held copies	Not available for all patients/rely on patient held copies
9. GPs and community pharmacists can utilise electronic prescriptions	100% of practices enabled and using EPS, but not fully utilising repeat and dispensing prescribing	100% of practices enabled and using EPS, but not fully utilising repeat and dispensing prescribing	64% (Mar 2016) of practices enabled and using EPS
10. Patients can book appointments and order repeat prescriptions online from GP practice	All practices have functionality via clinical system and Patient Online Services but not fully utilised	All practices have functionality via clinical system and Patient Online Services but not fully utilised	All practices have functionality via clinical system and Patient Online Services but not fully utilised

D1.10   A similar incomplete universal capabilities position is evident across the region's Acute, MH and Community providers. Table 6 illustrates some progress but also a long way to go in relation to appropriate levels of structured information sharing across 6 universal capabilities. MKUH has made most progress, partly enabled via their investment in their Cerner Millennium EPR and its associated gateway with TPP's SystmOne solution. This enables patient SCR access to all departments including pharmacy. Similarly, SystmOne access is only partly deployed elsewhere (medication only) e.g. at LDH the SCR is not accessible to A&E staff.

Table [7.2]. Providers Current Status

Capability	MKUH	BH	L&D H	ELHT	SEPT	CNWL	CCS
1. Access to GP medication records across care setting	SCR record available to all including Pharmacy staff	Summary Care Record available	No access from GP System one available to A&E. SCR available via SystemOne for Acute Pharmacy	N/A	N/A	information not available	information not available
2. Clinicians in urgent care/emergency can access key GP information for patients identified as most likely to present	Summary Care Record and CPIS (where applicable) accessible to all Clinical Staff	Summary Care Record available, not yet with additional information included	Paper system - paper print out sent with the patient or faxed.	N/A	N/A	information not available	information not available
5. GPs receive timely discharge summaries from secondary care	Unstructured non-CDA compliant Electronic Discharge Summaries from A&E sent through DTS / MESH to TPP SystmOne	65%, exceptions being maternity neonatal endoscopy opthamology from legacy systems	Structured discharge summaries sent electronically. 88% from Jan to Mar 2016	N/A	N/A	information not available	information not available
6. Social Care Receive timely electronic assessment, discharge notices from acute care	Electronic submission for relevant patients using Trust bespoke application which is received in form of a secure email to Social Care provider.	deployed in approx 2% of services	Information not available	N/A	N/A	information not available	information not available
7. Clinicians in unschedule care settings can access CP information with social care notified accordingly	CP-IS deployed to A&E and maternity	Trust has no electronic CP System but does examine alerts on SCR or TPP	Paper Information sharing form completed. Information from trust system printed on CAS card	N/A	CP-IS deployed	information not available	information not available
8. Professionals across care settings made aware of EoL preference information	Patient EoL information held in primary care not availble for secondary care	Information not available	Rely on patient held held copies	N/A	Not available for all patients	information not available	information not available

D2   Current initiatives

D2.1   Many local initiatives are underway which are of direct relevance to the LDR. Some of the key ones with whole-system / PF@POC implications include:

♦   procuring of an EPR (Cerner Millennium) that will initially be accessible to patients for appointment handling and general information via a mobile app. The solution supports SNOWMED-CT coding. (MKUH)

♦   implementing a robust clinical documentation system enabling all clinicians to access digital patient records at POC (MKUH)

♦   a programme looking to adopt GS1 (bar coding and RFID) standard across all operations (MKUH)

♦   Unified communications (VOIP, Web Conf and IM) implementation supporting virtual MDT meetings (MKUH)

♦   Two of the footprint's providers have undertaken data sharing initiatives across East London as part of the WELC collaborative and are actively working to understand how they can share patient data from their main clinical systems with acute, GP and local authority partners. In the WELC situation it is via Cerner's Health Information Exchange (HiE) hosted by Barts Health (SEPT, ELFT and MKUH - in progress).

♦ Shared service provision of CCG and GPIT for Beds and Luton, with a funded and resourced programme of work containing 10 Primary Care IT projects that will enable and help users adopt national directives (EP, ER, SCR, GP2GP, Patient Online, online access to letters & discharge summaries) and local initiatives (apps to access patient services, cross-practice data sharing agreements and cyber security) . The projects are to meet a combination of national targets and locally negotiated adoption targets by 31 Mar 2017 (HBL-ICT).

♦ Digital Health Record solution initiated inc digitisation and archiving of 1M+ healthcare records, creation of portal and integration engine (Beds Hospital).

♦ Under the BCF 16/17 programme, ambitions for multidisciplinary working; enhanced care in care homes; expansion of use of assistive technology and patient activation systems are funded and resourced (Central Beds Council).

D3   Local transformation pilots / initiatives

D3.1   There are also some specific examples of where new care models are being developed to transform care delivery, where local IM&T dependence and the need for multi-provider collaboration is recognised:

♦ A new service is being created to maximise independence through supportive technology (MIST) as new integrated community care and support service across Bedfordshire. Proposal is to move away from the traditional models of care (treat and discharge) to a chronic care model using self-management support. The model is based upon risk stratification in GP practices using a combined predictive dataset tool to identify the very high and high risk of admission to hospital patient population of c.22, 500 patients. (BCCG)

♦ A funding bid is in progress for the provision of a combined clinical and patient portal enabling patients to access and administer their medical record (LDH).

♦ Currently commissioning 111 and OOH services from 5 different providers, a programme is approved to integrate 111 and OOH to provide a more cohesive and seamless service for patients and to align with the national direction to deliver a functionally integrated service (Luton and Beds CCGs).

♦ Link from Acute to GPs through ICE results and requests and the EDT hub acting as a delivery method for patients' letters directly to GP's. Visibility of SystmOne data to support joint services between Bedford Acute Trust and the LCCG for Diabetes, COPD and Musculoskeletal services.

♦ Procurement of Eclipse® live for individual GP practices across Bedfordshire in support of local and national strategies including Everyone Counts: Planning for Patients 2014/5 to 2018/19, Plan for Patients 2014 – 16, Better Care Fund Plan (Risk stratification and admission avoidance) and Bedfordshire Health and Social Care System Plan 2014-19. The main benefits of the initiative are that patients are prevented from being admitted to hospital due to medication related problems, e.g. identifies those who are overdue for screening (BCCG).

