Limerick, Ireland
Smarter Cities Challenge report

Contents

1. Executive summary

The challenge: Assess current activities and develop a set of recommendations enabling Limerick City and County Council (LCCC) to predict and respond to the needs of senior citizens through better management of shared information.
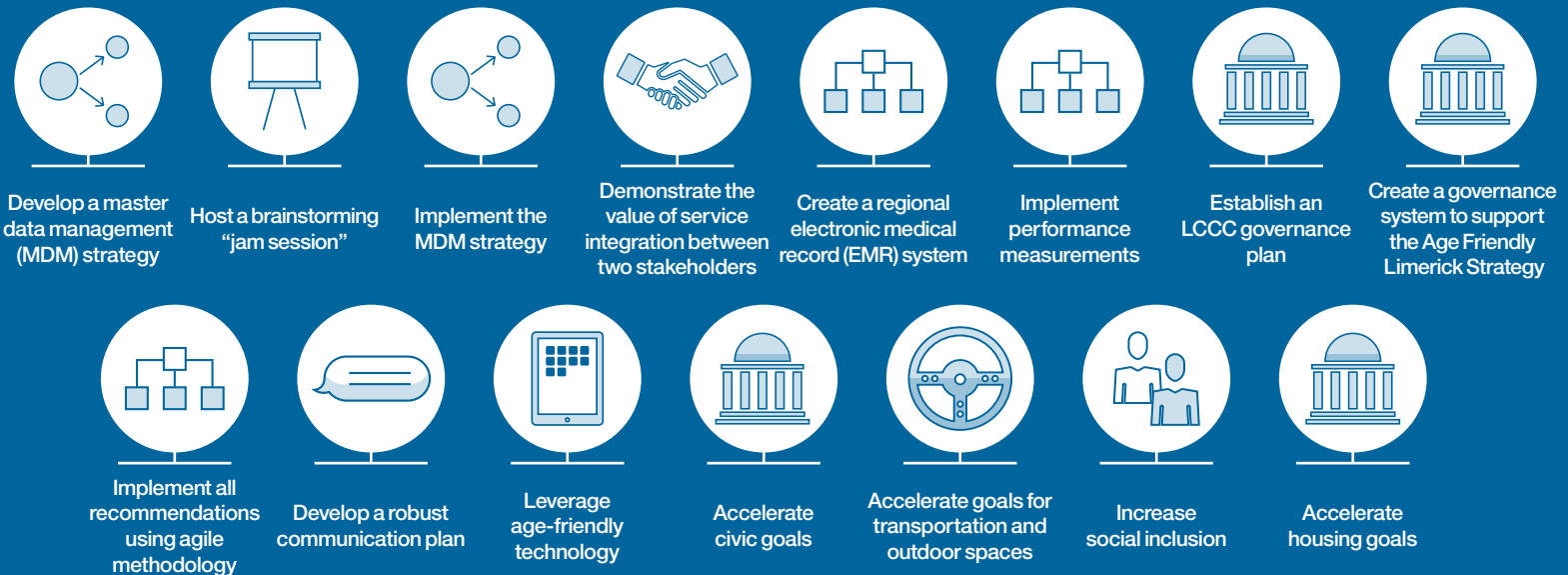
Context
- While almost 50% population is under 35 years, Limerick City and County have a large and rapidly growing population of senior citizens
- In Ireland, senior citizens (people older than 65) are expected to increase more than 260% by 2046. In Limerick, the population of older people could increase from 23,313 (in 2011) to 58,283 in 2036.
- Stakeholders validated the need for an "age-friendly" strategy
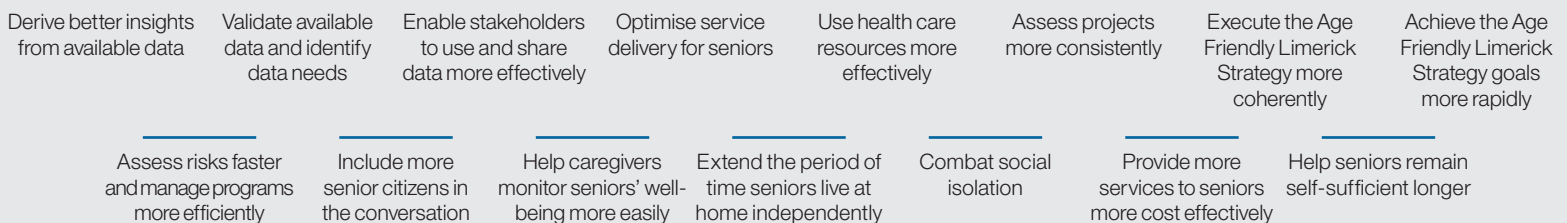- Three key needs: develop insights, accelerate existing projects and strengthen governance

Findings
- Accelerate goals for transportation and outdoor spaces, social inclusion, housing and civic participation
- Develop new initiatives for master data management, governance, communications, electronic medical records and smart cards

Summary of recommendations

| Develop a master data management (MDM) strategy | Host a brainstorming "jam session" | Implement the MDM strategy | Demonstrate the value of service integration between two stakeholders | Create a regional electronic medical record (EMR) system | Implement performance measurements | Establish an LCCC governance plan | Create a governance system to support the Age Friendly Limerick Strategy |

| Implement all recommendations using agile methodology | Develop a robust communication plan | Leverage age-friendly technology | Accelerate civic goals | Accelerate goals for transportation and outdoor spaces | Increase social inclusion | Accelerate housing goals |

Expected outcomes

| Derive better insights from available data | Validate available data and identify data needs | Enable stakeholders to use and share data more effectively | Optimise service delivery for seniors | Use health care resources more effectively | Assess projects more consistently | Execute the Age Friendly Limerick Strategy more coherently | Achieve the Age Friendly Limerick Strategy goals more rapidly |

| Assess risks faster and manage programs more efficiently | Include more senior citizens in the conversation | Help caregivers monitor seniors' well-being more easily | Extend the period of time seniors live at home independently | Combat social isolation | Provide more services to seniors more cost effectively | Help seniors remain self-sufficient longer |

Vision
By implementing the recommendations in this report during the next three to five years, and by continuing to implement the Age Friendly Limerick Strategy and other best practices, Limerick will become a Smarter City that cares for and includes all of its senior citizens in civic life.

2. Introduction

A. The IBM Smarter Cities Challenge

By 2050, cities will be home to more than two-thirds of the world's population. They already wield more economic power and have access to more advanced technological capabilities than ever before. Simultaneously, cities are struggling with a wide range of challenges and threats to sustainability in their core support and governance systems, including transportation, water, energy, communications, healthcare and social services.

Meanwhile, trillions of digital devices, connected through the Internet, are producing a vast ocean of data. All of this information — from the flow of markets to the pulse of societies — can be turned into knowledge because we now have the computational power and advanced analytics to make sense of it. With this knowledge, cities could reduce costs, cut waste and improve efficiency, productivity and quality of life for their citizens. In the face of the mammoth challenges of economic crisis and increased demand for services, ample opportunities still exist for the development of innovative solutions.

In November 2008, IBM initiated a discussion on how the planet is becoming "smarter". By this it meant that intelligence is becoming infused into the systems and processes that make the world work — into things no one would recognise as computers: cars, appliances, roadways, power grids, clothes and even natural systems, such as agriculture and waterways. By creating more instrumented, interconnected and intelligent systems, citizens and policymakers can harvest new trends and insights from data, providing the basis for more informed decisions.

A Smarter City uses technology to transform its core systems and optimise finite resources. Because cities grapple on a daily basis with the interaction of water, transportation, energy, public safety and many other systems, IBM is committed to a vision of Smarter Cities® as a vital component of building a Smarter Planet®. At the highest levels of maturity, a Smarter City is a knowledge-based system that provides real-time insights to stakeholders and enables decision-makers to manage the city's subsystems proactively. Effective information management is at the heart of this capability, and integration and analytics are the key enablers.

Intelligence is being infused into the way the world works.

The IBM Smarter Cities Challenge® contributes the skills and expertise of top IBM talent to address the critical challenges facing cities around the world. We do this by putting teams on the ground for three weeks to work closely with city leaders and deliver recommendations on how to make the city smarter and more effective. More than 132 cities have been selected to receive grants since 2010. The Smarter Cities Challenge is the company's largest philanthropic initiative, with contributions valued at more than $66 million to date.

The City of Limerick, Ireland, was selected through a competitive process as one of 17 cities to be awarded a Smarter Cities Challenge grant in 2015 – 2016.

During a three-week period in May of 2016, a team of five IBM experts worked in Limerick to deliver recommendations around key issues for Conn Murray, Chief Executive of Limerick City and County Council (LCCC), in support of the Age Friendly Limerick Strategy.
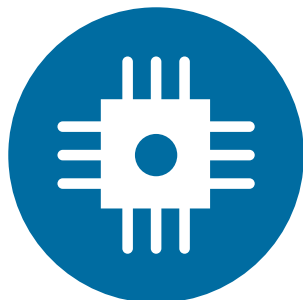
Instrumented
We can measure, sense and see the condition of practically everything.

Interconnected
People, systems and objects can communicate and interact with one another in entirely new ways.

Intelligent
We can analyse and derive insight from large and diverse sources of information to predict and respond better to change.

Figure 1: Instrumented, interconnected, intelligent

B. The challenge

The Smarter Cities Challenge in the City and County of Limerick was a proactive assessment of how to respond the rapid growth of senior citizens in the local population. Limerick has already launched several programs to address this issue, including Age Friendly Limerick: Strategy 2015 - 2020, and requested assistance with additional recommendations. The challenge was:

Assess current activities and develop a set of recommendations enabling LCCC to predict and respond to the needs of senior citizens through better management of shared information.

