

## Service Redesign Pillars

### Chaloner Chute

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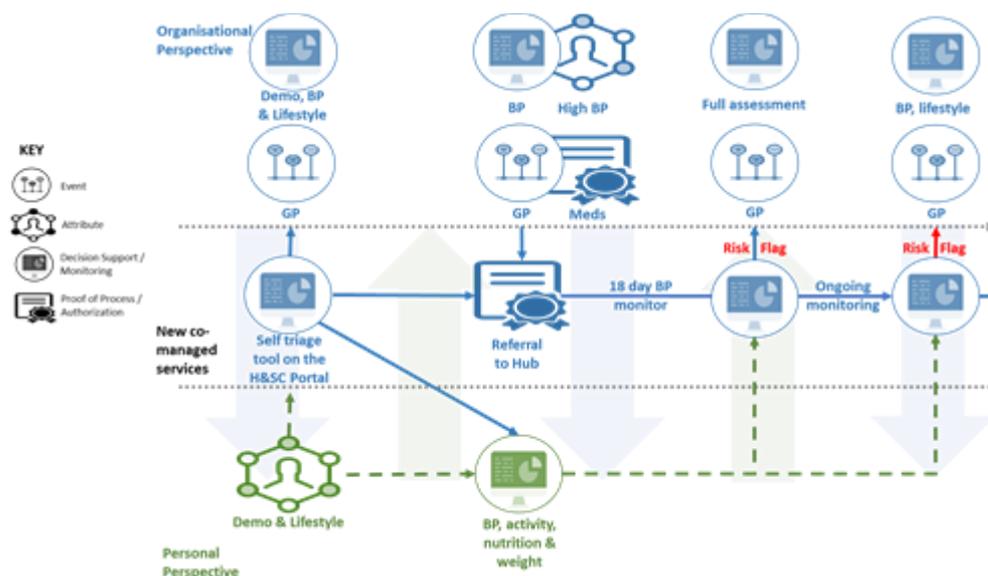
The sustainability of health and care services is increasingly expected to be achievable only with digitally supported change. Relating to the emerging digital capabilities discussed in the [previous blog post](#), the DHI Demonstration & Simulation Environment is focused on three service redesign pillars:

#### Pillar 1 - Management of Risk, Prediction & Prevention

A sustainable system that predicts care needs and personalises interventions will depend on:

- **Low effort monitoring** - Creating new, low cost, convenient and ideally passive ways of self-monitoring, using widely available and familiar technology.
- **Automation** - developing analytics and machine learning techniques to translate this data into insight that can be delivered to the right care giver or decision maker at the right time.
- **Formal Care Management by Exception** - using this new data to power predictive models and proportionate responses – starting with the most informal, with escalation when necessary.
- **Tailored interventions** – using the data generated by citizens to personalise care journeys and develop new services and treatments that can support more holistic benefit to the citizen.

#### Example: Hypertension Management



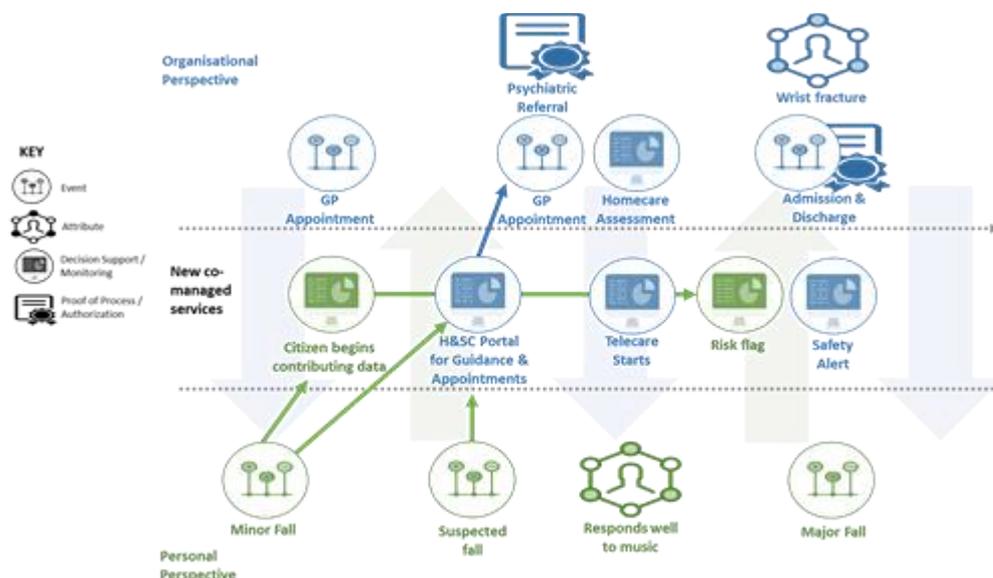
In this example we see the citizen is offered a self-triage tool, which they can auto-populate with data they already hold on their smartphone. This starts a 'co-management' journey (middle line) which they contribute to on their own terms (bottom line) and that may escalate them into the normal clinically-led model (top lines). It shows how they can either consume a state-led service (blue) that allows home-based Blood Pressure (BP) monitoring, or they can use a trusted consumer app / device themselves (green). Either way, their ability to contribute lifestyle and BP data on an ongoing basis can feed a risk management algorithm that either supports their self-management, signposts them to community services or escalates into the clinical tier when necessary.