♦ By Mar 2017, deployment of SystmOne to MASH team to enable electronic referral to MASH by Primary Care, access to health records for MASH staff involved in Safeguarding Assessments and the reporting to Primary Care of the outcome of any referral to MASH (e g. social services, schools (MKUH)

♦ Pilot with CNWL (Central & North West London) Hospitals to implement shared data entry standards and processes for SystmOne use to enable the creation of shared primary care, community and mental health records (MKUH & MKCCG).

D4   Recent digital achievements

D4.1   In summary, key recent achievements will contribute to the overall vision and delivery aims of the LDR include:

- Provision of free patient and visitor Wi-Fi across the hospital site (MKUH).

- Adoption of mobile devices to support mobile clinical functions such as electronic observations, clinical record access and community midwives including upgrading the wireless networking infrastructure to support further rollout of mobile technology for the next 5+ years (LDH).

- All remote working staff have access to secure mobile working access to SystmOne either through 3G or in areas of poor connectivity via offline working until network re-connection is made (SEPT)

- Successful proof of concept to share electronic AMPH/Shared Care Plans with social services providers (SEPT).

D4.2   The key factors which are currently considered to be constraining the rate of progress towards the vision for digital transformation across the whole system include:

- Sufficient new capital and revenue funding is the main limiting factor to progress to a completely paper free environment

- Some legacy system platforms are inflexible, difficult to integrate

- Complexity of multiple networks, multiple systems, multiple out-of-footprint flows e.g. patient referrals to large London Teaching Hospitals

- Culture / digital readiness and change acceptance amongst workforce (clinicians and non-clinicians)

- Capacity for managing change given other competing operational priorities and pressures

- Connectivity for mobile community staff

- Changing priorities across the heath economy

- Meeting security, data protection, IG requirements

D4.3   Several of these issues are examined further in the sections below.

E   Capability Development

E1   Universal capabilities

E1.1   The LDR guidance identifies 10 "Universal Capabilities" with 25 associated "Aims" which focus on fully exploiting the existing national digital assets (See Table [8]). For each of these capabilities, NHS England expects plans to show "clear momentum" in 2016/17 and "substantive delivery" in 2017/18.

Table [8]. Universal Capabilities and Associated Aims

Capability	Aim
1)Professionals across care settings can access GP-held information on GP-prescribed medications, patient allergies and adverse reactions	a) Information accessed for every patient presenting in an A&E, ambulance or 111 setting where this information may inform clinical decisions (including for out-of-area patients) b) Information accessed in community pharmacy and acute pharmacy where it could inform clinical decisions
2) Clinicians in urgent and emergency care settings can access key GP-held information for those patients previously identified by GPs as most likely to present (in U&EC)	a) Information available for all patients identified by GPs as most likely to present, subject to patient consent, encompassing reason for medication, significant medical history, anticipatory care information and immunisations b) Information accessed for every applicable patient presenting in an A&E, ambulance or 111 setting (including for out-of-area patients)
3) Patients can access their GP record	a) Access to detailed coded GP records actively offered to patients who would benefit the most and where it supports their active management of a long term or complex condition b) Patients who request it are given access to their detailed coded GP record
4) GPs can refer electronically to secondary care	a) Every referral created and transferred electronically b) Every patient presented with information to support their choice of provider c) Every initial outpatient appointment booked for a date and time of the patient's choosing (subject to availability) d) By Sep 17 – 80% of elective referrals made electronically
5) GPs receive timely electronic discharge summaries from secondary care	a) All discharge summaries sent electronically from all acute providers to the GP within 24 hours b) All discharge summaries shared in the form of structured electronic documents c) All discharge documentation aligned with Academy of Medical Royal Colleges headings
6) Social care receive timely electronic Assessment, Discharge & Withdrawal Notices from acute care	a) All Care Act 2014 compliant Assessment, Discharge and associated Withdrawal Notices sent electronically from the acute provider to local authority social care within the timescales specified in the Act

Capability	Aim
7) Clinicians in unscheduled care settings can access child protection information with social care professionals notified accordingly	a) Child protection information checked for every child or pregnant mother presenting in an unscheduled care setting with a potential indicator of the child being at risk (including for out-of-area children) b) Indication of child protection plan, looked after child or unborn child protection plan (where they exist) flagged to clinician, along with social care contact details c) The social worker of a child on a child protection plan, looked after or on an unborn child protection plan receives a notification when that child presents at an unscheduled care setting and the clinician accesses the child protection alert in their record
8) Professionals across care settings made aware of end-of-life preference information	a) All patients at end-of-life able to express (and change) their preferences to their GP and know that this will be available to those involved in their care b) All professionals from local providers involved in end-of-life care of patients (who are under the direct care of a GP) access recorded preference information where end-of-life status is flagged, known or suspected
9) GPs and community pharmacists can utilise electronic prescriptions	a) All permitted prescriptions electronic b) All prescriptions electronic for patients with and without nominations - for the latter, the majority of tokens electronic c) Repeat dispensing done electronically for all appropriate patients d) By end 16/17 – 80% of repeat prescriptions to be transmitted electronically
10) Patients can book appointments and order repeat prescriptions from their GP practice	a) By end 16/17 – Minimum of 10% of patients registered for, and actively accessing (per NHS Mandate 2016/17), one or more online (or through apps) services (repeat prescriptions, appointment booking or access to record) b) All patients registered for online services use them above alternative channels

Table 7.1 and 7.2 above (in section D) summarise the baseline position for Universal Capabilities.

E1.2 A detailed **Universal Capabilities Delivery Plan** is attached as an Appendix to this document. This outlines, across the three areas of the STP footprint (Milton Keynes, Bedfordshire, Luton), the detailed Baseline and Ambitions for Universal Capability delivery in 2016/17 and 2017/18. The STP Digital Programme arising from this LDR will include a key work stream on Provider Digital Maturity and Universal Capabilities (including Primary Care) – this will include developing more substance to the UC Delivery Plan, and overseeing its implementation with organisational partners across health and social care.

E1.3 In summary, the key points of the Plan are:

♦ Many relevant digital enablers are in place in primary care (e.g. SCR, tools for patient access to summary record, booking, prescriptions from GP systems, EPS, ERS), though utilisation and benefits are relatively limited at this stage.