3. Findings, context and roadmap

A. Findings and context

The IBM Smarter Cities Challenge team conducted more than 45 interviews with a broad range of Limerick stakeholders, including members of the Older People's Council, Health Service Executive, Irish Smart Ageing Exchange and the University of Limerick, among others. The City's current approach, which is outlined in the Age Friendly Limerick Strategy, covers eight key issues that map to similar work done by the World Health Organization.[1] These include the following:

1. Civic participation and employment
2. Community support and health services
3. Communication and information
4. Social participation
5. Respect and social inclusion
6. Housing
7. Transportation
8. Outdoor spaces and buildings

The stakeholders the IBM team spoke to clearly validated the need for an "age-friendly" strategy and noted that progress is being made in several areas. During these interviews, three overarching needs emerged: the need to develop more effective insights, the need to accelerate existing projects and the need to optimise activities and projects through stronger governance.
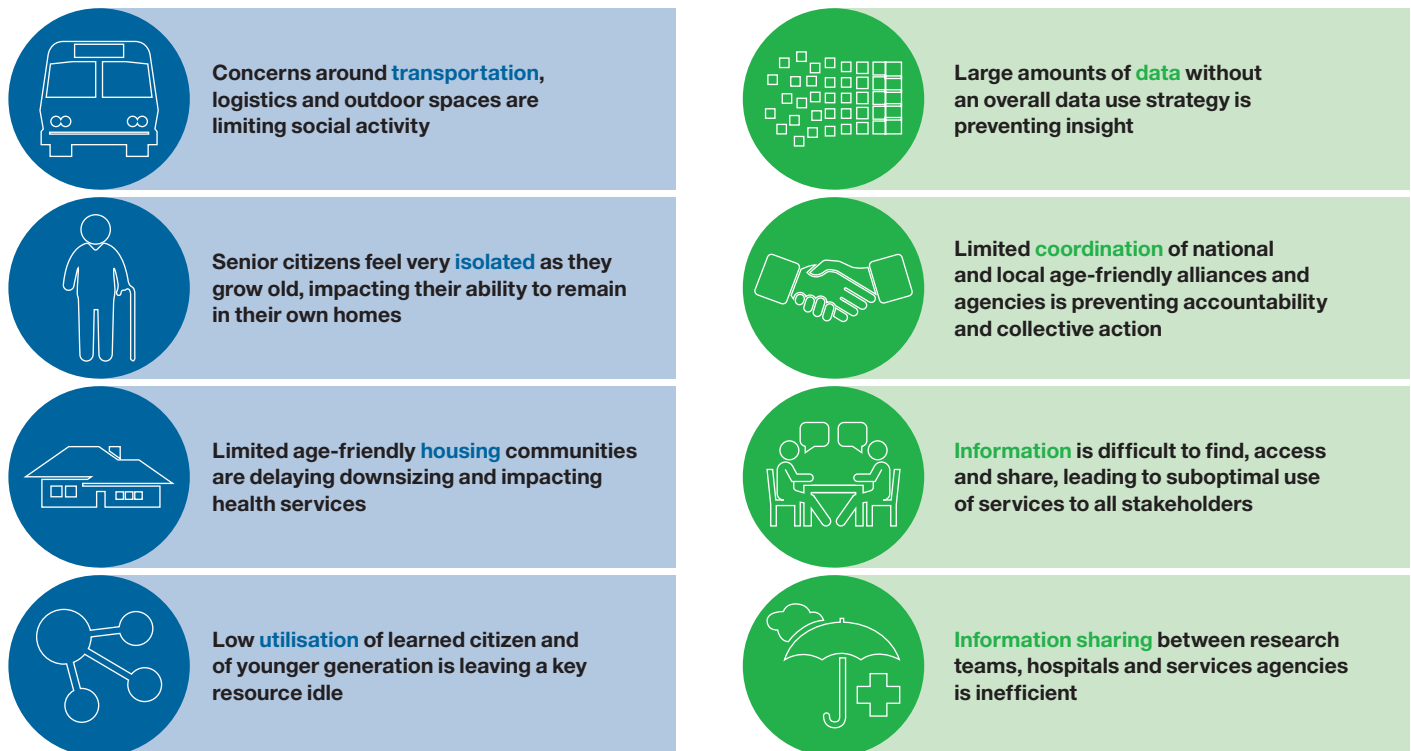
Concerns around **transportation**, logistics and outdoor spaces are limiting social activity

Large amounts of **data** without an overall data use strategy is preventing insight

Senior citizens feel very **isolated** as they grow old, impacting their ability to remain in their own homes

Limited **coordination** of national and local age-friendly alliances and agencies is preventing accountability and collective action

Limited age-friendly **housing** communities are delaying downsizing and impacting health services

Information is difficult to find, access and share, leading to suboptimal use of services to all stakeholders

Low **utilisation** of learned citizen and of younger generation is leaving a key resource idle

Information sharing between research teams, hospitals and services agencies is inefficient

Figure 2: Summary of findings

Areas of acceleration

The IBM team heard from several stakeholders about many valuable projects that are already underway in support of the Age Friendly Limerick Strategy. These include the following:

- **Transportation and outdoor spaces** — These two factors are limiting the activity of Limerick's senior citizens. Public transportation and accessible walking areas are what enable senior citizens to access critical health services and to engage in social activity. Challenges include the lack of coordinated bus schedules, poor bus availability, a lack of bus stop shelters and insufficient parking spaces near public transportation. These factors are forcing seniors to stay at home and will likely compromise preventative health care services (due to lack of attendance) and social interactions, increasing the likelihood of isolation.

- **Social participation, respect and inclusion** — There are many documented benefits of social participation, respect and inclusion, including increased happiness, less need for health services and prolonged independence. Social isolation is an especially big fear among senior citizens. This is consistent with several other concerns, such as limited transportation choices, fear for personal safety and a lack of age-friendly gathering spaces. As a result, there is significant demand to expand community centres, day care centres and active retirement centres, all of which can serve as social gathering areas.

- **Housing** — Senior citizens want to stay in their own homes as long as possible, but a lack of age-friendly housing is a barrier. Two areas of focus can help address this concern. First, the City needs to make existing senior housing more age-friendly with increased access to preventative health care, which reduces the overall need for health services, and improvements, such as first-floor bathrooms and handrails, that help reduce accidents as well as subsequent hospital visits and transitions to nursing care facilities. Secondly, there are concerns about the availability of appropriate housing for seniors. Accelerating the development of age-friendly communities, rather than building individual homes, would increase the likelihood of senior citizens moving into these communities. Additionally, senior communities help increase social interactions, make support services more accessible and mitigate safety concerns. Likely results include more efficient use of housing and reduced demand for health services.

- **Civic participation** — Senior citizens want to remain engaged with the community, and university students want to help them do this. In both cases, the barrier to action is readily accessible information. Academic institutions are eager to get involved, and their resources could be used more effectively to staff community centres and assist with technology education. Seniors are seeking more opportunities to be involved in the community and could serve in mentorship roles, learn how to run small businesses or become more active in sports leagues. Finding opportunities to align the needs of these two groups will help address a number of issues simultaneously.

New findings

The IBM team identified several new findings during stakeholder interviews. These include the following:

- **Master data management (MDM) strategy** — Meeting with stakeholders across a variety of functions, it became clear that each one manages a different set of relevant information. Yet each group works in its own silo without a clear MDM strategy. An overarching **MDM strategy** would enable these teams to derive better insights from data, accelerating the implementation of the Age Friendly Limerick Strategy. If this data were collected and analysed, it would show more clearly how issues affect the community and allow stakeholders to replace assumptions with evidence-based insights. An MDM strategy will not only help the City and County of Limerick but also set an example for what other cities can achieve.

- **Governance strategy** — Merging Limerick City and County Councils into one organisation resulted in significant gains, such as eliminating redundant positions and coordinating efforts across activities in which both organisations are key stakeholders. Now, the need is to bring all related agencies together as "one Limerick". Today, there is limited coordination among national and local age-friendly alliances and agencies, which prevents collective action. A formal **governance strategy** and performance management plan will fully optimise these efforts. A coherent strategy that includes key performance indicators (KPIs) to assess implementation would further improve the use of existing resources by reducing duplication of effort and bolstering services that are performing well.

- **Communication plan** — While the City offers many services, they are provided in a fragmented manner that makes it difficult for senior citizens to find and share information about them. **A communication plan** will help coordinate this disparate information. Simple improvements, such as a large-font printed events calendar delivered to a central location, such as a church, would improve information sharing and make better use of available services.

- **Electronic medical records and smart cards** — To facilitate information sharing between hospitals, the Health Service Executive (HSE) needs to develop an **electronic medical record** (EMR) system. The same data could be used to develop a **smart card** for senior citizens that stores relevant personal data for health care providers. Both will require a common consent form. There are significant insights to be derived from consolidated digital medical information. Providers will know which prescription medicine a patient is taking, for example. Consolidated data could also improve the diagnostic capabilities of clinicians or enable data mining that indicates where scarce resources should be allocated. In case of emergency, the smart card could be used by other agencies to identify the individual's health care issues and deliver the right treatment at the right time. These changes would reduce both costs and wait times, improving the overall health care experience for senior citizens.

B. Roadmap

Based on these findings, the IBM team developed recommendations to integrate services for senior citizens, improve communication about these services and make them easier for all senior citizens to access. The recommendations are organised within three pillars:

1. Enablement through insight
2. Acceleration
3. Optimisation through governance

Enablement through insight

The IBM team's findings repeatedly showed there is a wealth of available data, but it remains unstructured and stored in disparate locations. There is a strong need for clearer insight into this data. Dispersed, isolated pockets of data simply will not support the seamless integration of various initiatives. The roadmap includes the following steps to help achieve sharper insights:

