Fife QIS Project Report

10/06/2024

Purpose of report

This report is a summary of the work done collaboratively by DHI, NHS Fife and partners around the concept of using a QR code to handover digital records between organisations involved in a person's care. The work focussed on the transfer of a person from a care home to hospital via the Scottish Ambulance Service (SAS). It is intended to serve as a record of the work and includes recommendations for NHS Fife, the DHI and partners.

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Introduction

The DHI planned and ran two co-design workshops with NSH Fife and partners. These were nominally focussed on understanding the current state of services when transferring a person from a care home to a hospital in Fife and then design a future state that uses a QR code to share digital records between the pertinent stakeholders. The stakeholders considered were the person themselves, the care home, SAS, the person's family and the receiving hospital. There are still questions that need to be answered but the below recommendations contain the major design decisions.

Methodology

The project method followed an accelerate version of DHI's normal visual mapping and professional co-design method.

The steps included:

1) **Scoping -** Initial scoping was carried out between DHI, NHS Fife, Care Homes, ambulance services, hospital teams and other stakeholders. The agreed scope was the service journey encompassing a care home residents transfer via ambulance to hospital.
2) **Current State Mapping** – the team ran a workshop to map the current state patient pathway and understand the pain points experienced by patients and professionals.
3) **Co-designed Future State Mapping** – the team ran co-design workshop activity to review the current state map and then develop a future state service model. In addition to the service design elements, two other strands of activity were included:
    a. **The Art of the Possible** – the DHI team was asked to reflect on other digitally enabled service re-design from across health and care services, in order to stimulate the professional stakeholders to be able to stretch and consider how to scale and sustain the proposed methods.
    b. **Architecture –** There was focused discussion at each stage around the separation of data (storage, sharing) from the products, interfaces and experiences at various stages of the pathway. 'Platform' thinking was encouraged to ensure any output could be progressed without dependency on any one product or technology, and that the developed service could reuse common platform components shared with other similar services across health and care, to support sustainability and scalability.