♦ Summary Care Record access is enabled via GP practices, but there is limited access and utilisation in provider settings. Further work needed to support easier direct access for clinicians in key provider units, and to develop use of the SCR with Enhanced Information (which requires explicit consent from patients). (UC no.1)

♦ Wider access to the GP Record for authorised care professionals to be developed through the 1st Phase work on Records Sharing, enabling access to key elements of the record via TPP Symstone or the Medical Interoperability Gateway (MIG) – funding for this is included in the technology bid to the Estates and Technology Fund. (UC no.2)

♦ Greater patient and public engagement needed to drive up access by patients to their GP record, supporting in particular patients with long term conditions. This will act as a good foundation for further patient-facing digital health support through the Personalised Health Record component of the STP Digital programme. (UC no.3)

♦ Significant attention needed to the development and improved use of eReferrals across the BLMK footprint. (UC no.4)

♦ Plans to achieve Discharge data transmission from Providers to Primary Care compliant with the Association of Royal Colleges of Medicine need to be strengthened and actively monitored for delivery across the footprint. (UC no.5)

♦ Acute Trusts report that there is compliance with UC no.6 - Social care receives timely electronic Assessment, Discharge and Withdrawal Notices from acute care.

♦ Child Protection Information Sharing (UC no.7) requires more comprehensive and consistent coverage across the footprint.

♦ End of Life patient preference information is not reliably and comprehensively available to key clinical / care units, and requires significant attention – this could be rapidly improved through access to the GP Record via TPP Systmone or MIG, and / or through ensuring patients towards End of Life have an enhanced Summary Care Record, which contains the key information on EoL preferences. (UC no.8)

♦ Electronic prescribing in primary care is reasonably well established, but could be supported to extend further. (UC no.9)

♦ Capability for patients to book appointments and order repeat prescriptions on-line is comprehensive, but take up is relatively low – further work required to promote use of these services to help reduce workload on practice staff. (UC no.10).

E2   Broader capability deployment

E2.1   This section describes, for each of the seven capabilities directly relevant to PF@PoC, the expected trajectory over a three year horizon to March 2019. Figure [9] summarises what is covered by the seven capabilities, and Table [10] provides examples of some elements which are mainly dependent on functionality *within an individual organisation*, and those that require action *across organisations*. Note that of the seven, four capabilities have significant dependence on whole system working.

**Figure [9]. Scope of PF@PoC Capabilities**

Table [10]. Organisational and Whole System Dependencies

Capability	Organisation-specific dependency, e.g.	Whole system dependency, e.g.
Records, Assessments & Plans	Structured digital records accessed and updated in own systems	Access to clinical information from other organisations
Transfers Of Care	Systems able to generate and integrate referral and discharge information	Standardised approach for transfer / receipt of referrals and discharges
Orders & Results Management	Digital ordering of tests and access to results	May cover to/from primary care
Medicines Management & Optimisation	Digital prescribing by the organisation's clinicians	Limited
Decision Support	Digital alerts concerning patients under the care of the organisation	Limited
Remote & Assistive Care	Remote/virtual clinical consultations between clinician and patient	Remote/virtual clinical consultations between clinicians from different organisations
Asset & Resource Optimisation	Digital tracking and management of internal resources, such as beds, staff, equipment	Limited

E2.2   Figure [11] provides a high-level view of the capability trajectory for most BLMK providers across the footprint, and the current baseline position. The baseline scores are from the DMA. The prospective scores have been estimated by each organisation, based on their proposed systems and capability deployment plans. The whole system scores are derived by aggregating scores from individual organisations. Capability trajectory scores and deployment schedules for each trust, explaining what lies behind the forecast trajectories, are provided in Appendix [C].

Figure [11]. Provider Capability Trajectory
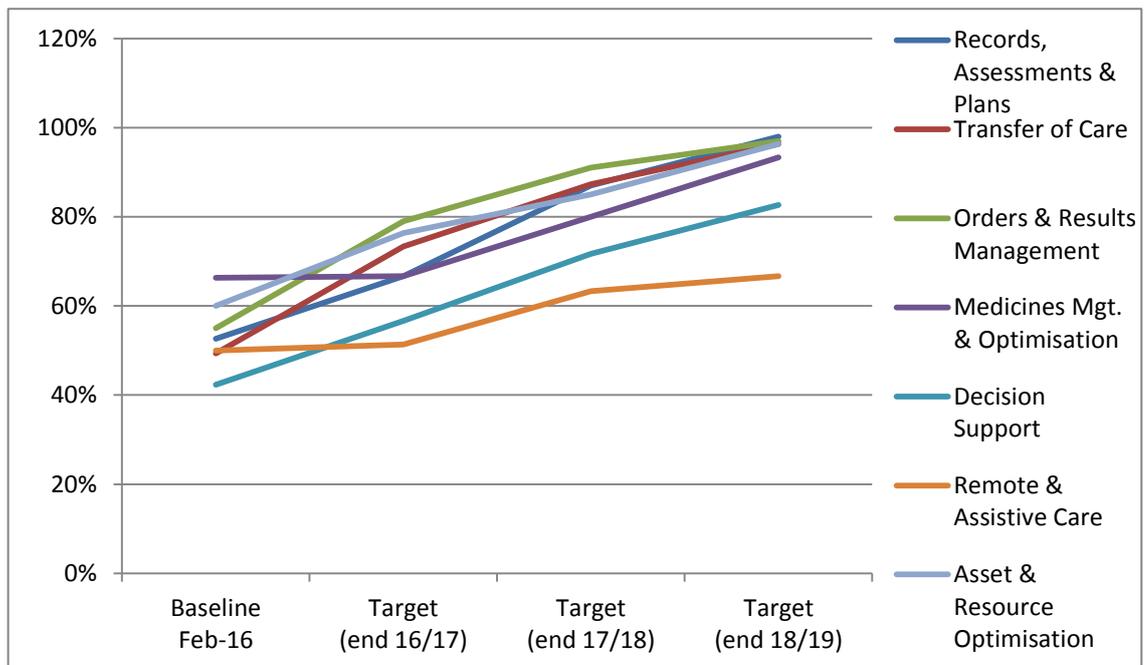
E2.3   Figure [11] shows that:

♦   The overall capability trajectory (MHUK, BH, L&D, ELFT, SEPT) indicates steady and relatively rapid progress is planned over next 3 years across all PF@PoC capability areas

♦   No capability is expected to reach 100% by 2019, but 6/7 categories are expected to exceed 80% by 2019 (*cf* national target of paperless working in primary, urgent and emergency care by 2018)

♦   The weakest capability area for targeted achievement is Remote and Assistive Care – this is the area that has the most modest ambitions reflected in plans.

♦   The weakest capability area currently (baseline position) is Decision Support, but this is targeted to over-take the status of Remote and Assistive Technology.

E2.4   A wide range of developments relevant to the PF@PoC capabilities are proposed across all organisations. Figure [11] shows, in summary only, when key aspects of deployment are expected in relation to each capability category, by organisation.