- Design and execute a "jam session" to gather input for the MDM strategy and unify stakeholders.
- Create an MDM strategy. This strategy should indicate what types of data are available and how it could be aggregated, shared, managed and, most important, secured and analysed to generate meaningful insights.
- Implement the MDM strategy through a clearly defined and tightly scheduled plan that provides a foundation for service integration.
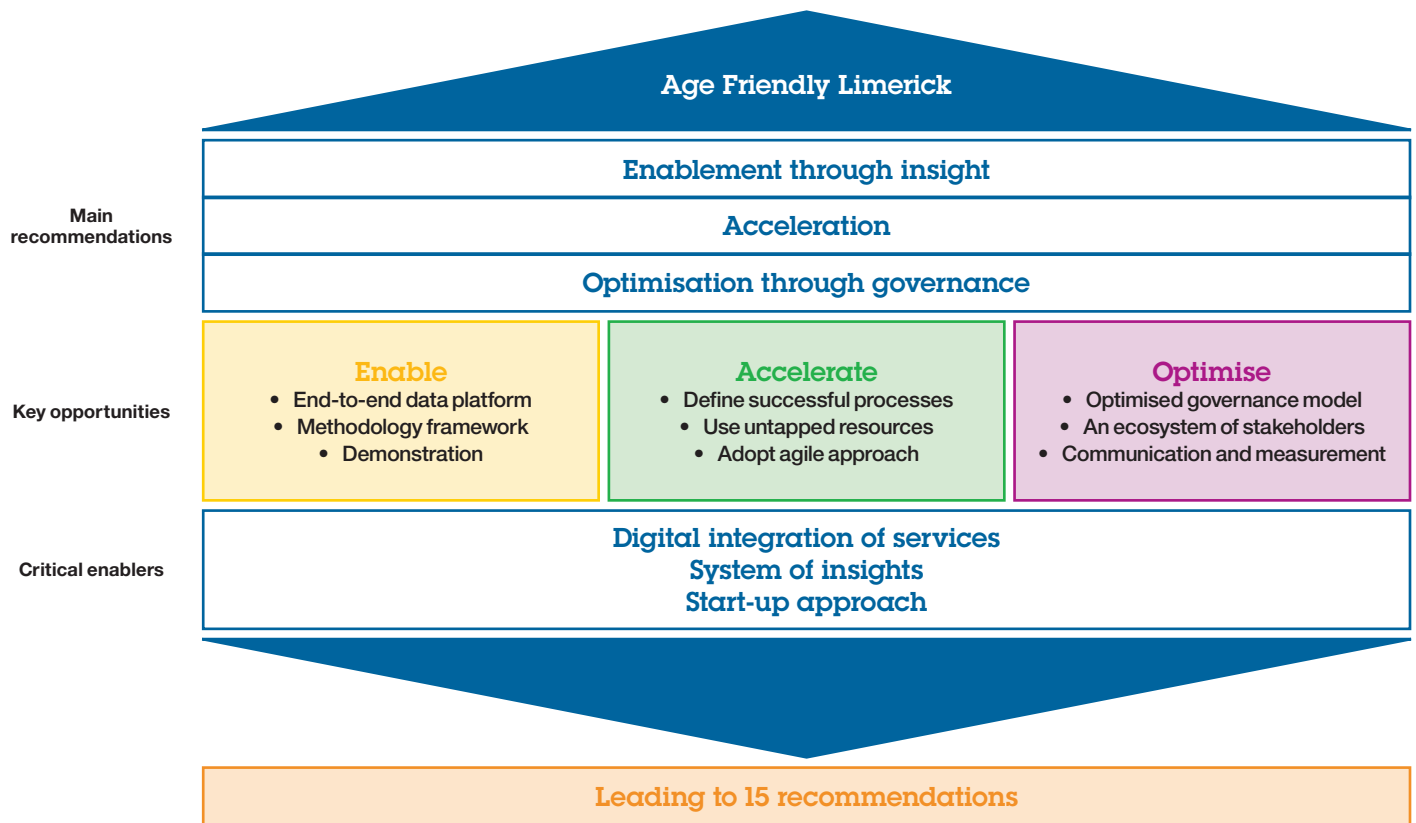
Figure 3: How the recommendations were developed
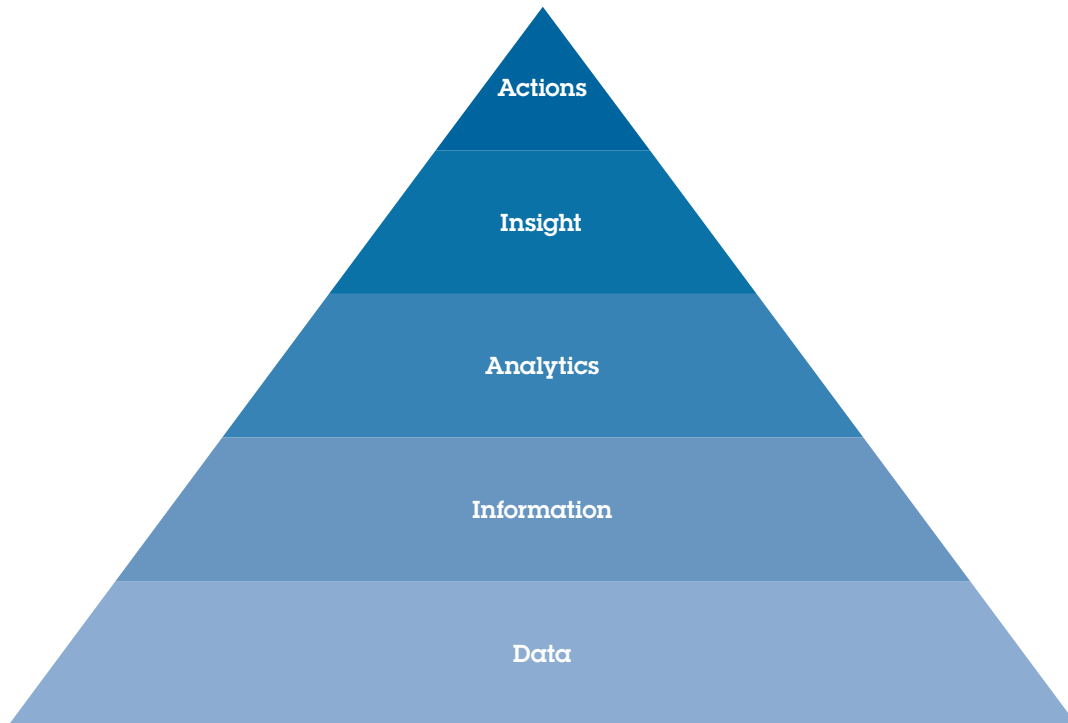
Figure 4: How analytics transforms data into actionable insight

A demonstration of service integration is required to show how different agencies can share sensitive, private information and use it to develop new services for senior citizens. The demo should exhibit the integrity and reliability of the MDM strategy and help the senior population identify the services to which they are entitled. This demo should eventually become a full service integration scheme that enables all stakeholders and providers to develop needed services as part of LCCC digital strategy.

While insights gained through the MDM plan are relevant to all aspects of LCCC, they apply specifically to health services and the overall well-being of local senior citizens. Barriers to data are compromising services and affecting the overall health care experience. The IBM team recommends creating a common consent form that grants providers access to the data they need. This common form would eliminate a perceived roadblock to using private data in compliance with data privacy laws and regulations in the EU and Ireland.

After the data becomes available, the City should deploy a common EMR system for the regional health care delivery ecosystem. Integrating these data sets will lead to population health insights and enable health care providers to provide more-informed diagnoses. The IBM team recommends issuing "smart cards" to senior citizens that will store their health care information and enable all health care providers, An Garda Síochána (the police force) and LCCC to access this data more easily and, ultimately, deliver health care services faster and more effectively.

Acceleration

The Age Friendly Alliance[2] has outlined a detailed strategy to provide services to senior citizens by 2020 and is taking significant steps towards achieving this vision. While the group is succeeding, the fragmentation of its efforts is not being leveraged across all relevant organisations and agencies. Some services are working very well locally in select rural communities, driven by volunteer efforts or dedicated local organisations. The IBM team recommends using an "agile" approach to identify best practices and replicate them across all aspects of this strategy. This will require a governance process to manage activities and measure outcomes. Finally, the IBM team recommends using multiple media to communicate progress to all members of the community.
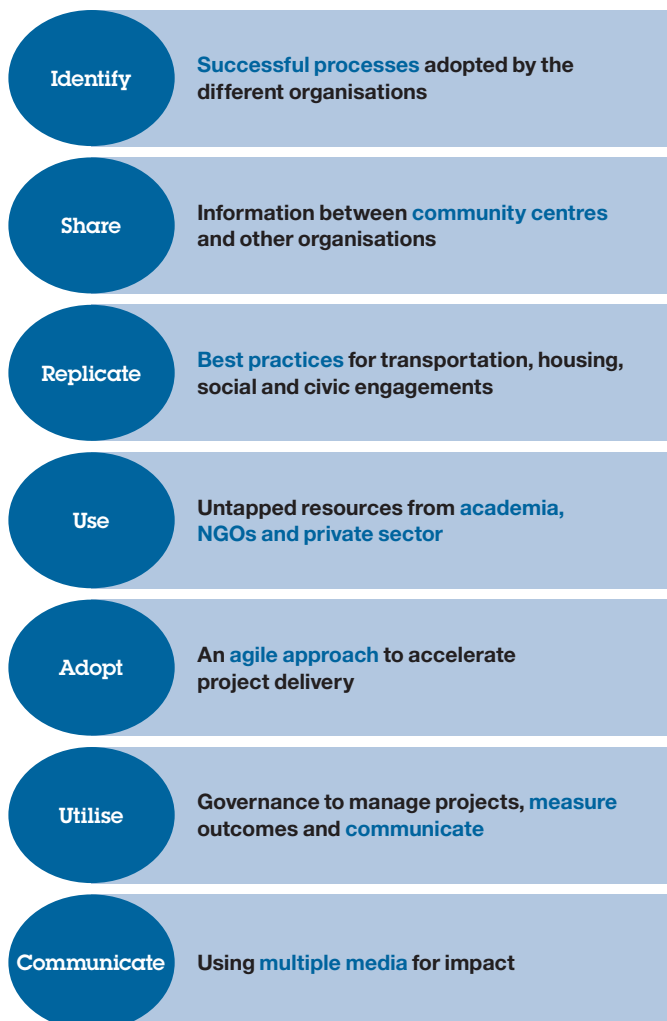
This approach should be adopted by a wide range of providers, including those in transportation, gardaí, housing, social groups, civic groups and health services. It could be facilitated through the governance and performance management model outlined in this report. The IBM team recommends using untapped resources from academia, the private sector and non-governmental organisations (NGOs) to assist with scouting, identifying and analysing available services in order to share best practices efficiently.

Technology can accelerate these objectives as well. Options include passive technology (such as wearable technology to monitor health vitals) and active technology (such as senior-friendly websites and mobile apps). Technologies should be augmented with tele-service units to offer key LCCC services remotely as well as intelligent video and audio technologies to optimise seniors' physical security. The IBM team also identified the need for more wifi access in public places.

Optimisation through governance

LCCC, Age Friendly Ireland and the members of the Limerick Age Friendly Alliance should formalise a collective operational and management model. An oversight committee should be formed that includes executive representation from each group or a governing body representing these stakeholders should be used if it already exists (for example, the LCDC). Within this governance model, a process should be developed to expand Age Friendly Alliance membership to include other stakeholders who can contribute to the successful execution of the strategy. Clear measurement of KPIs through the performance management methodology should be applied both to the oversight committee and to its projects and actions. Data analysis should be used to verify KPIs.

These actions will support a more cohesive execution of the Age Friendly Limerick Strategy across external organisations, LCCC departments, strategic and tactical projects and stakeholders. Projects and initiatives will be prioritised according to agreed-upon criteria and supported by data, resulting in more tightly coordinated funding and delivery of services and enabling services to reach a larger population of senior citizens.

Identify — **Successful processes** adopted by the different organisations

Share — Information between **community centres** and other organisations

Replicate — **Best practices** for transportation, housing, social and civic engagements

Use — Untapped resources from **academia, NGOs and private sector**

Adopt — An **agile approach** to accelerate project delivery

Utilise — Governance to manage projects, **measure** outcomes and **communicate**

Communicate — Using **multiple media** for impact

Figure 5: Summary of recommendations for acceleration

4. Recommendations

Recommendation 1: Develop an MDM strategy

The City and County of Limerick should create a master data management (MDM) strategy to derive better insights from available data and accelerate the implementation of the Age Friendly Limerick Strategy.

Scope and expected outcomes

Scope

MDM comprises the standards, governance, processes and tools that allow one or more organisations to manage critical data in a consistent way. The most common types of critical data would include reference documents and analytical data. These data types support the overall governance of an organisation and subsequent decision-making throughout the lifecycle of each action or initiative undertaken by its stakeholder groups.