Current State

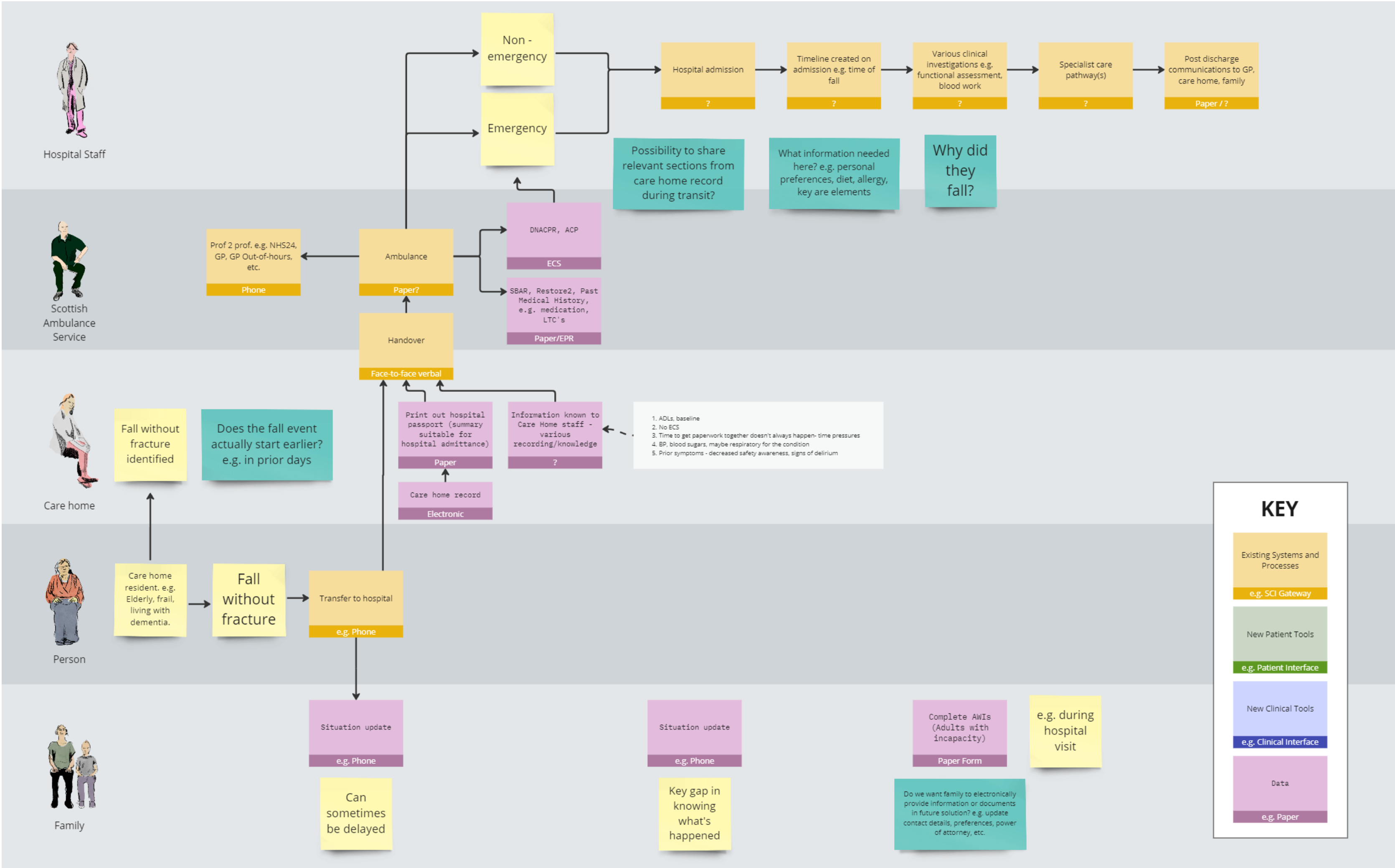

Figure 1: Current State: Fife Care Home to Hospital Transfers

Future State (High Level)

The 'swim lane' diagram in **Figure 2** shows the general timeline of a person in a care home suffering an accident. The diagrams show a highly abstracted view of a potential innovative, future service. **Appendix 1** contains a larger map with some additional insights.