E2.5   Table [11] suggests there will be more activity in the early years than later – but this probably reflects levels of certainty, although Figure [11] suggests that relatively few of the deployments identified are "aspirational" – most being current/active or planned/committed. It is very likely that there will need to be further components to the STP-wide digital programme to achieve the desired level of digital capabilities and impact.

♦   The information on planned digital capability developments by Providers indicates a wide range of planned / proposed solutions where a common or joint approach would be more coherent and cost-effective. These include:

♦   Methods to develop underline information sharing across care providers: current plans do not yet reflect a system-wide approach. The current initiatives indicated (eg MKUH and the use of the Cerner HIE capability) may present optimum ways forward, but the range of solutions suggests that a strategic options appraisal will be needed in key areas of development.

♦   Patient facing technology such as Patient Portals / Personalised Health Record – from a patient perspective it will not make good sense for a plethora of portals to develop at a provider level; these are best built around a integrated care records model creating a holistic / person central personalised health record.

♦   The detailed deployment charts in Appendix [D] provide insight into some of the major milestones for each organisation / sector over the next three years. For example, MKUH are continuing the deployment of the Cerner Millennium EPR system, adding functionality for patient flow management, order comms, and potential for wider health-system use of the HIE capabilities (Health Information Exchange). Bedford Hospital are progressing with single-sign on integration capability, enabling clinicians to access the multiple clinical systems in the Trust in the absence of a single EPR. A number of providers have clear plans to improve Medicines management and prescribing, for example enabling e-prescribing by Nurse Practitioners in SEPT.

♦   NB Table 12.1 shows a summary by year of the Capability Deployment plans by provider for Records, Assessment, and Plans – the most substantial domain in the digital capability framework. Figure 12.2 shows a summary of the remaining six capability Domains, by Provider over the 3 years of the plan.

Table [12.1]. Capability deployment summary - <u>RECORDS, ASSESSMENTS AND PLANS</u>

	16/17	17/18	18/19
MKUH	clinical notes available digitally	clinical observations / vital signs	Full EPR deployment
	NHS number tracing	care plans available digitally	Minimising duplicate data entry
	integration of e-Referrals into EPR workflows	clinical documentation in structured form	
		potential for other care-provider data to be available via HIE	
BH	Single Sign on to enable access to multiple systems	Digitising notes via EDRM solution (Electronic Document and Records Management)	Patient access to records
	TPP viewer to enable access to GP data		
	Vital signs monitoring		
	Improve access to SCR across Trust		
L&D	Vital signs monitoring	EPR Solution replacing PAS and other Trust systems where appropriate.	
	Patient management of diabetic care	Labs and Microbiology system implementation	
	Patient Flow management system updgrade (ExtraMed)		
	Digital Dictation upgrade to improve patient-data flow to GPs.		
	A&E patient flow management - Symphony upgrade		
	System One to display GP held records (A&E, Community Care and End of Life)		
ELFT	EPR roll-out across Beds MH services (Rio)		
SEPT	EPR roll-out across Beds Community services (Systmone)		

Table [12.2] – Capability Deployment Summary for remaining Domains (2-7).

	MKUH	BH	L&D	ELFT	SEPT
Transfers of care	Clinical workflow & bed management via Cerner EPR. Pre-registration of Ambulance data into EPR Extending digital discharge summaries to GPs, covering A&E, Inpatient and Outpatient discharges		Extending digital discharge summaries to GPs, covering A&E, Inpatient and Outpatient discharges	Care Planning capability e-Referrals across MH (Beds) e-Discharges across MH (Beds)	e-Referrals in Community Services
Orders and Results management	Digital orders functionality to deploy in MKUH via Cerner Millennium Order Comms module	Order Comms paperless for Pathology & Radiology. Extend Order Comms to Therapies, Endoscopy.			
Medicines Management and Optimisation	Barcoding at point of sample collection, deployment of Cerner EPMA Tracking of status of requests via EPMA Access to results via patient's EPR Alerts and audit trail Digital view of existing medications / prescriptions Alerts to drug interactions, duplication, out of range doses etc		Roll out of EPMA across Trust ChemoCare roll-out for cancer prescribing Electronic EDL to local Pharmacies	Roll-out of electronic prescribing and medicines management across all services	e-Prescribing for Nurse Practitioners

	MKUH	BH	L&D	ELFT	SEPT
Decision Support	Alerts on patient preferences, risk etc via EPR Clinical alerts Direction to evidence-based guidance and workflows Automated prompts for next action in care plans EPR support to patient discharge process	PACS replacement		Configuration of Rio to include alerting	Decision Support functionality via Systmone
Remote care	the use of webex and Skype will be explored in the future			Use of skype for patient consultations to be rolled out further	
Asset management	Bed management via EPR Real time patient flow tracking e-Rostering via HealthRosterdigital Automatic upload of vital signs data	Enterprise wide clinic scheduling Asset tracking	Vdi - Remote desktop		

F   Information sharing

F1   Information sharing approach

F1.1   Efficient, effective, secure patient / client information sharing across organisations is fundamental to achieving many of the whole system transformation priorities set out in the STP, as well as to the ambition of PF@PoC.

F1.2   Information sharing amongst clinicians / care workers can take many forms, e.g. the sharing of documents at the transfer of care (such as discharges, referrals), real-time access to specific parts of the clinical record (such as medications), sharing of information such as tasks or notifications as part of the workflow.

F1.3   In addition to sharing data and records amongst professionals, collaboration between professionals from different organisations may involve more interactive digital technologies. Alongside existing methods, i.e. telephony and email, opportunities exist to use, for example, instant messaging, video / web-conferencing, enterprise collaboration tools.

F1.4   The BLMK STP Digital work stream goal is for a model of integrated care records that communicates across all organisations and is available to the citizen. However, currently, there is no specific programme for a unified interoperability project – rather a mix of projects exploiting national and local systems. Hence a strategic options appraisal is needed, involving all the major stakeholders across the footprint.

F1.5   Organisations will be participating in the strategic options appraisal to identify a single approach to providing access to shared records to clinicians and patients. This may result in the implementation of a single patient portal / Health Information Exchange (HIE). Whilst the strategic solution is being pursued, patients access to, and utilisation of electronic records, will be improved in primary care through the existing PAERS project, and tactical scaling up of access and sharing of the primary care record through TPP Systmone and the MIG will occur.

F2   Progress and plans

F2.1   As indicated, a strategic options appraisal is required to identify the optimum way forward to achieve a long-term solution for integrated care records and personalised health records access and care planning tools for patients.