Currently, information about senior citizens and related issues is stored in disparate locations, often with inconsistent formats. Developing an MDM strategy and implementation plan will provide a framework for how this data should be generated, maintained, stored and shared among all departments within LCCC as well as organisations that interact and/or intersect with LCCC, such as gardaí, fire, emergency medical, transportation, housing and economic development (for example, the Chamber of Commerce).

The MDM strategy should focus on departments under LCCC umbrella in the initial stage, followed by a phased implementation for external organisations. This approach creates an opportunity to fine-tune the relevant processes and infrastructure as the strategy is executed. The strategy should include implementation of IT best practices for data protection and retention (including backup procedures and information security) to help ensure critical data is not lost.

Developing the MDM strategy and implementation plan should take place within six months in order to be as aggressive as possible with the launch of this initiative. Implementation will begin immediately following the creation of the MDM strategy.

Expected outcomes

The expected outcomes of this recommendation are the development of a viable MDM strategy and implementation plan that reflects input from a wide variety of stakeholders. The plan will set priorities according to this input as a way to derive maximum value as quickly as possible after implementation begins. In addition, the MDM strategy will align with requirements defined by the governance model (see Recommendation 7).

Cost of inaction

Inaction will lead to continued suboptimal use of the data and electronic media that affect governance and resource utilisation within LCCC.

Proposed owner and stakeholders	Suggested resources needed
Owner: LCCC Director, Digital Strategy **Stakeholders** • All LCCC departments • Gardaí • Fire department • Emergency response • Public participation network • HSE • Social protection • Transportation • Social services • Housing • Private sector	• Project management expertise • MDM experts or consultants **Cost estimate:** Low (if confined to strategy and plan development)

Recommendation 1: Develop an MDM strategy (continued)	
Dependencies	**Key milestones, activities and time frame**
Stakeholder input	**Short term (3 months)** • Develop MDM education plan for all stakeholder organisations • Educate all stakeholders about MDM and its benefits • Develop processes for stakeholder input • Obtain and compile stakeholder input • Consult with experts in MDM to begin developing the strategy • Define the MDM strategy for LCCC • Secure project management to develop an implementation plan in consultation with LCCC • Announce implementation launch date

Priority
High — Development of the MDM strategy plan is required for its successful implementation, which is required to support the governance recommendations (see Recommendations 7 and 8).

Recommendation 2: Host a brainstorming "jam session"

LCCC should host a brainstorming "jam session" as a prelude to implementing the MDM strategy, in order to validate available data and identify data needs.

Scope and expected outcomes

The IBM InnovationJam® platform is purpose-built for large-scale, online collaboration among numerous stakeholders. Sophisticated analytics help the sponsor (in this case, LCCC) and participants find conversations of interest. Jams are designed to help organisations unleash the collective brainpower of the enterprise in order to generate and evolve ideas around business-critical or urgent societal issues.

Scope
- LCCC and its partners (including HSE, gardaí, Department of Social Protection and PPN) should kick-start the transformation of data management by organising a transparent conversation about critical issues.
- Identified agencies and individuals (representing research organisations, Limerick Institute of Technology, the University of Limerick, local communities and so on) "jam" by contributing their expertise and opinions about various topics, mixing it up with others to create a powerful voice.
- LCCC and its partners will identify the event moderators and the topics to be discussed during the "jam".
- Findings, analysis and insights are provided at the conclusion of the event.

Expected outcomes
- LCCC and its partners will have raw content, as well as a post-event analytics report, illustrating recommendations gleaned from the jam.
- The output from the jam will cover existing data that is not available in a usable format and the data needed for the MDM strategy.

Cost of inaction
The City will lack the knowledge of what, how and where critical data resides, as well as what data will be required in the future, preventing LCCC and its partners from implementing an efficient MDM strategy.

Proposed owner and stakeholders	Suggested resources needed
Owner: Chief Executive of LCCC **Stakeholders** • LCCC • Department of Social Protection • HSE • Gardaí • PPN	• InnovationJam platform • People to conduct the jam **Cost estimate:** Low
Dependencies	**Key milestones, activities and time frame**
Collaboration among LCCC and its partners	**Short term (3 months)** • Identify the host/conductor • Identify funding • Choose event date • Identify participants • Send instructions to participants • Conduct the jam • Collate and analyse data • Present and act on findings
Priority	
High	

Recommendation 3: Implement the MDM strategy

LCCC should implement the MDM strategy identified in Recommendation 1.

Scope and expected outcomes

Scope
Implementing the MDM strategy requires the following steps:
- Identify all current data sources, including disparate sources in which structured and unstructured data is stored, and their native formats
- Identify all data producers, including all tools and applications that generate data and information
- Identify all data consumers, including all the tools and applications that use or maintain master data sources as well as the people and organisations that use these tools
- Assign data stewards from a pool of people who are knowledgeable of source data and who accept responsibility for transforming data into the master data format
- Implement the data governance program and program office, a group of people who make decisions about how master data is maintained, the data lifecycle and how changes are authorised and tested
- Determine retention policies and map them to data sources
- Develop the master data model by establishing data definitions for master records, including descriptive attributes, and create or adjust data sources and master data mappings
- Choose the tools required to maintain master lists
- Design and build the infrastructure to support the MDM system, emphasising the key drivers of reliability, availability and serviceability (RAS)
- Apply a proper data security framework and implement role-based access control (RBAC) to ensure data integrity
- Test newly generated master data, merging source data assets into the master data list and modifying rules to ensure matches are correct, iterating as necessary
- Operationalise maintenance processing, defining the processes and tools that will be used to track and correct issues in the master data as they arise

The following steps are recommended but optional:
- Organisational change management (OCM) — An MDM model typically represents a culture shift in how organisations generate and manage data. An OCM program is recommended to help maintain progress.
- IT best practices — Best practices for data recovery and security should be implemented prior to the start of MDM implementation to ensure data is not lost or compromised during the transition period.

Expected outcomes
The full implementation of MDM for LCCC and external stakeholders will set the stage for more organised data and information that leverage common data definitions, enabling all stakeholders to use and share data more effectively as well as generate insights and predictive models. For this reason, the recommendation is a dependency for many other recommendations in this report as well as the initiatives that will be developed and managed under the proposed new governance model and plan (see Recommendations 7 and 8).

Cost of inaction
Continued suboptimal use of the data and electronic media used as inputs to governance and resource utilisation for LCCC and other key stakeholders will limit the ability to gain predictive insights from available data. This will also limit the ability to determine which data and information should be acquired to develop more effective predictive models.

Recommendation 3: Implement the MDM strategy (continued)	
Proposed owner and stakeholders	**Suggested resources needed**
Owner: LCCC Director, Digital Strategy **Stakeholders** • All LCCC departments • Gardaí • Fire department • Emergency response • Public Participation Network • HSE • Social protection • Transportation • Social services • Housing • Private sector • Community centres • Day care centres	• Project management expertise • MDM consultant to determine the best tools for LCCC and to provide guidance during implementation **Cost estimate:** High — A two- to four-year implementation will require infrastructure and MDM tooling.
Dependencies	**Key milestones, activities and time frame**
• Successful identification of all data sources • Buy-in from all stakeholders • Funding for full implementation	**Long term (1 to 3 years)** • Activities and milestones are outlined in the scope.
Priority	
High — This recommendation is required to support the governance recommendations (Recommendations 7 and 8), to generate predictive models and insights and to support data-driven collaboration between LCCC departments and external stakeholders.	

Recommendation 4: Demonstrate the value of service integration between two stakeholders

LCCC should demonstrate the value of integrating sensitive data between two stakeholder groups, enabling optimised service delivery and the creation of additional services.

Scope and expected outcomes

Scope
The design and implementation of the MDM strategy will enable various stakeholders to integrate services, which also supports the broader Limerick digital strategy. To enable an enterprise-grade framework for services, LCCC should start with a demonstration ("demo") that integrates sensitive private information from two stakeholders, ideally primary care clinicians and the local hospital. This demo will provide controlled access to specific information that all stakeholders rely on to deliver care to senior citizens within the local health ecosystem. The demo should be managed by a trusted third party that can build out the services and orchestrate both data and services between the two stakeholders.

The demo will allow HSE/University Hospital, primary care clinicians and other health and well-being agencies to share an identified subset of data securely to, for example, ensure a person's medical conditions and prescriptions are accessible in real time if that individual needs to visit the emergency room. Broader access to this data can help avoid harmful drug interactions and allergic reactions before potentially dangerous situations arise.

In addition, an "age-friendly" user interface should be implemented for www.limerick.ie that enables senior citizens to log in and review medications that need to be renewed, to validate appointment times and to browse other available services.

The hospital and primary care physicians will continue to maintain their own data sources, sharing only a well-defined subset in a secure manner, through a trusted enterprise information broker.

Expected outcomes
- A more coordinated system of services that integrate data from multiple ecosystem partners, starting with two stakeholders
- Better functionality for www.limerick.ie that enables senior citizens to review prescriptions and services and to identify other services to which they may be entitled
- A framework for integrating additional services over time
- Validation of the MDM strategy (Recommendation 1)
- A step towards implementing LCCC digital strategy

Cost of inaction
Disjointed systems and services will continue to operate with no meaningful coordination, inhibiting the implementation of LCCC digital strategy.

Proposed owner and stakeholders	Suggested resources needed
Owner: Third-party information broker (under LCCC supervision) **Stakeholders** • LCCC • HSE • Social protection services	Third-party provider with expertise in cybersecurity to establish service integration, data integrity and security enablement **Cost estimate:** Medium

Recommendation 4: Demonstrate the value of service integration between two stakeholders (continued)

Dependencies	Key milestones, activities and time frame
• MDM strategy • MDM implementation plan • Formation of governance (Age Friendly Alliance)	**Short term to long term (3 months – 1 year)** • Leverage OPC to identify a statistically significant pool of senior citizens • Leverage OPC to obtain waivers from target population • Load target population data into demo system • Determine how information is used in real time when a patient receives treatment in an emergency • Evaluate participants to identify mismatches in services entitlement (walkers, glasses, hearing aids and other assistive devices) • As each patient's records are updated at the source, update the record in the demo system • Create age-friendly user interface

Priority

High — This recommendation will be the foundation for a complete system of services and insights. Implementing this recommendation successfully will position LCCC to show the value of shared information and insights in support of LCCC digital strategy.

Recommendation 5: Create a regional electronic medical record system

The HSE should work with local stakeholders to create a regional electronic medical record (EMR) system for Limerick City and County citizens.

