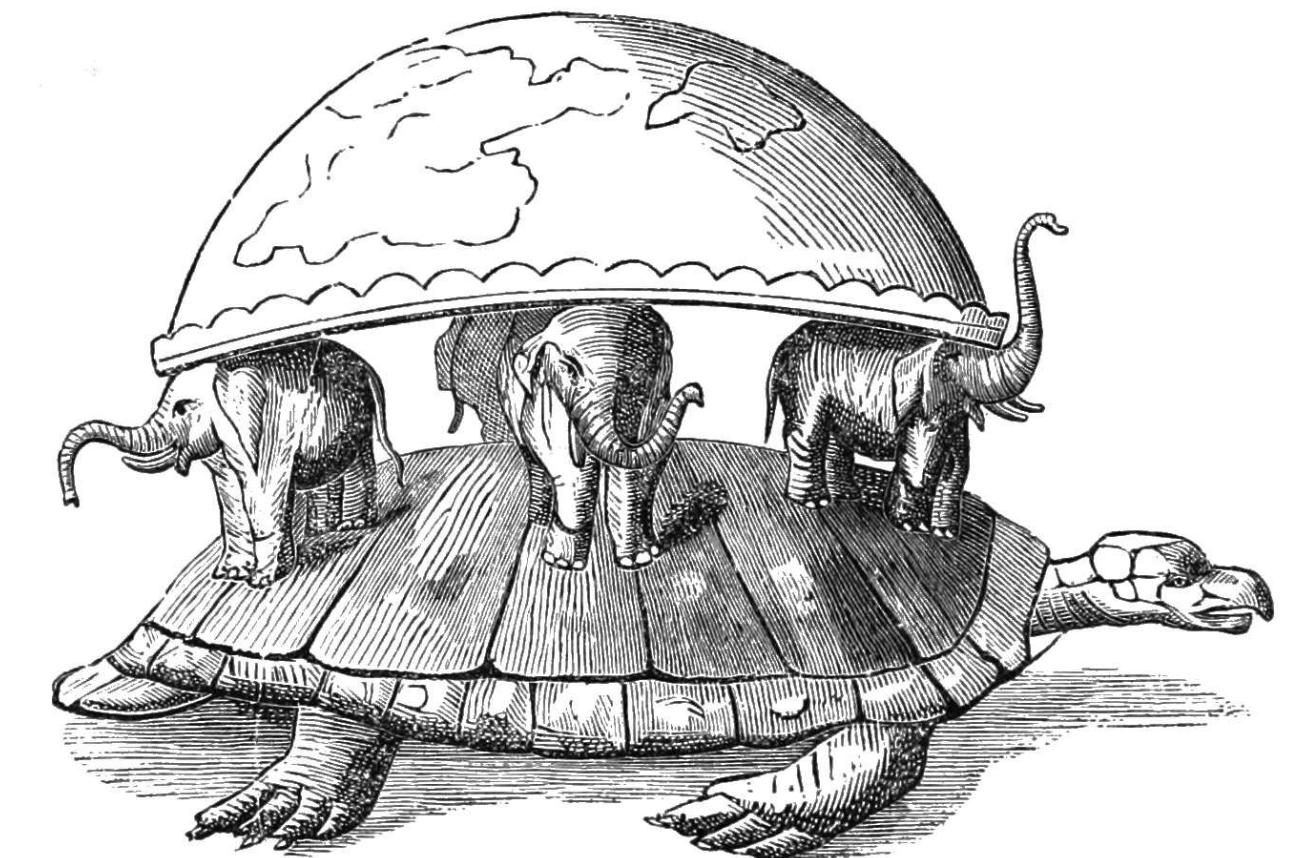


The Health of a Nation

**What's your diagnosis?
What's your management?
What's your decision?**

Dr. Mark Wardle



I'm seeing you in my clinic

What are we going to do?