F2.2   As a tactical approach, a joint funding bid under the Estates and Technology Fund 2016/17 has been submitted to support information sharing across Primary Care and with Acute Providers. This will pursue the information sharing capabilities of TPP Systmone, and the Medical Interoperability Gateway (for EMIS and Vision practices).

F2.3   The CCGs will also promote extension of the use of the Summary Care Record with Additional Information (SCR-AI) – this approach, combined steps to achieve Universal Capability 1, will provide a richer level of information for prioritised patients (eg End of Life, Frail Elderly).

F2.4   In the absence as yet of an overarching interoperability strategy, there are many initiatives which support the aim of digital patient information sharing across organisations. The next stages will involve:

♦   Rationalising and consolidating some current / planned initiatives, where appropriate and beneficial

♦   Roll-out and realising further benefits from these initiatives, alongside new imperatives such as access by trusts and GPs to the Child Protection Information Service (CPIS)

♦   Reviewing strategic options for the next 5 or more years

F2.5   Appendix [E] plots, for the next few years, the proposed deployment of information sharing solutions and their usage.

F3   Enablers

F3.1   Progression of the interoperability initiatives will be dependent upon several enablers, including:

♦   Governance – it is recognised that revised governance and accountability arrangements will be required, as part of the overall LDR implementation - see proposals in Section [H2].

♦   Information sharing agreements - building on the STP wide agreement to develop an effective Population Health Model for analytical purposes, the area is already driving forward to determine effective governance with a direct shared care paradigm, learning from other systems where considerable progress has been made.

♦   Key infrastructure components and standards, e.g. NHS number used as the primary identifier, communications networks, structured and coded data – the current status and proposed steps to address the gaps are described in Section G on Infrastructure and Standards, below.

G   Infrastructure and standards

G1   Mobile working

G1.1   Providing a robust, secure mobile IT infrastructure not only enables flexible information access for professionals within their normal place of work, but also supports their ability to work in other care settings, patient homes, residential homes, etc.

G1.2   The necessary mobile infrastructure components include mobile devices (laptops, handhelds, tablets, smart phones), authentication / security, device-specific user interfaces, connectivity (Wi-Fi, 4G), mobile device management.

G1.3   The current status and plans for the mobile working infrastructure across the footprint are summarised here:

♦   Mobile devices – the Provider DMA scores for healthcare professionals being equipped with mobile devices to access clinical applications and information at the point of care are better than the 63% national average see Table [7] below.

♦   Connectivity – The extent to which healthcare professionals have Wi-Fi access to clinical applications across each provider was self-assessed as part of the DMA – see Table [7] below. Different mobile authentication / security solutions are currently deployed across each organisation, with different mobile device management (MDM) products in use.

♦   The Primary Care Forward view programme (report published April 2016) states that it will support and fund CCG's in installing WiFi in all general practices. Currently there is no evidence of how these plans will be actioned in Luton and Beds. In MK, their GP Wi-Fi project has commenced and will deliver Wi-Fi to all sites in 2017; also facilitating access for patients.

♦   Once WI-FI is in place in practices, both Health and Social Care workers will be able to access networks / systems in their own organisation from off-site locations, such as general practices, via VPN.

G1.4   System-wide initiatives to further develop and exploit the mobile working infrastructure include:

♦   Further opportunities for sharing facilities and best practice should be examined including evaluation of mobile devices and MDM solutions. Common aim is for any health /care professional to have secure Wi-Fi access from any site, irrespective of organisation.

Table [13]. Providers current status of mobile devices and wi-fi access to clinical systems

	National Ave (%)	LDH	MKUH	BH	ELFT	SEPT	CNWL	CCS	SCAS	EoEAS
Healthcare professionals are equipped with mobile devices to access clinical applications and information at the point of care	63	75	25	25	75	100	25	75	75	100
Healthcare professionals have wi-fi access to clinical applications across their estate	78	75	100	75	100	75	25	75	50	100

G2 Communications, Networking

G2.1 Currently, all NHS organisations and 4 Local Authorities have full access to the NHS secure network, N3. The council connections are termed as ad hoc connections for secondary use data i.e. not organisation wide and not linked to social care case management systems.

G2.2 All organisations will migrate from the existing N3 service in 2017 to the successor Health and Social Care Network (HSCN) services, capable of supporting both the Health and Social Care system. For Beds and Luton sub-regions this migration work is likely to be handled via the prevailing HBL-ICT support arrangements subject to CCG arrangements. Migration plans for MK to be confirmed.

G2.3 There are no currently no initiatives to develop a STP footprint wide network e.g. a community of interest network (COIN). Shared Network Infrastructure is key theme of the LDR programme, and will result in an initiative to create joined-up network connectivity under the HSCN, enabling easy and quick access to network resources via good band-width connections across the health and care estate.

G3 Standards & Policies

G3.1 The implementation of certain standards and agreed policies across the footprint are essential enablers for sharing information. The current coverage of NHS number in key systems across organisations in summarised in Table [14] below. The current status and plans for the adoption of other key national standards (SNOMED-CT, GS1, Dictionary of Medicines and Devices) is summarised in Appendix G.

Table [14]. % patient / client records which have NHS number

Organisation	% coverage	Comments
BH	86-90	All key systems supporting services are able to use the NHS Number.
LDH	96-100	Routinely used in all systems
MKUH	96-100	Routinely used in all systems
Beds Council	Not available	
Central Beds Council	98%+	Data shared via open API's to/from council to Community Provider and to/from GP and specialist Pallative service
SEPT	99%	only exception being patients without an NHS number e.g. immigrants
Luton Borough Council	Not available	
MK Council	Not available	

G3.2   Each organisation has plans, policies and procedures in place to minimise risks associated with increasing dependence upon technology. The summary, below, outlines the current status, identifies important gaps and some of the proposed steps to address these for each of the relevant areas.

G3.3   Organisations are aware that the National Data Guardian Review of Data Security is underway, and that this is likely to require a review of local plans, especially in relation to responsibilities and data security standards.

G3.4   Data Quality and Information Standards – it is recognised that robust, standardised data must underpin most of the strategic objectives that this LDR aims to address (e.g. sharing of information across organisations, enabling patients / clients to view and add to their own health records). Each organisation has its own data quality improvement initiatives. These should begin to identify areas where data is not fit for purpose, which will need to be fed back to and rectified by the supplying organisation. Wherever they exist, organisations will adopt national / international standards of data recording / coding, and standardised data sets for transactions such as referrals and discharges.