Scope and expected outcomes

Scope

Inefficient use of medical resources can often be attributed to cumbersome, paper-based systems used to manage patient records and patient flow in clinical settings. These inefficiencies are compounded because there is no common view of patient data, especially when other agencies are involved in providing services. For example, a patient may have to wait for discharge from a hospital due to a delay in arranging assistive devices or home health care. Potentially harmful situations arise when a person enters an emergency room and is unable to share an accurate list of prescription medications. This is a direct result of hospitals that lack direct, timely access to patient records. Paper-based medical records are also exposed to the risk of loss or misuse as they move through clinical settings.

To address this, the HSE should work with local stakeholders to implement a regional EMR system and an electronic health record card for Limerick City and County residents. The EMR system should be available to all clinics, private general practitioners and agencies that provide health care services. Data access would be provided as needed, based on services provided.

The EMR has many advantages over paper-based medical records, including all of the following:
- One common view of each patient's data
- Shared records with data from all clinical settings (radiology, lab, pharmacy and so on)
- More efficient use of the patient's time in clinical settings, which reduces wait times and helps optimise clinical resources
- More-efficient coordination of services within the ecosystem (inter-agency workflow)
- Ability to restrict information access to people or agencies performing specific roles
- Generate prescription orders directly at the patient's pharmacy of choice

At University Hospital Limerick, Dr. Declan Lyons and his team have taken the first steps towards an EMR. They have produced a variety of applications to support a complete and fully functional EMR system, including the "Bed Bureau", which is designed to optimise the use of available beds within the regional health care system.

There are two options for moving forward with a regional EMR system:
1. Assess what has been built by Dr. Lyons's team to determine what would be required to expand the system into a complete and integrated EMR, build additional infrastructure and test the results as a standalone EMR. This system could be expanded to include additional clinical settings until all facilities have access.
2. Deploy a commercial-grade EMR system (such as an open source option) in a hardened data centre within the City of Limerick.

There are advantages to each approach. With the first option, the EMR system would be available for RAS testing and could be expanded with a deployment in a hardened data centre. With the second option, the software would have already been tested for resiliency, and additional support would be available to purchase.

The form factor of the electronic health record card would be identical to a debit card. It would contain basic information, such as current medications, medical conditions, age, emergency contact and primary care provider.

Expected outcomes
- Health care resources would be used more effectively in Limerick City and County, reducing wait times, improving linkages among service providers and reducing gaps in service that result in longer hospital stays.
- Medical records would be more secure, eliminating paper records that are easily misplaced or seen by unauthorised users.
- Linking a health record card to the EMR would provide essential information to providers or first responders in emergencies.
- Health care professionals would be equipped to make more comprehensive diagnoses, for example, by knowing a patient's prescriptions and avoiding conflicts.
- Outcomes would apply to all citizens of Limerick City and County, including seniors.

Cost of inaction
Inefficient use of health care resources will continue to drive up costs and inconvenience for all consumers and create potentially harmful situations.

Recommendation 5: Create a regional electronic medical record system (continued)	
Proposed owner and stakeholders	**Suggested resources needed**
Owner: HSE **Stakeholders** • HSE • Health care providers • Citizens	• EMR expertise • Project management **Cost estimate:** Medium to high
Dependencies	**Key milestones, activities and time frame**
• IT resources, including personnel and a data centre • Consistent adoption of IT best practices	**Long term (1 to 3 years)** • Evaluation and selection of EMR system • Deployment of EMR system • User training • Bulk conversion of paper records
Priority	
Medium	

Recommendation 6: Implement performance measurements

LCCC should develop a consistent program management model and performance metrics to evaluate the effectiveness of initiatives from development through execution and maintenance. This model can be replicated for the implementation and execution of the governance plan for the Age Friendly Alliance.

Scope and expected outcomes

Scope
- Develop a program management model based on accepted best practices to manage the many complex initiatives LCCC has underway
- Test the new program management model on the Age Friendly Limerick Strategy and its underlying initiatives
- Identify a clear set of performance metrics to support the governance, assessment and prioritisation of initiatives, including cost/benefit analysis
- Designate a member of LCCC staff to own the program management model, ideally a senior member who is well-versed in LCCC operations
- Provide the program manager with best practices information and appropriate training (resources can be found at www.strategic-alliances.org)
- Use the model to set investment priorities for upcoming projects and to accelerate existing projects

Expected outcomes
- Establish a more consistent approach to assessing projects and initiatives for effectiveness, cost and potential improvement
- Transition to evidence-based project prioritisation and cost/benefit analysis
- Create a holistic view of initiative status on a dashboard for better decision-making
- Use an objective means of periodically re-evaluating the strategy to spur long-term improvement

Cost of inaction
Limited ability to assess project effectiveness and cost, both individually and holistically, will compromise the ability of LCCC to prioritise investments effectively.

Proposed owner and stakeholders	Suggested resources needed
Owner: Chief Executive of LCCC **Stakeholders** • LCCC department head directorates • Key stakeholders from the Age Friendly Alliance	• Program manager (could be the same person for the Age Friendly Alliance) • Additional program assessment staff **Cost estimate:** Unknown
Dependencies	**Key milestones, activities and time frame**
• Dedicated program manager • Implementation in LCCC and Age Friendly Alliance governance structures • Potential changes to IT finance applications	**Short term (1 – 3 months)** • Designate a program manager **Medium term (4 – 12 months)** • Develop program management model and performance metrics • Establish implementation plan for the model and get stakeholder buy-in • Implement the model and begin to measure and assess KPIs • Use KPIs to prioritise projects for investment
Priority	
High	

Recommendation 7: Establish an LCCC governance plan

LCCC should develop and implement a governance plan and management system to support key initiatives, starting with the Age Friendly Limerick Strategy.

Scope and expected outcomes

Scope

LCCC should establish a new governance plan that includes a management system, internal/external communication plan and performance metrics. The management system should include peer mapping at all levels, key initiative prioritisation and a dashboard that is available to all key stakeholders. The performance measurement plan should be implemented to support the overall governance model. Data analysis methodologies should be utilised to characterize KPI results. Working with an expert consultant will be critical to all of these efforts.

Expected outcomes
- More coherent execution of the Age Friendly Limerick Strategy (and other initiatives) across all LCCC departments
- Improved communication, leading to better employee understanding of key initiatives and their interdependencies
- Better prioritisation of projects and initiatives according to agreed-upon criteria and supported by data and analysis
- Coordinated delivery of services for all citizens, including seniors
- Coordinated funding of services for all citizens, including seniors
- Faster implementation of key initiatives

Cost of inaction

Lost opportunities to coordinate across multiple departments and help initiatives succeed, leading to continued organisational inefficiencies.

Proposed owner and stakeholders	Suggested resources needed
Owner: Chief Executive of LCCC **Stakeholders** • LCCC Economic Development Directorate • LCCC Physical Development Directorate • LCCC Social Development Directorate • Customer Services Directorate • Service Operations Directorate • Support Services Directorate • Regional Services Directorate • Change Management • Limerick 2020 • Housing Assistance Payments	• Administrative program management of the new governance model • Consultant for initial set-up of LCCC governance (potential resources can be found through Association of Strategic Alliance Professionals, www.strategic-alliances.org) **Cost estimate:** Low — includes ongoing cost for program management staff and one-time consultant fee

Dependencies	Key milestones, activities and time frame
Implementation of the proposed program manager and performance measurement plan (Recommendation 6)	**Medium term (1 – 6 months)** • Identify appropriate consultant and funding • Consultant provides detailed recommendations for operational structure • Identify program management resource • Establish and implement program management and metrics • Assess programs and projects • Establish and implement internal and external communication plan • Review governance model for continuous improvement

Priority
High

Recommendation 8: Create a governance system to support the Age Friendly Limerick Strategy

LCCC should develop and implement a governance and management system to support the Age Friendly Limerick Strategy in coordination with Age Friendly Ireland and the Limerick Age Friendly Alliance membership.

Scope and expected outcomes

Scope
LCCC, Age Friendly Ireland and members of the Limerick Age Friendly Alliance should formalise the current operational and management model under a new governance plan that includes an internal and external communication plan as well as performance metrics. An oversight committee should be formed to include senior-level representation from all stakeholder groups. Peer mapping should be developed across all levels.

The key initiatives and projects that support the Age Friendly Limerick Strategy should be prioritised and measured with quantifiable evidence through a performance measurement plan and captured on a dashboard available to all stakeholders. Clear measurement KPIs should be identified for both the oversight committee and the underlying projects and actions. Data analysis methodologies should be utilised to characterise KPI results.

Within this governance model, a process should be developed to enable expansion of Limerick Age Friendly Alliance membership to include other key stakeholders who can contribute to the successful execution of the overall strategy.

Expected outcomes
- Faster and more coherent execution of the Age Friendly Limerick Strategy by all stakeholders, including external organisations, LCCC departments and strategic and tactical project teams
- Better prioritisation of projects and initiatives based on agreed-upon criteria and supported by data
- Coordinated delivery of services for all citizens, including seniors
- Coordinated funding of services, expanding their reach to larger populations

Cost of inaction
The time frame to achieve the Age Friendly Limerick Strategy will increase. Investments may be spread too thin. LCCC will have lost an opportunity to leverage initiatives driven by outside entities. The senior citizen population will grow faster than the strategy can be implemented, adding to the total cost. These results will compromise the economic development efforts of LCCC.

Proposed owner and stakeholders	Suggested resources needed
Owner: Chairperson of Limerick Age Friendly Alliance **Stakeholders** • Oversight committee members, including senior representation: LCCC Chief Executive • HSE GM • Chief Superintendent Limerick gardaí • CEO Limerick Chamber • President of University of Limerick • Chairman of Limerick GAA • Others as deemed necessary	• Administrative program manager for the new oversight committee and governance model • Consultant for initial set-up of Alliance governance (potential resources can be found through the Association of Strategic Alliance Professionals, www.strategic-alliances.org) **Cost estimate:** Low — includes ongoing cost for program management staff and one-time consultant fee

Recommendation 8: Create a governance system to support the Age Friendly Limerick Strategy (continued)	
Dependencies	**Key milestones, activities and time frame**
• Implementation prior to or in concert with the implementation of the Age Friendly Alliance governance plan • Implementation of LCCC governance model (Recommendation 7) • Implementation of the proposed program manager and performance measurement plan (Recommendation 6)	**Short term (1 – 3 months)** • Gain agreement among stakeholders to formalise new structure, including oversight committee (using a third-party consultant to accelerate development) • Identify appropriate consultant and funding • Consultant provides detailed recommendations for operational structure • Identify oversight committee members • Identify program management resource • Communicate with stakeholders and form oversight committee **Medium term (4 – 9 months)** • Establish and implement program management and metrics • Start assessing programs and projects • Establish and implement internal and external communication plan to support governance system **Long term (10 – 12 months)** • Oversight committee assesses governance and management model using established KPIs **Year 2** • Continue to improve program management and metrics • Develop and implement process for adding stakeholders to this effort
Priority	
Medium	

Recommendation 9: Implement all recommendations using agile methodology (continued)

Scope and expected outcomes (continued)

Cost of inaction

LCCC will continue to find it difficult to track the progress of the recommendations in this report and their constituent projects, as well as control their costs. Projects will be overseen by teams with limited coordination and a lack of synergy.