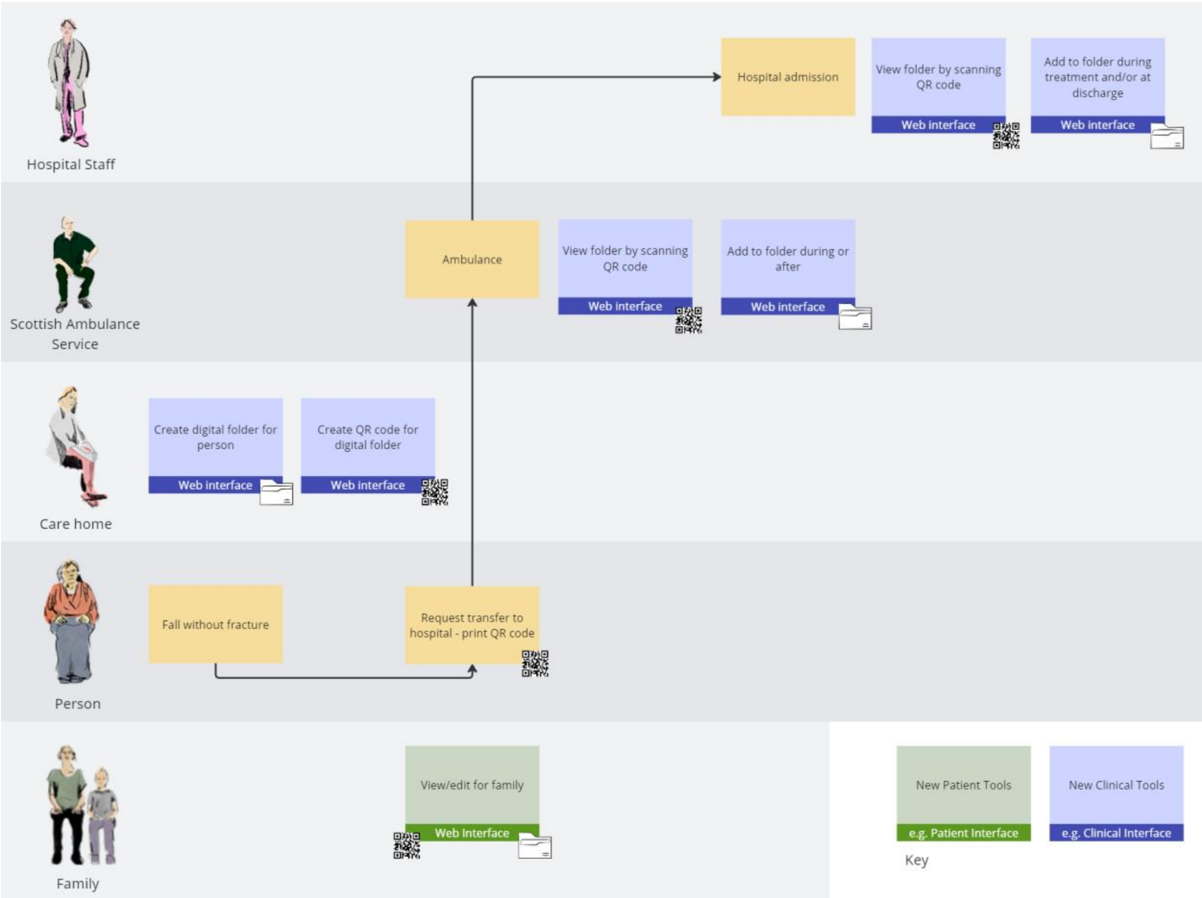

Figure 2: The preferred future state as described by participants at the DHI workshop.

In this future state service model:

1. **Starting the Digital Folder** – After the triggering event (e.g. a fall) and ambulance call, the care home team upload relevant information to a digital folder, and help the resident put on a wrist band with a QR code linking to the folder.
2. **Handover 1** – When the ambulance arrives, the ambulance clinician can scan the QR code using their mobile or tablet device to see the contents of the digital folder. When they scan the QR code the folder automatically records that the clinician has accessed the record. There is an opportunity for data entry into the folder by the ambulance clinician in the interface they used to see the folder.
3. **Handover 2** – when the ambulance arrives at the hospital, the receiving clinical team(s) can repeat the steps in Handover 1.
4. **Treatment or discharge** - info could be updated into the folder using the same interface.
5. **Review and Communications -** The care home staff can see where the patient is on their journey, and access treatment and discharge materials if appropriate. The patient's family could also access the patient journey information, giving them comfort as to the status and location of their family member.

Future State (Detailed)