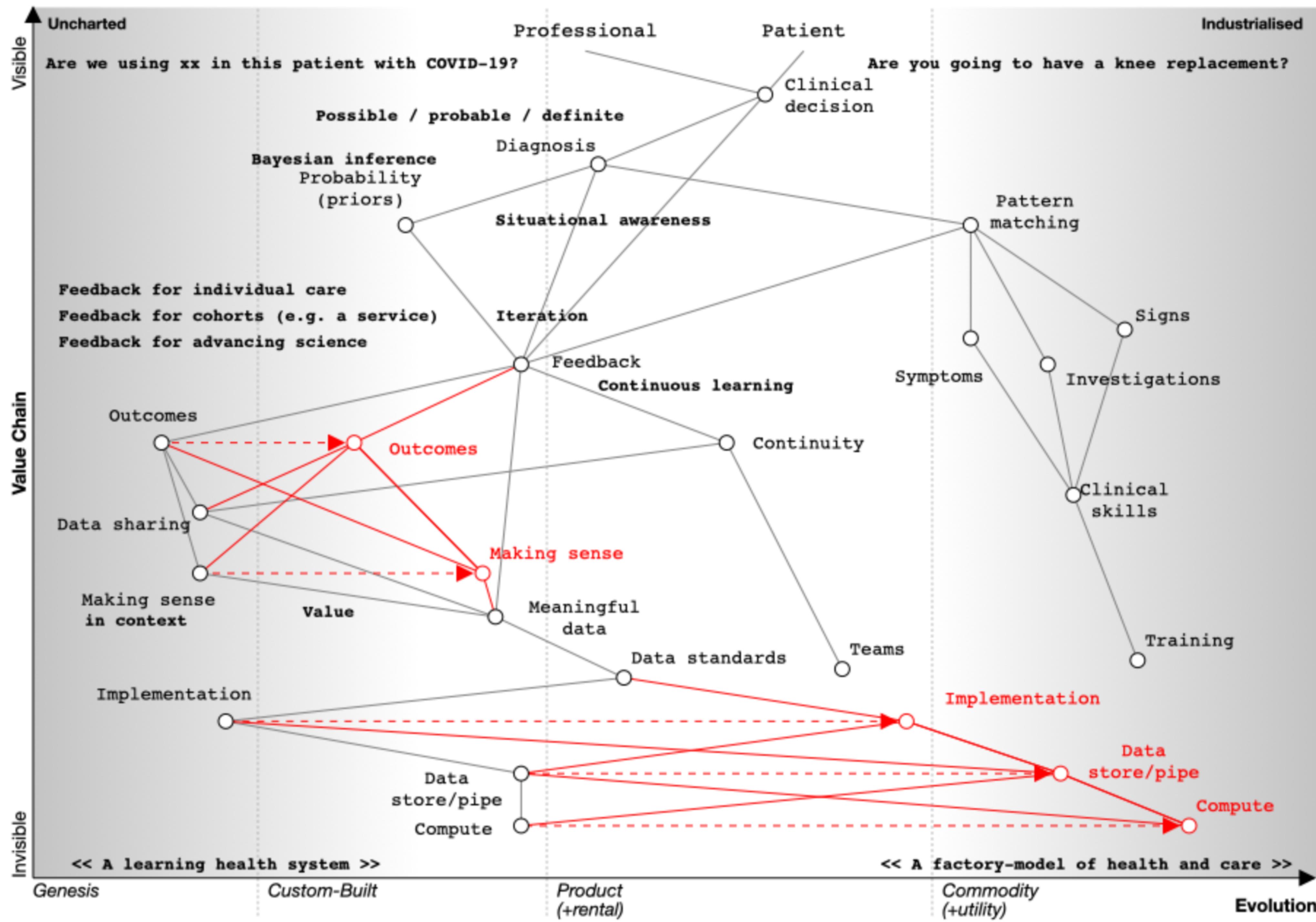
Always orientated towards actions

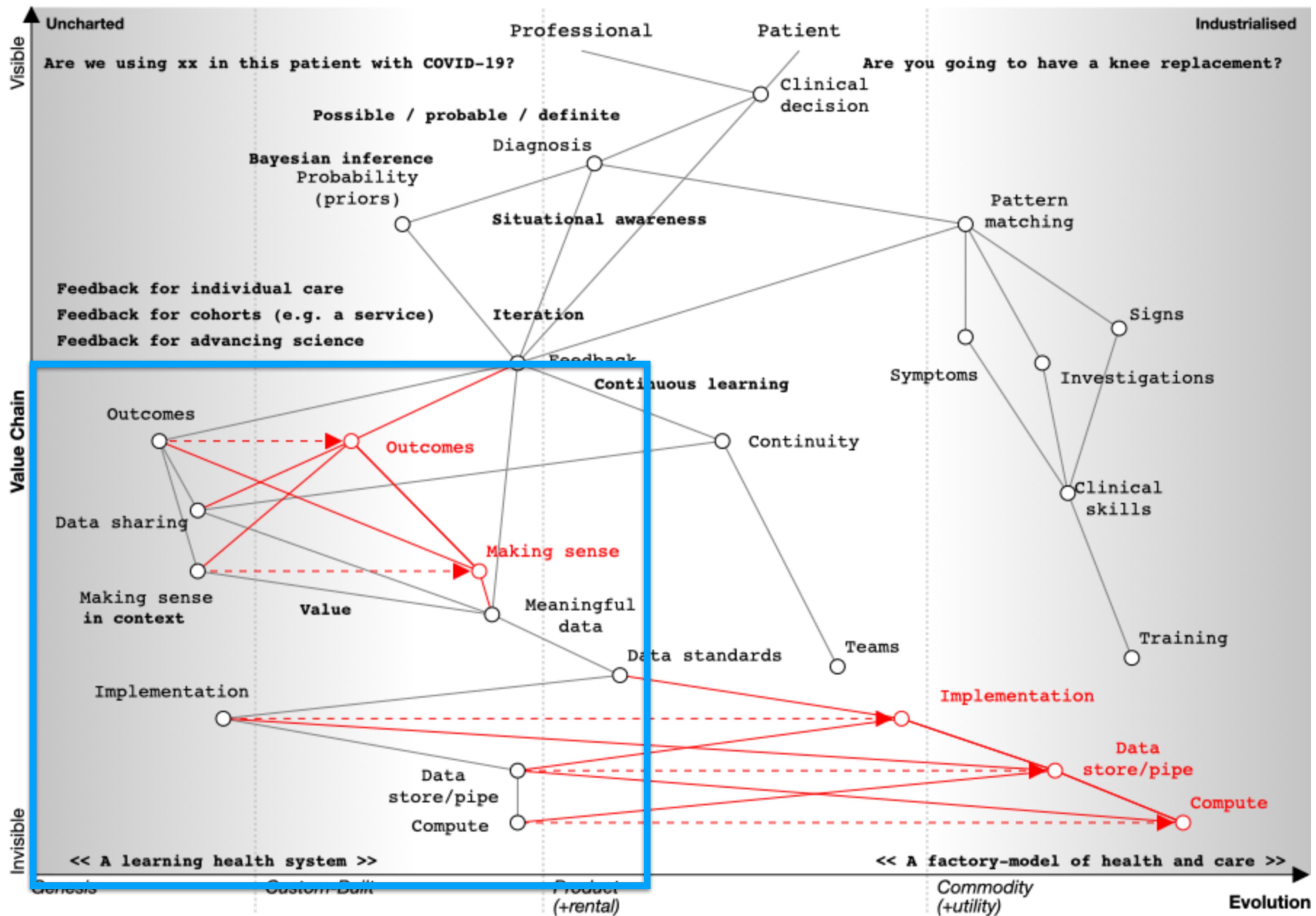
That means decisions

Visual studio code
01-diagnosis

All my maps are wrong. I hope they might be useful.

1. What we need
2. What we have
3. What we need





So, what's our plan?



In which areas should we focus?

- **Outcomes** - meaningful outcomes, measured and used to inform *value*
- **Data sharing** - how do we do this, safely, distributed, at scale, with consent and control?
- **Making sense** - how do we make sense in context? What tools do we need? How to support *shared* sense and decision making?
- **Implementation** - most should *not* be custom-built, and much *shared / for the commons*.
- **Data store / pipelines / compute** - why are we still building and running data centres?

We want to run a new algorithm
in our clinical work in the UK.