G3.5   IG, Data Protection and Privacy - DMA scores relating to IG are summarised in Table [14]. This shows that the scores for all providers bar one are above the national average of 73%. Information Sharing Agreements and patient consent (to sharing) models need further development and roll-out across the region. Part of this development will be to understand the direction of travel for x-regional GP federated models.

G3.6   Business Continuity and Disaster Recovery (BC&DR) – DMA scores relating to this area are summarised in Table [13]. Seven out of the nine providers scored higher than the national average. In all cases, Disaster recovery processes have been tested and audited.   For most providers, Business-critical digital services are not supported by documented disaster recovery processes, with clear roles & responsibilities assigned and are not supported by IT infrastructure with multi-site redundancy to maintain normal operations in the event of an outage at any particular location. There appears to be scope to tie together the lack of provider level critical digital system business continuity with the opportunity to develop a regional network infrastructure including shared data centres, etc.

G3.7   Decision Support/Clinical Safety - – DMA scores relating to this area are summarised in Table [15]. More than half of the providers (5 out of 9) scored below the relatively low national average of 36%. Two of the Providers (LDH & SEPT) self-assessed with a high score. There could be opportunities for knowledge share across advanced capability providers to help the remaining providers accelerate progress of their capabilities.

Table [15]. DMA scores for IG, Decision Support/Clinical Safety and Enabling Infrastructure (business continuity / disaster recovery)

	National Ave (%)	LDH	MKUH	BH	ELFT	SEPT	CNWL	CCS	SCAS	EoEAS
Information Governance	73	88	75	88	67	100	71	75	75	75
Decision support/Clinical Safety	36	65	8	31	31	70	22	63	22	38
Enabling Infrastructure	68	89	64	45	84	89	43	82	75	88

G4   Opportunities for shared infrastructure

G4.1   It is recognised that there are likely to be potential economic, strategic and operational benefits from further sharing of the IT infrastructure across the footprint beyond the current shared services arrangement that Beds and Luton have via HBL-ICT.

G4.2   In addition to Beds and Luton's operational IT support, HBL-ICT also supports Herts CCG and GPIT and in turn has involvement in Herts' STP and LDR footprint development effort. It's therefore conceivable that potential future opportunities including shared data centres, regional network infrastructure, shared technical support arrangements, joint cloud initiatives, shared access to Wi-Fi services across whole health / social care estate all merit investigation on a cost/benefit basis including understanding the dependencies between them. Milton Keynes GPIT and CCG IT support is provided by GEM and Arden CSU, and consideration will need to be given in the future over potential consolidation of these support models.

G4.3   It is recommended that these opportunities be examined further as part of the STP Recommendations Review and LDR Implementation Programme and be subject to the preparation and presentation of a business case that demonstrates appropriate levels of ROI and a recommended approach to procuring the services.

H   Readiness

H1   Introduction

H1.1   This report outlines ambitious plans and identifies several likely challenges in meeting the plans. Therefore, to succeed the LDR Implementation Programme requires strong leadership and clarity regarding governance and accountabilities.

H1.2   In order to deliver the anticipated benefits, there needs to be a robust approach to change management and to benefits management.

H1.3   This section outlines the approach that will be taken to these issues, as well as highlighting overall resource requirements / funding priorities.

H2   Leadership, engagement and governance

H2.1   A Digital Programme Board, clinically chaired and driven with patient representation, will lead the creation and delivery of the STP-wide digital programme as reflected in this LDR and the STP Digital work stream. This partnership board, with membership from across health and care organisations, will have accountability to the BLMK STP Steering Group, and with links to Health and Wellbeing Boards across the footprint. The STP digital programme will form part of a wider matrix / Portfolio model for the delivery of the STP goals. Figure [16] outlines the provisional governance structure relating to the digital programme:

Figure [16]. Possible future LDR Governance Structure
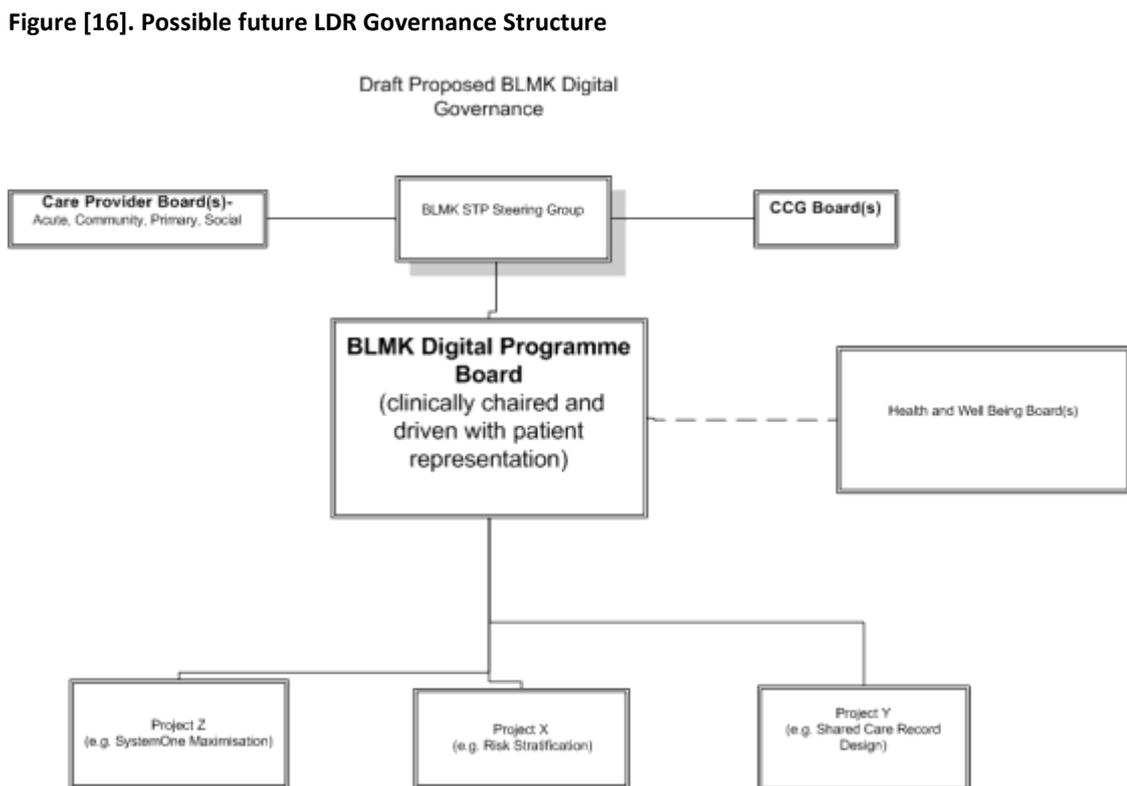
H2.2   N.B. Those PF@PoC goals which relate primarily to developments within an organisation will continue to be managed as part of that organisation's IM&T Programme. Individual organisations (including CCGs for GPIT) will need to maintain governance arrangements for the planning and delivery of IM&T programmes, and be active partners in the formation and delivery of the STP wide digital programme.