1. Starting the Digital Folder (Care Home)

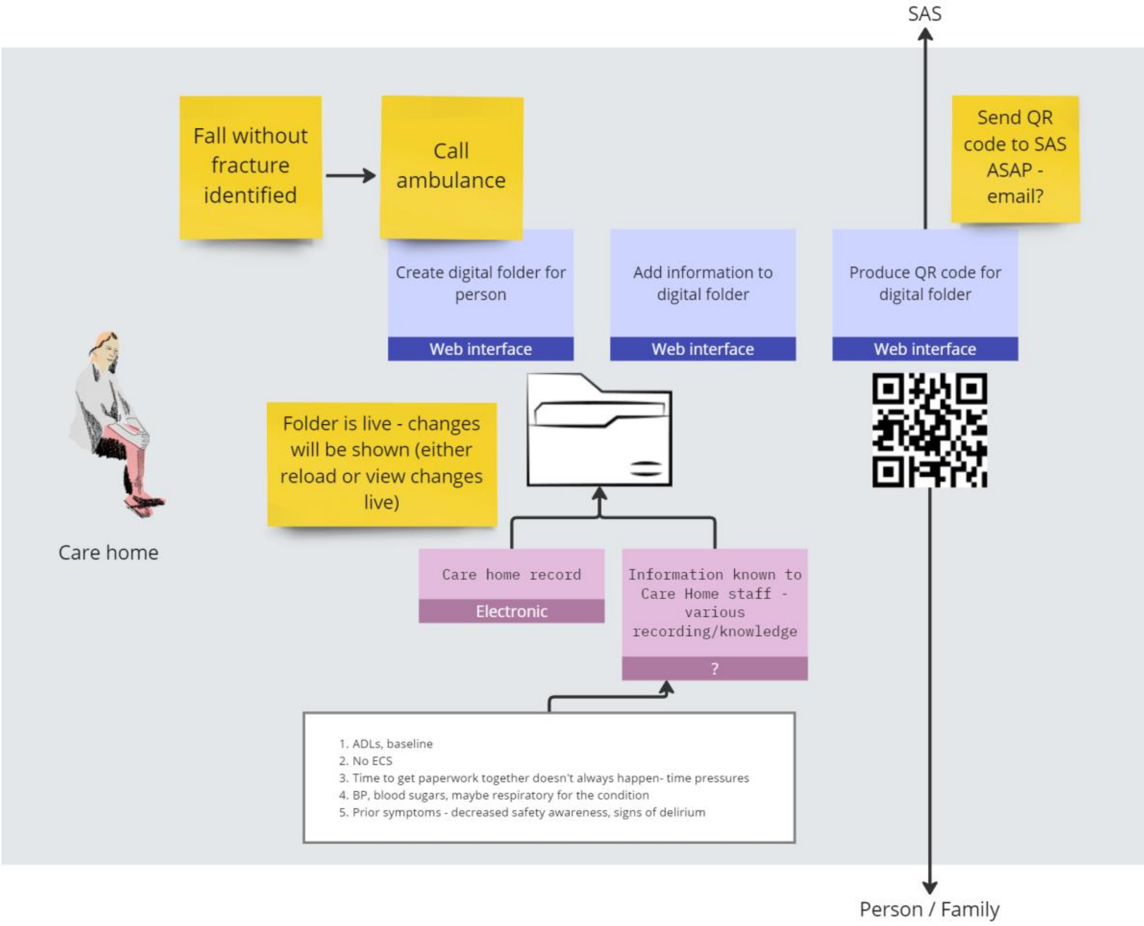

Figure 3: More detailed view of the care home element from Figure 2

The object is to have an "infrastructure-light", digital handover model for a test-of-change. i.e. no printing or systems integrations.

A QR code (or NFC chip) on a physical medium (wrist band, card, key fob) links to a digital folder of information for the person in the care home.

In the short term the data will be predominantly document based. There may be some limited structured data entry possible in the digital folder interface. Later the data should be structured, machine readable and drawn automatically from connected professional systems to unlock advanced features and reduce administrative overheads.

The care home would be the organisation that sets up the folder initially, and so would need the software, training and equipment (e.g. the physical elements like wrist bands with QR codes) for this role.

2. Handover One (Care Home to SAS)

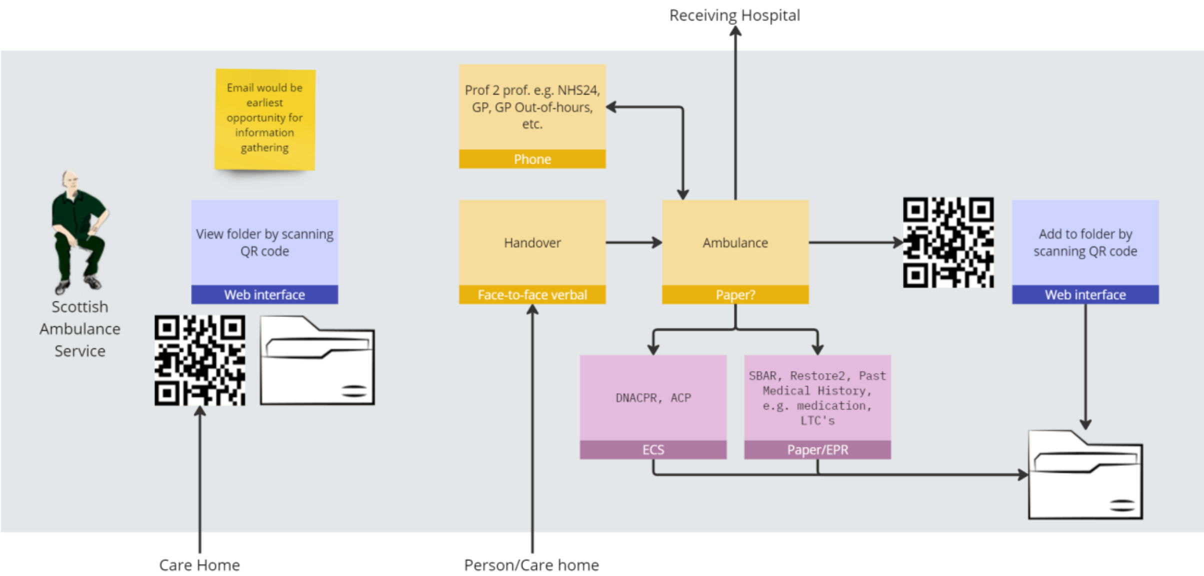

Figure 4: More detailed view of SAS element from Figure 2

The Scottish Ambulance Service clinicians would need ability to read QR codes. The staff currently have their EPR (Electronic Patient Record) on a Windows tablet device which should be capable of reading a QR code. SAS are also rolling out smartphones to their clinical staff, which may provide an alternative, easier route for either QR code or NFC methods.