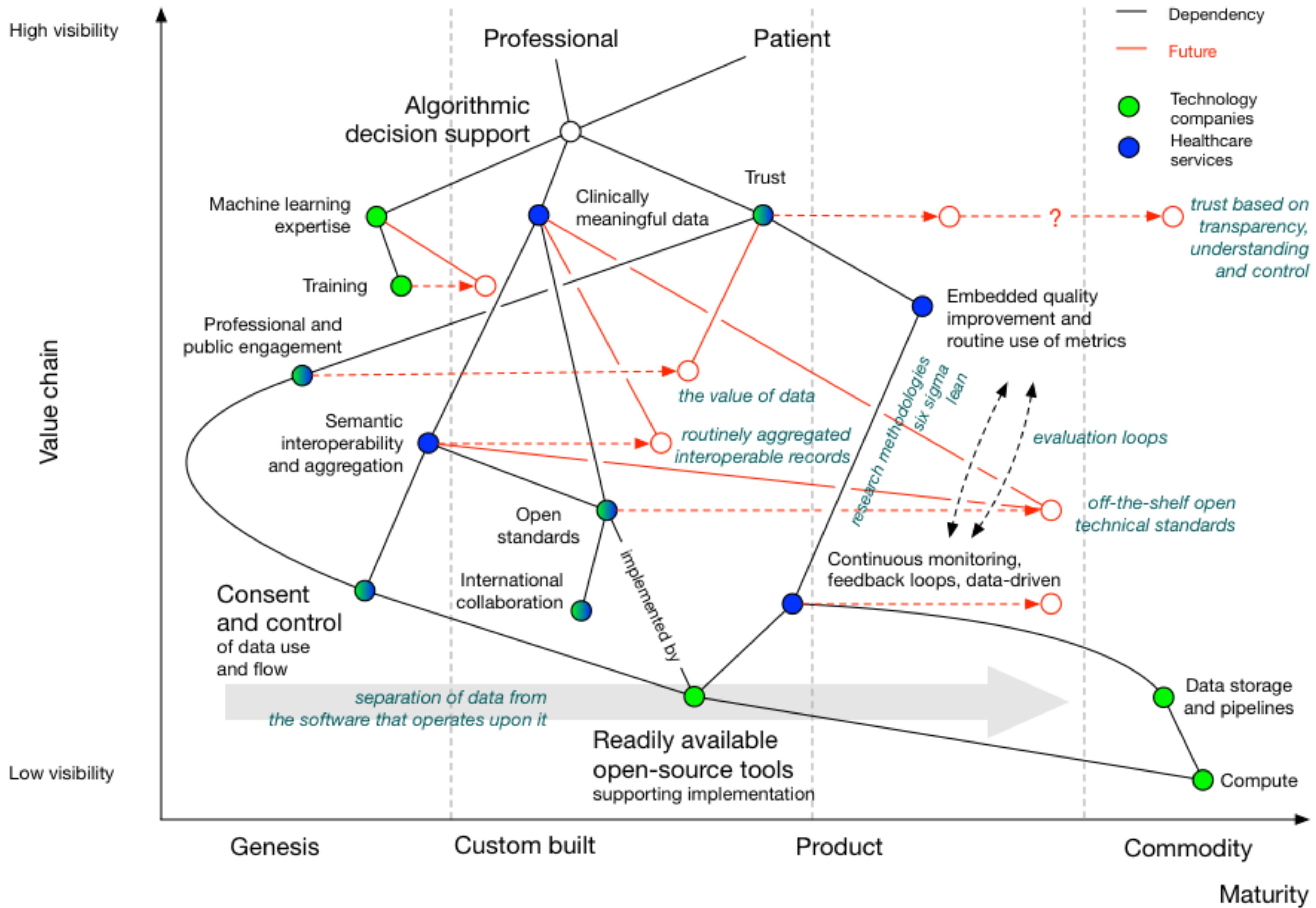
Do you think we've industrialised this yet?