Proposed owner and stakeholders	Suggested resources needed
Owner: LCCC **Stakeholders:** Owners of various recommendations and their respective program managers	• Agile coach • Stakeholder education **Cost estimate:** Low
Dependencies	**Key milestones, activities and time frame**
• MDM strategy (Recommendation 1) • MDM plan (Recommendation 3) • Formation of governance plan with Age Friendly Alliance (Recommendation 8)	**Short term (1 – 3 months)** • Identify a suitable agile education approach (online, in person or private tutoring) **Long term (10 – 12 months)** • Introduce agile methodology to stakeholders • Demonstrate agile adoption through an initial project

Priority

Medium

Recommendation 10: Develop a robust communication plan

LCCC should develop strategies to deliver content through multiple channels beyond digital to include more senior citizens in the conversation.

Scope and expected outcomes

Scope

LCCC needs to enhance its existing communication strategy to ensure information is disseminated to all parties effectively, with a particular focus on senior citizens. The new communication plan should include the following:
- Continue to use www.limerick.ie as the focal point of communication efforts and expand it to include information about all local events, ideally with stakeholders pushing the content to the site rather than LCCC pulling the details
- Create educational materials and classes to educate senior citizens about which devices to acquire (smartphones and/or tablets) and how to use them effectively
- Expand the marketing strategy beyond the current digital footprint to include other avenues, including event calendars with phone contact details, large-print publications, newsletters and radio ads
- All content must be published timely and kept current
- Focus on print material, which is particularly important for reaching senior citizens and should be distributed monthly or quarterly to churches, community centres, active retirement centres, day care centres and hospitals, among others

Expected outcomes

Increased awareness of events and services, especially among senior citizens, increasing participation in all services provided.

Cost of inaction

Confusion caused by fragmented information will continue, leading to increased social isolation among senior citizens.

Proposed owner and stakeholders	Suggested resources needed
Owner: LCCC marketing department	Expansion or reallocation of LCCC marketing team
Stakeholders • Limerick Age Friendly Alliance • Limerick Older People's Council	**Cost estimate:** Low

Dependencies	Key milestones, activities and time frame
Service providers publishing content through www.limerick.ie	**Short term (1 – 6 months)** • Increase or expand the marketing team to focus on senior citizens • Update the communication plan to include nondigital channels • Make digital education materials and classes available for senior citizens

Priority
High

Recommendation 11: Leverage age-friendly technology

LCCC should employ age-friendly technology to improve quality of life for senior citizens.

Scope and expected outcomes

Scope

A partnership between HSE, LCCC and the private sector should be established to explore and adopt passive and active age-friendly technologies for a multitude of services to improve quality of life for seniors and to reduce health care costs. LCCC should include these technologies in the Limerick digital strategy.

Passive technology refers to technology that users do not interact with directly but that collects information useful to others. Passive technology should be considered for all of the following applications:

Well-being monitoring — This flexible approach helps seniors and caregivers to manage their vitals, sleep, diet, exercise and socialisation patterns. Sensor-driven monitoring of user activities (such as sleeping, health, exercising and socialisation) interprets patterns and estimates multidimensional well-being indicators that make it easier for senior citizens or caregivers to notice abrupt changes and make informed decisions in response.[5]

Medical records card — This secure magnetic stripe card can store a subset of a senior's EMR, including current medications, allergies, conditions (pacemaker, colostomy and so on) as well as emergency contact details that could be accessed by first responders and medical professionals. The card would be updated every time a new medication is subscribed or a condition is changed. The proper encryption and security features would help ensure that only authorised personnel can access the information. The card would be linked to the senior's PPS number, so it could be replaced in case of loss or theft.[6]

Physical security — Personal security and security of property are constant concerns for senior citizens. Improving the security of communities and regenerated areas can be accomplished by adding cameras and monitors and by taking advantage of video analytics that can tie back to the gardaí. This is a mature technology that could be further enhanced with audio and alerts.

Tele services — These technologies allow senior citizens to use a variety of services without leaving home. Tele-service stations are typically enabled with audio, video and network connectivity. They could be established in various communities and regenerated areas and managed by the community or a community attendant. Seniors would not have to deal with connectivity or set-up issues. They would simply be able to connect and communicate with various service providers, starting with LCCC and expanding to include others.[7]

Active technology refers to technology with a direct user interface. Active technology can improve quality of life for seniors in several ways. Senior-friendly web design makes web pages easier to navigate. Age-friendly authorisation replaces conventional text-based passwords and multifactor authentication with graphical passwords and peripheral authentication to help seniors interact with electronic transaction systems (for medical records, banking, insurance and so on) more easily. Senior-friendly mobile devices with larger buttons and simpler interfaces can be used to improve social interaction as well.[8]

Public wifi hubs — Establishing free public wifi hubs throughout the City and County of Limerick would help seniors access the Internet more easily. These hubs could be equipped with tele-service stations and clearly marked computers that are equipped with age-friendly technology and specifically designated for use by senior citizens.

Expected outcomes

- Easier real-time monitoring of seniors' well-being by caregivers
- Faster response time with appropriate medical teams and equipment in emergencies
- Faster responses to seniors' inquiries
- More effective outreach to seniors in rural areas
- Up-to-date and easily accessible medical information available to first responders
- Stronger security in local communities
- Better technology adoption, interactivity and communication among seniors
- Lower risk of social isolation and increased opportunities for social inclusion

Recommendation 11: Leverage age-friendly technology (continued)

Scope and expected outcomes (continued)

Cost of inaction

A lack of continuity in monitoring seniors' well-being may delay care or deprive seniors of proper medical attention. Security issues will persist, leading to increased social isolation. Fewer seniors will be inclined to use Limerick's digital services.

Proposed owner and stakeholders	Suggested resources needed
Owner: HSE for telehealth and telemedicine **Stakeholders** • HSE • LCCC • Academia • Gardaí • Central and regional hospitals • Private sector	• Resources from IT department in Limerick Institute of Technology for proofs of concept • Funding for proofs of concept • ISP to set up wifi hubs • Design resources to make websites age-friendly **Cost estimate:** Medium — if LCCC uses a two-step approach to evaluate the best technology before general deployment
Dependencies	**Key milestones, activities and time frame**
• Adoption and implementation of the Limerick digital strategy • This initiative should be tracked and managed in the new governance model (Recommendations 7 and 8)	**Ongoing** • Evaluate potential technologies • Extend the Limerick digital strategy to include an optimised infrastructure to support identified solutions and integrate them within the MDM plan • Develop partnerships with academia to support the development of age-friendly websites • Identify and test a pilot program, selecting a new location and testing the complete technology set-up for a wifi hub designed for senior citizens • Install public wifi hubs

Priority

Medium — This recommendation touches many verticals, from transportation and public health care to personal and property security. If implemented, it will help improve social inclusion and enrich the Limerick digital strategy.

Recommendation 12: Accelerate civic goals

LCCC should continue to accelerate its civic participation and employment goals as outlined in the Age Friendly Limerick Strategy.

Scope and expected outcomes

Scope

Improving the civic participation and employment of senior citizens will help keep them healthy and living independently longer. LCCC should take several steps to achieve this goal, including those outlined in the Age Friendly Limerick Strategy and the initiatives already under way in conjunction with the Older People's Council. These include the following:

Collaborate with the Gaelic Athletic Association (GAA) to create programs for seniors
- Work with the Older People's Council and the GAA to design programs specifically for senior citizens with a focus on community centres, day care centres and active retirement organisations
- Leverage the work already begun by the Older People's Council
- Publish details of new programs in print and on websites (see Recommendation 10)

Partner with academia to create co-operative programs that engage students (especially those in the social sciences) in activities for senior citizens
- Offer three- to six-month internships for all students in social sciences
- Interns would work in community centres and/or day care centres to earn credit towards certificates or degrees

Expand gardaí partnership to pilot an awareness training module on age friendliness for primary and secondary students, as part of the Garda Schools Programme

Use reverse mentoring
- Leverage senior citizens as mentors
- Capitalise on their life experience through partnerships with the Older People's Council, academia, the Chamber of Commerce and private-sector organisations

Improve the visibility of the local chamber's "silver entrepreneurs" program to attract more participants and increase the number of seniors involved in running small businesses

Introduce the Age Friendly Limerick Strategy as a topic for discussion at the Chamber of Commerce Business Forum, partnering with the Older People's Council to develop a presentation

Expected outcomes

Helping seniors participate in sports enhances their physical and mental state, potentially extending the period of time they can live at home independently. Engaging social sciences students as interns provides a source of free labour and enriches students with valuable experience. Reverse mentoring helps channel a wealth of knowledge back into the community. Developing "silver entrepreneurs" helps contribute to the local economy.

Cost of inaction

More senior citizens will stay homebound and feel socially excluded.

Recommendation 12: Accelerate civic goals (continued)	
Proposed owner and stakeholders	**Suggested resources needed**
Owner: LCCC **Stakeholders** • Older People's Council • University of Limerick • Limerick Institute of Technology • Enterprise Ireland • Private sector • Limerick Chamber of Commerce	**Cost estimate:** Low to medium (depending on whether internships are paid)
Dependencies	**Key milestones, activities and time frame**
• Universities, including internships in social science curriculum • Business community commitment • Enterprise Ireland commitment	**Long term (0 – 18 months)** • LCCC and GAA design and implement the program • LCCC works with academia to design internship programs • LCCC works with Enterprise Ireland, the Chamber of Commerce and the business community to design Business Forum's silver entrepreneur program
Priority	
Medium — Implementing this recommendation will help keep senior citizens healthy and living independently, and it will help improve social inclusion.	

Recommendation 13: Accelerate goals for transportation and outdoor spaces

LCCC should continue to accelerate its goals for transportation and outdoor spaces as outlined in the Age Friendly Limerick Strategy.