H2.3   National LDR Guidance para 6.14 states "LDRs should provide an overview of the programme structure for 16/17 that will be delivering on the Paper-free at the Point of Care ambition, identifying the programmes / projects and their key focus." Projects / work streams will be needed to cover ALL the priorities identified including : the various strands of the Universal Capabilities, whole system elements of general capabilities, including information sharing, patient/client/citizen-facing technologies, whole system analytics.

H2.4   The self-assessment of IM&T leadership and governance of trusts, as defined in the recent DMA exercise, is summarised in Table [17]. In relation to both Digital Leadership and Governance all providers (bar East of England Ambulance Service - scoring 0% and 55% respectively) have scored themselves higher than the national average.

Table [17]. Trust DMA scores for Leadership and Governance

	National Ave (%)	LDH	MKUH	BH	ELFT	SEPT	CNWL	CCS	SCAS	EoEAS
Leadership	77	88	75	88	67	100	71	75	75	75
Governance	74	100	85	70	80	100	85	75	75	55

H2.5   Most providers have a designated CIO. Those that don't have alternative arrangements to cover key aspects of the role. Most organisations have appointed a CCIO or equivalent, but there is need for a more proactive programme of support and networking across the CCIO community, to support and engender strong clinical / care professional leadership of the digital transformation needed across BLMK.

H2.6   Engagement with patients / clients and the public – this is a fundamental area for significant development, and is included as a priority for 2016/17 to develop an engagement approach with patient / user groups, including Health Watch and others, that helps to co-produce the methods of information sharing and consent models.

H2.7   There appears to be somewhat of a disconnect between the self-assessed strong digital leadership and governance and the relative immaturity, low adoption or even non-existence of digital solutions. This gap is less pronounced within the control boundaries of each provider than it is when seeking evidence and progress of significant x-provider digital solution adoption.

H3   Change management & benefits management

H3.1   "Technology will only succeed if it supports new ways of working. Interventions have failed where technology has simply been layered on top of existing structures and work patterns, creating additional workload for health care professionals", *Delivering the Benefits of Digital Health Care*, Nuffield Trust (Feb 2016)

H3.2   Hence achievement of the aims set out at the beginning of this report is critically dependent upon changes to relationships, to workflows and to pathways, with appropriate clinical engagement, training and support.

H3.3   All organisations have arrangements in place to ensure that IM&T / Digital developments are aligned with organisational service priorities, and linked to change management and benefits management programmes. These include ensuring that;

♦   All developments have business cases which clearly articulate outcomes and benefits, and which are subject to defined approval processes

♦ All projects are managed using the PRINCE 2 methodology (AGILE may be most appropriate for many digital initiatives), and include change management and benefits management activities

♦ The Digital Programme Board oversees the whole programme of system-wide IM&T / digital developments, to ensure alignment with organisation objectives and with service transformation programmes, and that benefits are realised.

H3.4 The successful design and deployment of six significant priority areas as defined in this LDR across a region that has had little history of collaborative working is a key risk and management challenge. In addition to requiring an extension of existing governance arrangements, it will also require the adoption of suitable Programme Portfolio and IT Enterprise Architecture Design methodologies such as Managing Successful Programmes (MSP) and TOGAF. The associated investment in effort and cost of adopting such methodologies provide payback in the form of better designs, improved visibility of risks and dependencies, improved utilisation of resources and re-work avoidance.

H3.5 MSP would provide an overarching portfolio programme framework including PMO, Risk Management, Change Management & Communication, Benefits Realisation Strategy and Plans - baseline and progress reporting, etc.

H3.6 TOGAF would provide industry standard methods to address cross- enterprise business and IT needs, including managing changes to enterprise architecture. It provides proven methods for managing a large number of requirements across many stakeholders, a set of architecture views (business, data, application, technology) and a set of recommended deliverables.

H3.7 Organisations have implemented a range of initiatives to build the digital skills of their workforces. Examples include;

♦ Training provided for all new clinical and non-clinical systems, covering PC skills, MS Office, Clinical Systems and IG compliance

♦ IT / Digital champions in each service / business unit

♦ Business as usual (BAU) training available for new staff

♦ Intranet Learning hub for systems – e.g. User Guides, How To's, e-learning

♦ Clinical Guidance Senior Administrator carries out training and presentations to practices regarding local digital initiatives, e.g. DXS implementation.

♦ Key training hints, tips and help advertised in local ICT / digital newsletters

♦ Innov8 Digital Toolkit to encourage staff to develop new systems with digital at their core.

H3.8 Given that the analysis in sections D and E has identified workforce readiness and change management as critical to delivering the required outcomes, the approach to these issues across the whole footprint should be re-evaluated, and opportunities for collaboration considered.

I Moving forward

I1 Gaps and prioritisation

I1.1 The above analysis indicates that the individual organisations and the footprint as a whole have made significant progress in relation to many of the issues considered in this LDR. However there clearly is some way to go to address the gaps revealed concerning:

♦ Strategic goals of PF@PoC and of universal information sharing capability – to achieve the planned capability trajectories outlined in Figure [10], and to make further progress with the interoperability initiatives outlined in Section [0]

◆ Universal capabilities - mainly by realising further benefits from existing systems and initiatives

◆ Other strategic needs - especially citizen / patient / client-facing technologies, and whole system analytics

◆ Essential underpinning infrastructure components, e.g. mobile capabilities.

I1.2 Table [19] summarises some of main gaps that appear to exist between the current situation and the strategic goals (not just the shorter-term Universal Capability targets) outlined in Section C.