Technically, it may be difficult to share information via the digital folder while in transit. i.e. not shared until signal is available. SAS crew often wouldn't have time to enter data into SAS EPR while in transit. So, updates will arrive after received at hospital. On current SAS EPR the 'send' button closes the record for SAS.

Move to web-based version of SAS EPR is planned - possible opportunity for integration when this happens.

3. Handover Two (SAS to Hospital)

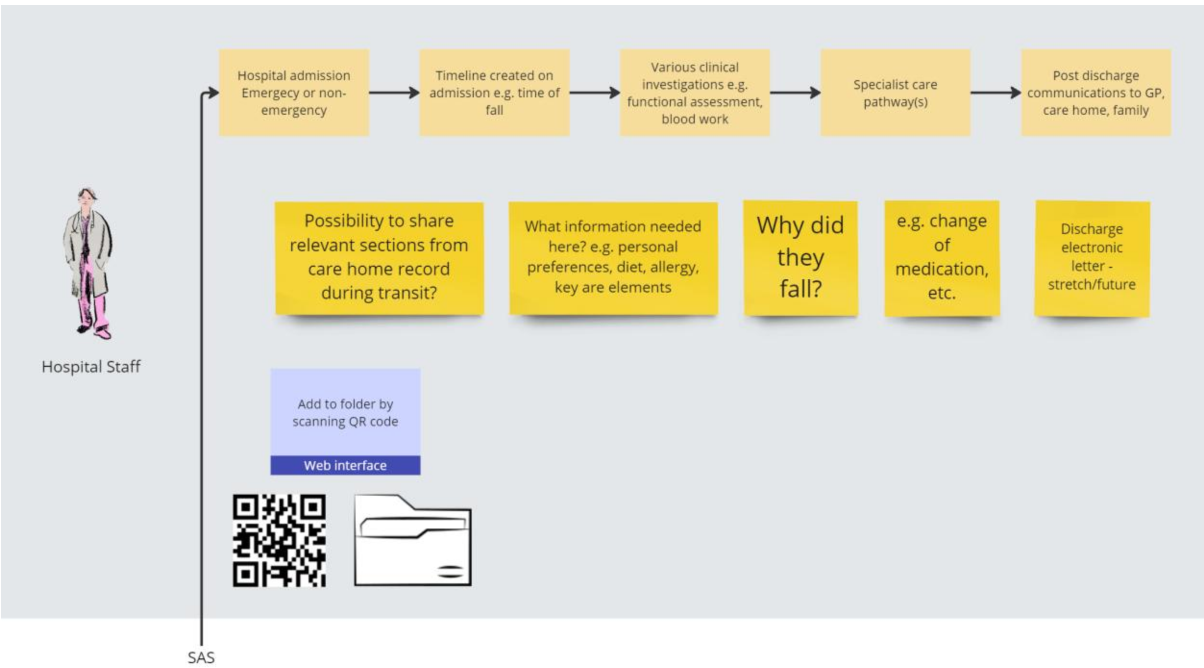

Figure 5: More detailed view of the receiving hospital within Figure 2

The team at the receiving hospital would need the ability to read the QR code. This would likely mean a web application that could be accessed via a device with a camera (phone, tablet, PC) to read QR codes or alternatively NFC capabilities.

The workshops did not deeply investigate the journey beyond the patient's arrival at hospital. The data from earlier in the journey would help at multiple stages through that hospital process. That said initially the biggest valued would be at the 'hospital front door' for initial assessment to ensure the best possible pathway selection.

4. **Treatment, Discharge, Review & Communications**

Most of the discussion focused on the journey into hospital and the "push" of data from early in the journey towards hospital. Whilst it may be beyond the scope of an initial pilot project, it is important to note that the digital folder could be used by the hospital team to share treatment, status and discharge information back to the care home and the patient's family and carers.