Scope and expected outcomes

Scope

Improving the availability and quality of transportation will increase the mobility of senior citizens, while improving public spaces will create more places for seniors to visit. Access to walkways is a critical factor for transportation usability inside cities and towns. LCCC should take several steps to achieve this goal, including those outlined in the Age Friendly Limerick Strategy and the initiatives already under way in conjunction with the Older People's Council. These include the following:

Enhance public transportation availability and quality
- Collect, coordinate and distribute schedules in print
- Offer sensitivity training about senior citizens' needs to the community, including public transportation teams
- Leverage the work started by Limerick Smarter Travel, building on partnerships with the National Transport Authority and Bus Éireann (and other providers) to increase total capacity and age-friendly accessibility
- Offer senior citizen shuttles that pick up people at their homes and transport them to key service locations, increasing their mobility while reducing the need for large infrastructure changes, such as additional bus lanes

Enhance outdoor spaces related to mobility
- Enhance public waiting areas with bus shelters and benches
- Increase the number of public toilets, either by building additional facilities or by partnering with the private sector to make existing infrastructure more accessible (for example, restaurants could post signs advertising restrooms for seniors in exchange for increased patronage)
- Reduce demand for parking by increasing the quantity and accessibility of parking lots at key locations or by offering valet parking

Enhance outdoor spaces that promote social gathering
- Enhance and promote green spaces to encourage public gatherings
- Increase and publicise shared gathering areas, including community centres and day care centres
- Enable public spaces with free wifi hubs

Expected outcomes

Transportation that is more available and easier to use will increase seniors' use of preventative health services, leading to improved health. More group activities for seniors in public spaces will help combat social isolation. Wifi-enabled public places will encourage social gatherings, help seniors learn how to use technology and foster continued use of technology among seniors.

Cost of inaction

More senior citizens will become homebound due to travel barriers, increasing social isolation, reducing use of preventative health services and potentially raising health care costs.

Proposed owner and stakeholders	Suggested resources needed
Owner: LCCC **Stakeholders** • Limerick Smarter Travel • Limerick Age Friendly Alliance • Limerick Older People's Council • Bus Éireann and other public transportation providers • National Transport Authority • Private sector • Age Friendly Ireland	• Funding for additional travel resources • Incremental funding for increasing travel capacity **Cost estimate:** Low to medium (depending on the amount of new travel resources needed after optimising existing infrastructure)

Recommendation 13: Accelerate goals for transportation and outdoor spaces (continued)	
Dependencies	**Key milestones, activities and time frame**
• MDM strategy (Recommendation 1) • Information distribution (Recommendation 10) • Social inclusion (Recommendation 14) • Personal safety (Recommendation 11)	**Short term (1 – 6 months)** • Increase travel council resources to conduct audits and collect information about specific needs (with university resources supplementing current employee resources) • Distribute coordinated schedule information • Complete audit for infrastructure upgrades **Long term (12 – 24 months)** • Work with travel providers to expand total transportation capacity
Priority	
Medium — Current travel services meet the needs of the majority of citizens, and expanding services will yield incremental gains.	

Recommendation 14: Increase social inclusion

LCCC, together with the HSE, should use a programmatic approach to manage community centres and The Wise and Well Centres as a separate initiative within the Age Friendly Alliance governance program.

Scope and expected outcomes

Scope
LCCC should use the project management methodology identified in the governance plan (Recommendations 7 and 8) to monitor community and day care centres, which should be rebranded as "The Wise and Well Centres".

This initiative should define the number of community centres and The Wise and Well Centres and their locations based on analysis of demographic data. It should clearly articulate the boundaries within which the centres operate and develop KPIs to guide disbursement of funds. Data collection should be a KPI for all centres and related programs. The format in which data needs to be collected and stored should be defined as part of the MDM strategy (Recommendation 1).

Energy-efficiency grants, which come at zero cost to senior citizens, need greater visibility. This scheme, which is highly scalable, is delivered with the support of the Sustainable Energy Authority of Ireland and the Department of Social Welfare through such organisations as Tait House Community Enterprise and the Bergerie Trust, which are the only community centres currently offering this service. The recommendation is to expand the grants to all community centres as a service to their respective users. While they are not directly related to social isolation prevention, these grants can strengthen community centres, which are vital to seniors.

All programs run by the centres need greater visibility. KPIs should dictate that all centres have websites with accurate schedules and information about energy-efficiency programs, meals on wheels, hair salons and so on. All these websites should be linked to www.limerick.ie (immediately if they already exist).

LCCC should create a printed booklet that collects important information about these centres and active retirement facilities, to be made available in designated places.

The centres should share best practices, and their results should be reported monthly in the dashboard created by the Age Friendly Alliance (see Recommendation 6).

Expected outcomes
Increasing accountability for community centres and The Wise and Well Centres will increase their efficiency, enabling them to provide more services to seniors in a more cost effective way.

Cost of inaction
Fragmentation of community centres and their services will continue, and LCCC will lose an opportunity to make improvements that will reduce seniors' social isolation.

Proposed owners and stakeholders	Suggested resources needed
Owners: Regional office of the HSE and LCCC Social Development Directorate in partnership **Stakeholders** • Northside Family Resource Centre • Tait House • St. Munchin's Community Centre • Cappamore Community Centre	• Project manager responsible for all centres in the City and County of Limerick (funded by the owners) • Steering committee member representing the owners in partnership **Cost estimate:** To be determined by the owners

Recommendation 14: Increase social inclusion (continued)	
Dependencies	**Key milestones, activities and time frame**
• Collaboration between LCCC and the HSE • Adoption of the governance plan (Recommendations 7 and 8) to jointly develop KPIs and funding • Full-time project manager • Falls under the Age Friendly Alliance and should be tracked separately	**Long term (1 – 2 years)** • Establish the initiative between LCCC and the HSE • Utilise the program manager for the Age Friendly Alliance governance plan • Define the initiative's goals and measurements • Define a project plan with timelines • Bring all community centres and The Wise and Well Centres together to discuss the plan • Establish funding based on key deliverables • Build websites for all centres • Link sites to www.limerick.ie • Define timeline for producing detailed booklet • Launch websites and distribute booklets • Build new community centres

Priority
Medium

Recommendation 15: Accelerate housing goals

LCCC should continue to accelerate its housing goals as outlined in the Age Friendly Limerick Strategy.

Scope and expected outcomes

Scope
This recommendation is designed to help senior citizens live independently for as long as possible, either by upgrading existing homes or encouraging people to downsize and move into dedicated senior citizen communities.

Upgrade existing homes
- Increase awareness of grant schemes available to make homes more age-friendly
- Simplify grant forms and processes
- Improve perceptions of personal safety with increased presence from local police and/or neighbourhood watches
- Expand "Trusted Tradesman" with information about vendors that can provide safe and reliable services within senior citizens' homes, such as the Age Action Ireland "Care and Repair" service

Encourage seniors to join age-friendly communities
- Senior citizen communities are clusters of age-friendly homes with easy access to critical services
- Evaluate rebuilding (rather than refurbishing) abandoned city cores, leveraging private-sector investors for additional resources
- Accelerate housing regeneration to increase the number of age-friendly houses, ideally by adding senior citizen communities within city cores

Expected outcomes
Additional housing for senior citizens will help them remain self-sufficient longer, contribute to their communities and reduce the burden on nursing homes.

Cost of inaction
Senior citizens will stay in their oversized houses and start using more health services earlier. Without senior communities in the city proper, seniors who do move will relocate in the suburbs, leaving city cores abandoned and making it more difficult for them to access health services and other City services.

Proposed owner and stakeholders	Suggested resources needed
Owner: LCCC **Stakeholders:** • Age Friendly Ireland • Age Action Ireland • Private developers • HSE • Limerick Age Friendly Alliance • Limerick Older People's Council • Community and volunteer organisations • Gardaí Joint Policing Committee	• Additional funding for grants to accelerate and expand regeneration • Private sector investors **Cost estimate:** Low (enhancing existing homes) to high (new home construction)
Dependencies	**Key milestones, activities and time frame**
None	**Short term (1 – 7 months)** • Publicise and streamline available housing grants • Provide "Trusted Tradesman" recommendations • Develop a plan for additional community-based housing **Long term (1 – 5 years)** • Create neighbourhood watch programs • Add community housing
Priority	
Medium	

5. Conclusion

Limerick City and County face the reality of a large and rapidly growing population of senior citizens. In Ireland, the number of people older than 65 is expected to grow by more than 260% by 2046, far exceeding the projected overall population growth of 47%. In Limerick, the population of older people could increase from 23,313 (in 2011) to 58,283 in 2036. This growing demographic group creates challenges as well as opportunities.

LCCC had the foresight to recognise this issue early and start developing a strategy to address it. As part of the strategy, the Limerick Age Friendly Alliance was established in July of 2013. The alliance strategy utilises eight categories identified in the World Health Organization Global Age-friendly Cities: A Guide, published in 2007, and the alliance has outlined goals to improve each area through 2020.

LCCC can advance these efforts significantly by implementing an MDM strategy coupled with analytics to gain insights. A formal governance and performance management plan, including an internal and external communication plan, will help improve activities and projects already underway.

A demonstration of integrating sensitive private information (SPI) will show the value of sharing the data and mining it for insights. Collating, combining and analysing significant amounts of available data will help determine which goals should continue to be pursued and identify new areas of opportunity.

If LCCC follows the recommendations in this report during the next three to five years, continues to implement the Age Friendly Limerick Strategy and leverages other best practices, it will be well on the way to becoming a Smarter City that cares for and includes all of its senior citizens in civic life.

6. Appendix

A. Acknowledgements

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- Lavinia Duggan, National Retail Sales Manager

Site visits
- Northside Family Resource Centre (community centre and meals on wheels service)
- Tait House (non-profit community development cooperative)
- St. Munchin's Community Centre (self-sustaining local community and enterprise centre with a strong focus on senior citizens)
- Park Retirement Village Castletroy (community offering high-quality houses and apartments for residents interested in independent residential living and assisted living)
- Cappamore Community Centre (rural, community-run centre)

B. Team biographies

Nancy D. Breiman
**Manager, Innovation Solutions and
Business Development
Cisco Global Alliance
IBM Global Alliances
Scottsdale, Arizona, USA**

Matt Broomhall
**Executive IT Architect, Master Inventor,
Vice Chair TSLC, Member IBM Academy
of Technology
IBM Sales and Distribution
Bedford, New Hampshire, USA**

As a Certified Strategic Alliance Professional (CSAP), Nancy Breiman leads a team of Global Alliance Executives responsible for developing and driving adoption of innovation solutions in collaboration with Cisco. Her team is responsible for the joint solution strategy, including offering development, go-to-market strategy, sales enablement and sales execution in collaboration with Cisco. Her previous team was responsible for driving alliance joint solutions with partners, including Schneider Electric, Ricoh, Hok and Gehry Technologies. Prior to this role, Breiman lead an alliance team responsible for evaluating and on-boarding new cloud-based alliances and providing support to the IBM Global Alliance Solutions portfolio as the Cloud Center of Excellence. In her 10 years as an alliance professional, she was personally responsible for IBM alliance relationships with Business Objects and Salesforce.com.

Breiman is actively involved in the Association of Strategic Alliance Professionals (ASAP) as a member of the advisory board and a committee member for the Knowledge Base and Research committee and Partnering committee.