## Pillar 2 - Empowerment, communication & planning

Moving towards a citizen centred, integrated and seamless care experience will depend on:

- **Self-management** - Allowing the citizen to control their own data, enabling the citizen and their informal care network to be more responsible and resilient in the management of their own care.
- **Co-management** - Developing communication and care coordination tools that use data generated by both the citizen and the system to power meaningful dialogue and joint planning.
- **One Version of the Truth** – Creating data once and reusing it, with all relevant actors contributing to and using the same version of the truth.
- **Personalisation** – Allowing the citizen to hold this single version of the truth and use it to activate personalised services on their own terms.

### Example: Frailty Management



In this example the citizen and their family are able to curate their own story (green), capturing early events that help to predict and prevent issues arising. After a minor fall the citizen and their family buy some consumer technology – perhaps a wearable and a set of smart scales. An algorithm raises risk flags when the person is inactive, or their weight starts to drop, allowing their family to help them stay mobile and strong. These flags populate the family’s events timeline. When they have to escalate to formal services (blue), they are now armed with data that can help with joint decision making. Formal service interactions are automatically added to the family’s timeline. Over time everyone sees a richer picture of the patterns and opportunities for change.

### **Pillar 3 - Trust in Distributed Data**

The first two pillars are dependent on trust in data shared across an increasingly complex and diverse set of actors, which can be built through providing:

- **Data provenance, integrity, and consensus** – distributed ledger technology can support the automation of governance to build trust in vast quantities of data generated outside of well-governed service processes. See this [UK Government paper](#) for an idea of the possibilities.
- **Sustainability, reliability and timeliness of data communication** – new connectivity capabilities, such as [Low Power Wide Area Networks](#), can improve the reach and consistency of information from lower cost sensors. DHI are working with Censis, who are already [leading the way](#) in its use.
- **Co-managed data to support co-managed care** - in this increasingly distributed world, attempting to govern permissions on an organisation to organisation basis is not scalable. The more informal care providers – be they third sector, independent or citizens – cannot participate effectively in this way. It is not desirable from a policy perspective as it excludes the citizen and perpetuates a patriarchal model. There will always be critical health data that must move between organisations for individual and population health purposes, but for the more informal and distributed data sets, the citizen is a more appropriate point of integration. Here is an early example of the premise from a UK government sponsored [MiData initiative](#).
- **A means to ensure only those permitted can access the data** – the distributed and messy nature of these informal care networks mean that previous organisation centred ‘walled garden’ approaches to data security will not be viable. Data will need to be encrypted ‘end to end’ with the ‘keys’ to read the data ultimately controlled on an active citizen consent basis. Here is a [lifewire article](#) that explains it without too much jargon.

A number of these capabilities are only just emerging, and so concrete existing examples in health and care are hard to find. DHI will be sharing some examples it is working on to combine these capabilities.

My next blog post will go on to describe more of what the DHI Demonstration & Simulation Environment is doing to explore these emerging challenges and opportunities.