Figure 1: More detailed view of the person's family within Figure 2

Technical Considerations

There are some decisions still to be made around the following elements:

1. **Permissions**

There are two broad options for handling permissions:

- All organisations have the same access for the duration of the episode
- Different QR codes could be created for different permissions. e.g. a QR code for SAS, a QR code for the family, etc

Permissions would set what can be created, read, updated and deleted (i.e. CRUD). CRUD actions should be timestamped and linked to organisation. Unresolved questions include:

- How do we know which organisation is editing? We could use the QR code if they're created for different organisations?
- We could use organisation specific files. e.g. SAS add and edit their files, Care home adds and edits their files, etc.
- If a field or file is updated, then should we keep an accessible history?
- How do we close the episode? i.e. when does the QR code stop working?
- What format should the data be in? A PDF is simple to create but difficult to update.
- Do we want family to electronically provide information or documents in future solution? e.g. update contact details, preferences, power of attorney, etc.

2. **What Information Should be in the Folder?**

No decisions were made about the precise contents of the folder.

Currently shared (verbal / paper handovers):

- Current medication
- Normal picture of the person e.g. likes and dislikes

Put together from scratch by each professional team, accessing a mixture of verbal handover, hospital pack, and their own professional systems

In the future:

- A Front Page - at a glance - critical info - e.g. name, next of kin
- Circumstance of fall
- Mood
- 'Getting to Know Me' (i.e. About Me) document would capture likes and dislikes
- Key documentation such as DNACPR, Section 47 (certificate of incapacity), ACP
- Timeline of events

Service Development Roadmap

Horizon 1: Pushing a care home document to SAS and hospital

The care home team puts a PDF into the folder and link it to the NFC / QR code on a wrist band. SAS and the hospital have 'read only' access. The system logs when each team has accessed the file, giving a read receipt back to the care home interface so they can see where the patient is, and which organisation is accessing the data.

Horizon 2: Structuring data and expanding access

As per Horizon 1 but:

- The care home team adds "normal" observations into the folder as structured data manually via a web form. This might include the persons normal level of lucidity, breathing, vital signs, mobility. The ambulance clinicians and hospital front door team can do the same, allowing for the combined clinical team to see what 'normal' looks like and any change over time. The data entry for the ambulance team would need to be very limited and would only be for the pilot as it is highly unlikely this would become common practice without integration into the existing SAS EPR.
- A treatment summary / discharge letter can be uploaded to the file by the hospital end to give the care home a better and earlier understanding of the situation and assist with earlier discharge if appropriate.

Horizon 3: Integration & Automation

As per Horizon 1 & 2, but with the structured data being shared bidirectionally with care home / SAS record systems. Hospital systems may be possible, but the larger value comes from integrating the earlier record systems to improve the flow of data into the hospital to effect treatment decisions.

At this stage, automated sharing with the family could be considered by giving a separate web interface onto the folder – showing timeline and where the patient is on the journey.

Actions to Progress a Pilot Project

Assuming a ‘Horizon 1’ initial scope, this is a non-exhaustive list of actions arising from the analysis:

1. Check on the NFC / QR code reading capabilities of the participants at each stage. What is the SAS smartphone availability and whether the devices have enabled cameras, internet access and permissions to access the new URLs? Do the hospital teams have any internet connected smartphone, tablet or a PC with a webcam that could host the web application (permitting the new URLs) and allow the QR code / NFC chip to be read?
2. Select a pilot care home, ideally one that can export an existing ‘hospital pack’ that would otherwise be printed and handed to the ambulance clinician. Review this pack for ‘at a glance’ accessibility with ambulance clinicians and hospital teams to understand how usable it would be if presented to them digitally during handover. Note it is likely that this pack will hold more detail than the receiving clinical teams can handle in a pressured environment. Exploring whether higher level summaries can be generated and exported by the care home system could address this if it is an issue.
3. Progress appropriate information governance processes between NHS Fife / the care home and SAS.
4. Consider what a pilot project would be evaluating. Is this about faster handovers? Improved understanding of the patient journey and risk factors to enhance safety and efficacy of care? More appropriate investigation / test ordering and improved pathway decision making in hospital?

Appendix 1 – Whole Future State Map (With Commentary)