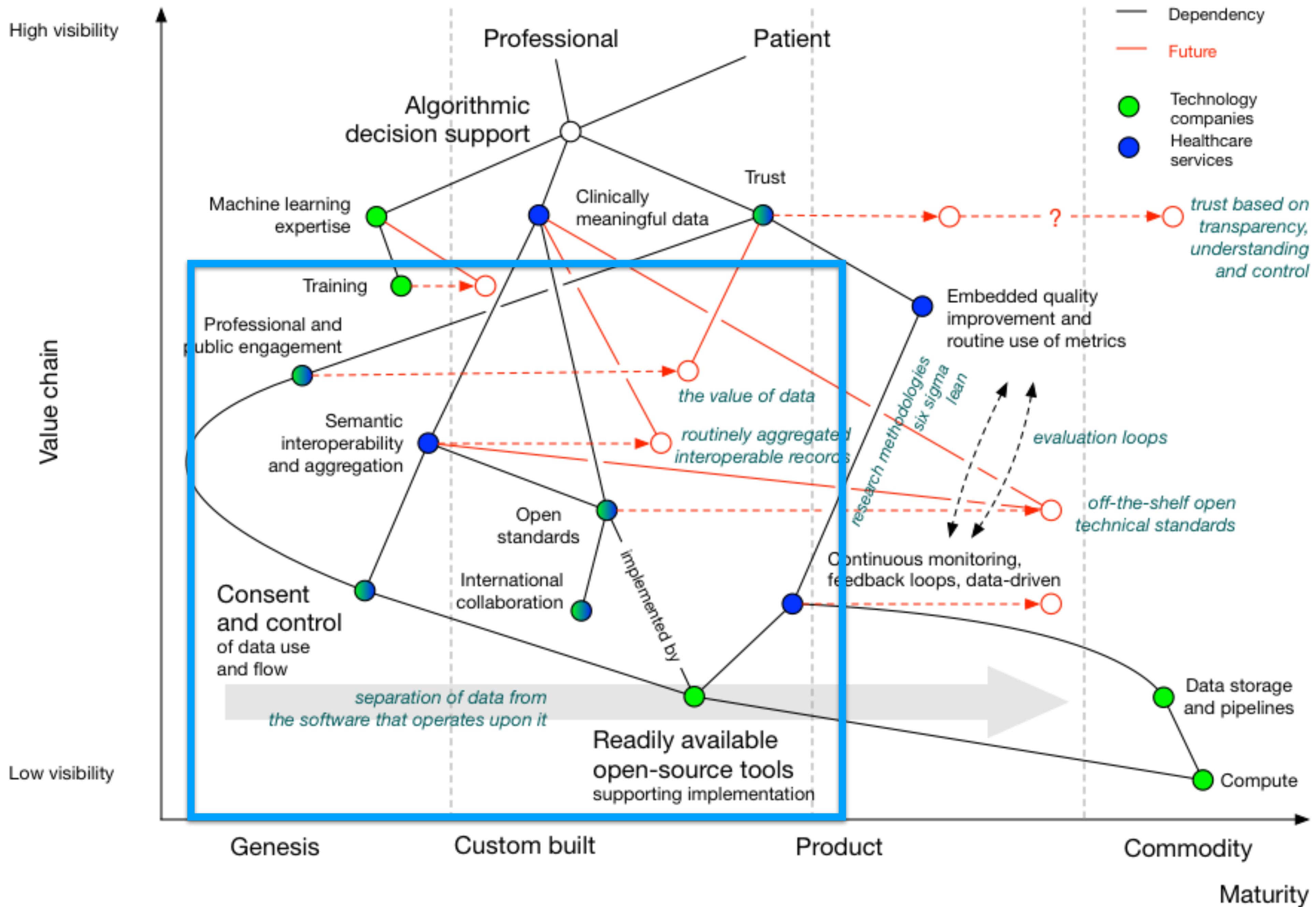
Or an off-the-shelf product?

Or are we breaking new ground every time we want to do this?

Visual studio code
02-algorithms

<https://wardle.org/strategy/2018/08/30/algorithm-strategy.html>





So, what's our plan?



In which areas should we focus?

- **Clinically meaningful data** - including outcomes, measured and used to inform *value and performance* - *with fast feedback to support continual and routine evaluation*.
- **Data sharing** - how do we do this, safely, distributed, at scale, with consent and control?
- **Trust** - how do we build ‘systems’ that inculcate trust? Needs foundation of ongoing monitoring and quality improvement.
- **Implementation** - most should *not* be custom-built, and much *shared / for the commons*. Data sharing, and implementation of data standards open-source.