Table [19]. Gaps in relation to strategic goals

Patient / Client Records (includes Universal Capabilities, PF@POC, Information Sharing / Interoperability, professional digital collaboration)	• No comprehensive interoperability / integrated care records solution plans • Extent of access and use of SCR in provider settings. • Some providers low at present on specific digital domains, eg order management, transfers of care, medicines optimisation.
Citizen / Patient / Client-facing Digital	• Use of remote & assistive care technologies patchy and small scale • Diversity of sector/condition-specific patient portals, but no overarching strategy/plan • Limited access by patients to their detailed digital records • Limited use by patients of online services such as appointment booking
Analytics & Decision Support	• Not routinely using primary care data for whole system intelligence • ACG risk stratification tool becoming available in Bedfordshire CCG, not yet widely used but with scope to support integrated Population Health Analytics. • Limited clinical decision support in trusts, but with some key capabilities planned in some providers.
Infrastructure	• Mobile IT access limited for some • Limited WiFi coverage in practices, but planned coverage in Milton Keynes primary care. • Little sharing of technical resources / expertise across organisations
Readiness, Governance	• LDR Implementation Programme not yet defined (to be based on this LDR) • General IT skills of workforce need development

I1.3 Many different current and proposed initiatives are referenced in this report and its appendices. Although each has a role to play in meeting the stated goals, they need to be prioritised.

I1.4 The criteria for agreeing priorities across the footprint include:

◆ Universal capabilities - is this initiative essential to achieving one or more of these?

◆ STP – are there specific objectives that will rely upon this initiative?

◆ Whole system working – will this initiative directly or indirectly facilitate a shared approach across the footprint (and possibly beyond)?

♦ PF@PoC - is this initiative an essential enabler within a single organisation? Across several organisations?

I1.5 Furthermore, in determining overall priorities, clearly it is essential to ensure current and future ongoing information and IT operational needs are adequately resourced, along with more general enabling activities such as addressing the "digital culture" and basic digital skills of the workforce.

I2 Emerging priorities

I2.1 With reference to the gaps and by applying the above criteria, those initiatives that are considered particularly high priorities within the LDR Implementation Programme for 2016/17 and for 2017 and beyond are summarised in Table [20].

Table [20]. Priorities

	Strategic focus & goal	2016/17	2017/18	2018/19
Governance, Engagement, leadership	Create and sustain a system-wide collective-leadership approach to designing and delivering an STP-wide digital programme, focused on the prioritised digital developments that will have greatest impact on the '3 gaps'. Develop and support clinical engagement in digital programme design, delivery, and benefits realisation, through an evolving CCIO network and programme of clinical / professional engagement. Ensure genuine patient / client & public engagement in the development and delivery of the digital programme, especially around information sharing and consent models.	Establish governance for leadership of a system-wide STP Digital Programme, accountable to the STP board. Define the programme and commission initial work-streams (see below) Develop the CCIO network across the BLMK footprint, ensuring that CCIOs are appointed in all Providers, with a support programme and network established. Establish STP-wide Information Governance forum with sufficient seniority and expertise to guide the creation of a robust information sharing & consent model, with patient involvement. Create Information Sharing Architecture for Shared Care Record developed including sign-up by all care providers, including general practice. Agreement signed and communicated with public and patients.	Extend and deepen clinical / professional engagement to support change management and adoption of new ways of working to realise benefits. Continue development of patient & public engagement to strengthen quality of patient-facing technology support.	

	Strategic focus & goal	2016/17	2017/18	2018/19
Patient / client records	Creating integrated care records capability across the BLMK footprint, enabling care professionals to work collaboratively across organisational and physical boundaries – with links to PHR functionality (see below). Development of digital operating model to enable Primary Care at scale/ primary care hubs, enabling shared EPR access and patient booking.	Undertake strategic options appraisal to identify optimum way forward to create integrated records capability, taking account of existing systems and market intelligence for alternatives (eg integration portal). Initiate clinical and public engagement in the use case and requirements for shared care records. Implement tactical solutions for records sharing via capabilities of existing systems (phase 1 integrated care records programme).	Implement stage 2 of interoperability programme, creating a long term foundation for records sharing capability across care professionals – solution option to be selected as result of options appraisal in 16/17 (and BC / sourcing of funding).	Extend and enhance records sharing capability, through a combination of additional functionality (eg care plans) and / or connections with new care settings – to be determined by programme phasing choices.
Citizen / Patient / Client-facing Digital (Personalised Health Record)	Creating the capability for patients to directly access and utilise a patient-centric care record, engage in care planning with professionals, and support their self-management for LTCs. Integrated with or delivered via an integrated care record (see above). Extend digital access for patients to primary and urgent care services, supporting triage and demand management.	Undertake strategic options appraisal to identify optimum approach to creating PHR functionality supporting self-care, care-planning with professionals, and ability to upload patient-generated data. Pilot and implement methods of supporting web-based patient-access to primary care, supporting triage and demand management.	Implement stage 2 of PHR programme, creating a long term foundation for patient access to shared care & planning tools – solution option to be selected as result of options appraisal in 16/17 (and BC / sourcing of funding).	Extend and enhance PHR through a combination of additional functionality (eg joint care planning with health & care professionals) and interfaces with consumer digital health devices.
Analytics & Decision Support	Develop integrated Population Health Analytics capability, integrating pseudonymised record-level data from across care-settings, and providing a basis for modelling, risk stratification, and pathway planning & management. Ensure appropriate clinical decision support is utilised or accessed from within EPR systems, enabling guided clinical decision-making and referral management.	Procurement of a common platform for data management and risk stratification. Address security and consent model issues for the integration and use of pseudonymised record level data.	Extend and enhance functionality through additional data set integration.	

	Strategic focus & goal	2016/17	2017/18	2018/19
Infrastructure	Develop network connectivity infrastructure that enables care professionals to connect to a high-speed network and access their own resources from across the health and social care estate, and enable patients to access free wifi from any site. Create a mobile-enabled workforce with access to devices and mobile-friendly software and applications, including for shared care records.	Review current network infrastructure and connectivity across providers, primary care and social care, and undertake options assessment and preparation of business case and draft funding bid to utilise the Health and Social Care Network (HSCN – successor to N3).	Implement and complete phase 1 Network infrastructure programme, connecting main health and social care providers.	Extension of network connectivity under the HSCN to all care settings including care homes and hospices.
Universal Capabilities	Create a firm foundation for digital health through a high level of achievement of the Universal Capabilities, providing core capabilities for records access and supporting transfers of care.	Include within the scope of the Digital Programme the oversight for achievement of the Universal Capabilities across providers / primary care by end 2017/18. Establish coordinated programme focused on UC capability, ensuring accelerated progress across Providers, Primary Care and Social Care.	Continue and complete achievement of Universal Capabilities across health settings.	Extend Universal Capabilities as appropriate to wider care settings such as care-homes and hospices.

Appendices (in separate document)

Appendix A – Glossary

Appendix B – Universal Capabilities Delivery Plan

Appendix C - Capability deployment trajectory – secondary care

Appendix D - Capability deployment Schedule

Appendix E - Information sharing approach

Appendix F - Use of mobile technologies

Appendix G – Use of national standards