Before joining Global Alliance Solutions, Breiman held positions as the Global Client Director responsible for the IBM relationship with DHL; Vice President, Worldwide Cross Brand Competitive Sales; Vice President, Americas Competitive Sales, Server and Technology Group; Vice President, Worldwide Linux Cluster and High End Intel Sales and Manager of the IBM Corporate Competitive Intelligence team responsible for the launch of the IBM eServer™ portfolio.

Breiman joined IBM in July 1984 as a professional hire in sales. Since joining, she has held numerous sales, marketing and management positions across IBM.

Breiman holds a Bachelor of Science degree in industrial arts from the State University College at Buffalo, New York, and is a CSAP Certified member of ASAP and a member of the Strategic and Competitive Intelligence Professionals. She is married and has two beautiful young adult children and three dogs.

Matt Broomhall is an Executive IT Architect with a specific focus on health care. He is Vice Chair of the Technical Sales Leadership Council and a member of the IBM Academy of Technology Leadership team. His current focus is on helping IBM health care customers determine how their pain points can be addressed through technology innovation. His prior roles focused on business transformation and technical innovation targeted at IBM growth markets. Broomhall has a long history of successfully bringing disruptive technologies into IBM. He is an innovator and mentor, currently serving on various boards focused on patenting and cultivating talent within IBM. In his free time, he enjoys home handyman projects, skiing and consulting with schools on how to evolve their IT infrastructure and processes.

Dr. Nader Nassar
Master Inventor, Senior Software
Engineer, Certified IT Architect
IBM CISCO Organization
Transformation and Operations
Somers, New York, USA

Dr. Nader Nassar is a Senior Software Engineer and a Master Inventor in the IBM CIO Innovation Lab. He is a certified IT Architect and a certified IT Specialist, as well as a board member of the IBM IT Certification board, where he interviews and mentors other certification candidates. He received a Bachelor of Science and a Master of Science in electrical engineering from The City University of New York and earned his PhD in computer science from Pace University in 2016. Dr. Nassar's interests are in cybersecurity, especially web and mobile applications security. He is passionate about investigating innovative solutions to improve IBM security posture.

Dr. Nassar joined IBM in 1999 as an IT specialist shortly after finishing his bachelor's degree. Until recently, he was the technical owner of the IBM Simulated Phishing initiative, which aimed to increase awareness of spear phishing and social engineering threats. IBM CEO Ginni Rometty described his initiative in one of her talks as "increasing employees' security IQ". In 2008, he was the technical owner of the IBM Corporate Service Corps social portal. He pioneered one of the first interactive social platforms in IBM. Dr. Nassar is also an IBM Corporate Service Corps alumni. He served one month in Sao Paolo, Brazil, helping an NGO, Instituto Esporte & Educação. Last year, Dr. Nassar received the Corporate Eminence and Excellence award and a Manager's Choice award for his overall contributions. In his free time, he likes to get involved in local charities.

Marc Silhavy
Manager, Sales Analytics
IBM Global Business Services
Somers, New York, USA

Marc Silhavy is a Senior Sales Analytics Manager and Certified Executive Project Manager for IBM Global Business Services®. He manages a team developing and supporting applications, including mobile apps, analytic predictors and large-scale data transformations empowering IBM sales teams. Previous experiences include helping found the IBM internal Business Analytics Centre of Competency, development of the IBM Intellectual Property and Licensing patent system and enhancing the IBM internal home page and search engine. He received a Bachelor of Science in mathematical sciences from Johns Hopkins University and an MBA in information technologies from New York University. Silhavy lived and worked for nearly three years in Bratislava as Senior Manager, leading, growing and integrating local teams with the worldwide team. His interests are in agile development practices and incorporating the DevOps approach into the historical portfolio to accelerate deployment cycles to match the pace of the business. In his free time, he enjoys playing with his three boys, gardening and hiking.

Aruna Padmanabhan
Executive Director, Human Resources
IBM Global Business Services
Bangalore, India

Aruna Padmanabhan is IBM Executive Director of Human Resources for IBM Global Business Services, based in Bangalore, India. She is a Senior Human Resources professional who has shaped high-performing cultures and supported revenue growth in Fortune 500 organisations and companies with robust personal development programs. She brings deep understanding of best-in-class human capital practices that attract and retain high-potential talent. Her successful career has partnered active talent management and HR business with the distinct experience of working with global companies in India, Asia and the US. Prior to working at IBM, she was the Global Head of HR for a major automotive business in Austin, Texas, and she started her HR career in several electronics companies. Padmanabhan has a degree in law and a post-graduate degree in science. Her hobbies include traveling with her family to ancient historical sites. She is a strong proponent of working women and coaches and conducts sessions for working women. On a personal level, she supports underprivileged girls in their education and helps manage a home for elderly women in Bangalore.

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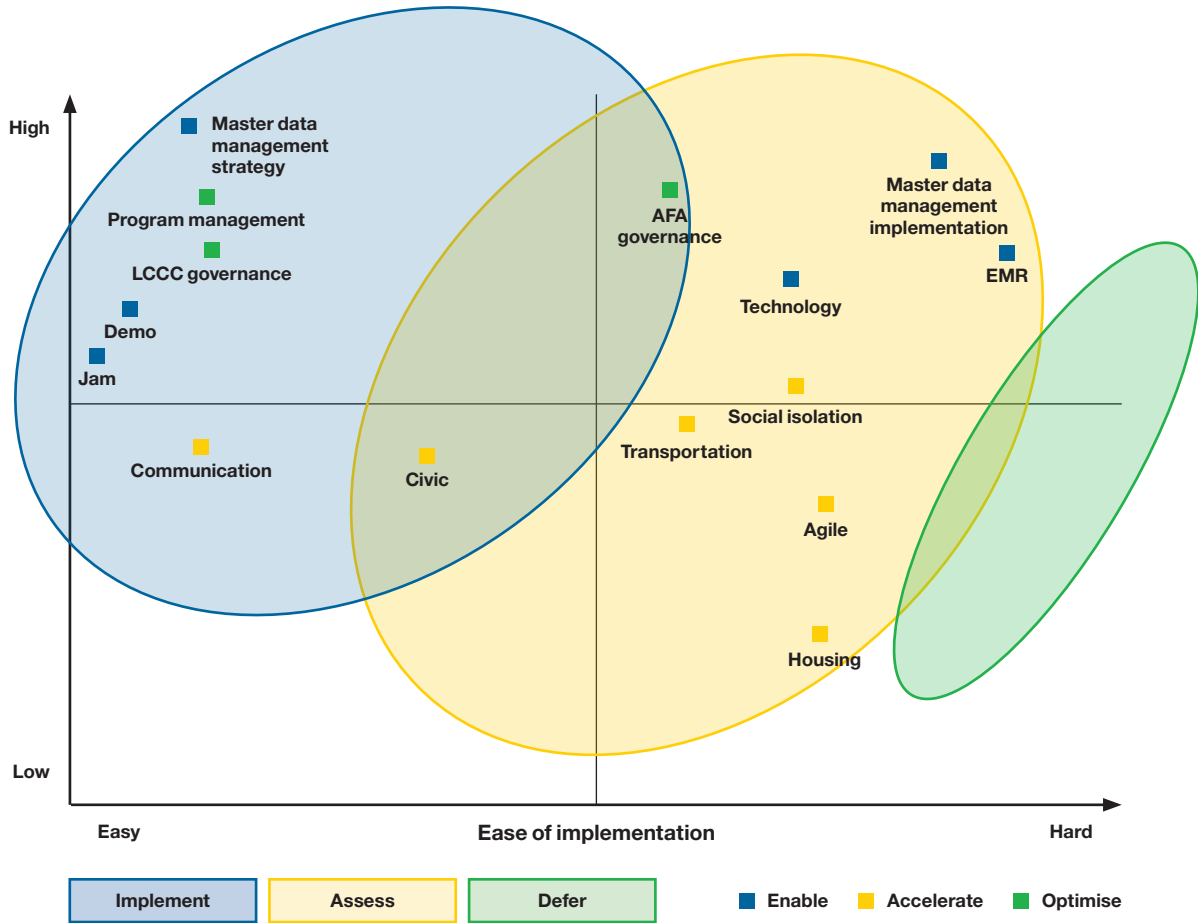
D. Prioritisation of recommendations

Figure 6: Prioritisation of recommendations

E. Use cases

The vision: Myles

Myles is an 89-year-young man living alone in Croom, Limerick County, in his own home. He has chronic health issues and takes several prescription medications. The details of his health are known only by his doctor, his caregiver, Breen, and his two children, a son and a daughter who both live in Dublin, which is two-and-a-half hours away.

Myles's health conditions need regular attention. Accurate details about his health should be available to all the people and organisations that provide care for him. To make sure this happens, Myles has signed a common consent form. He carries a smart card with him at all times, which stores his sensitive personal information, including his name, age, health conditions, prescription medications, food allergies, health care providers, hospital information and emergency contact details.

On a very cold day in January, there was an electrical problem in Myles's house that started a fire. Myles smelled the smoke and immediately called 999. By the time the first responders had arrived, there was so much smoke in the house that Myles had collapsed from smoke inhalation. The first responders entered, found Myles and immediately transported him to the emergency room.

The local hospital checked Myles's smart card, immediately gaining access to an up-to-date prescription list and his current health conditions. With this data, attending clinicians made an accurate diagnosis quickly and prescribed medications without concern about harmful drug interactions.

Using the details stored on the smart card, the fire department informed Myles's son, who met Myles at the hospital.

Myles recovered in the hospital and was discharged after a week. His son was able to arrange repairs to his house while Myles was in the hospital and took him home after he was discharged.

Before returning to Dublin, Myles's son called the local community centre to arrange "meals on wheels" for his father. The centre was able to access information about any food allergies Myles has before delivering a daily hot meal to him.

Despite the incident, Myles has been able to continue living independently in his own home.

The vision: Annie

Annie is a wise, 83-year-old woman. She lives alone in Cappamore, Limerick County, in her own home and gets great support from her community.

One day, Annie needs to go to the hospital for a 10 a.m. appointment. She checks her bus schedule booklet, which she picked up at the Cappamore Wise and Well Centre. The booklet has a schedule for the rural bus that aligns timing with the city bus, so she can arrange her trip to the hospital.

Annie walks from her home to the bus stop. It starts raining. She stays dry in the bus shelter and waits for the bus. The bus arrives on time. The bus lowers its steps for Annie to get in. The driver helps her into the bus and waits for her to be seated before he drives away.

The bus takes her to the bus stop where the city bus picks her up just as the printed schedule said it would. Annie reaches the hospital on time for her appointment. She finishes her appointment and returns to the hospital bus shelter to start her journey home.

She takes a nice clean seat in the shelter. The bus arrives on time to take her back home. She decides to visit the Wise and Well Centre in Cappamore to meet her friends and spend time with them. She has a hot lunch with her friends, followed by a ride home organised by the staff.

F. Additional resources

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Vhi Healthcare Annual Report and Accounts 2014.
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