The use of standards should *not* be a differentiator; you don’t choose your browser based on its implementation of http. Differentiation by suppliers can and must be higher up in the value chain!

- **Data store / pipelines / compute** - again, why are we still building and running data centres?

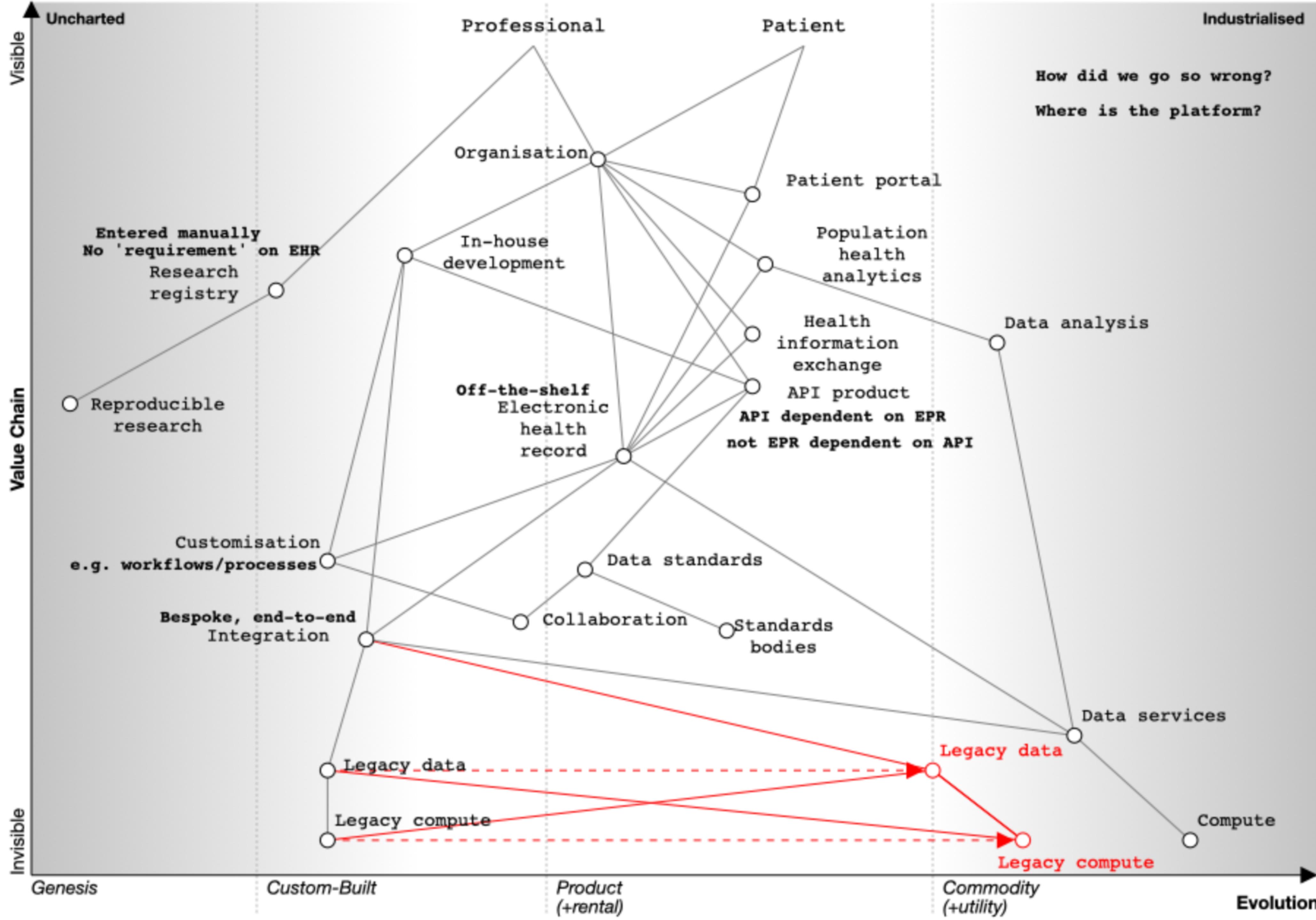
So do machines need that much
different to what I need?

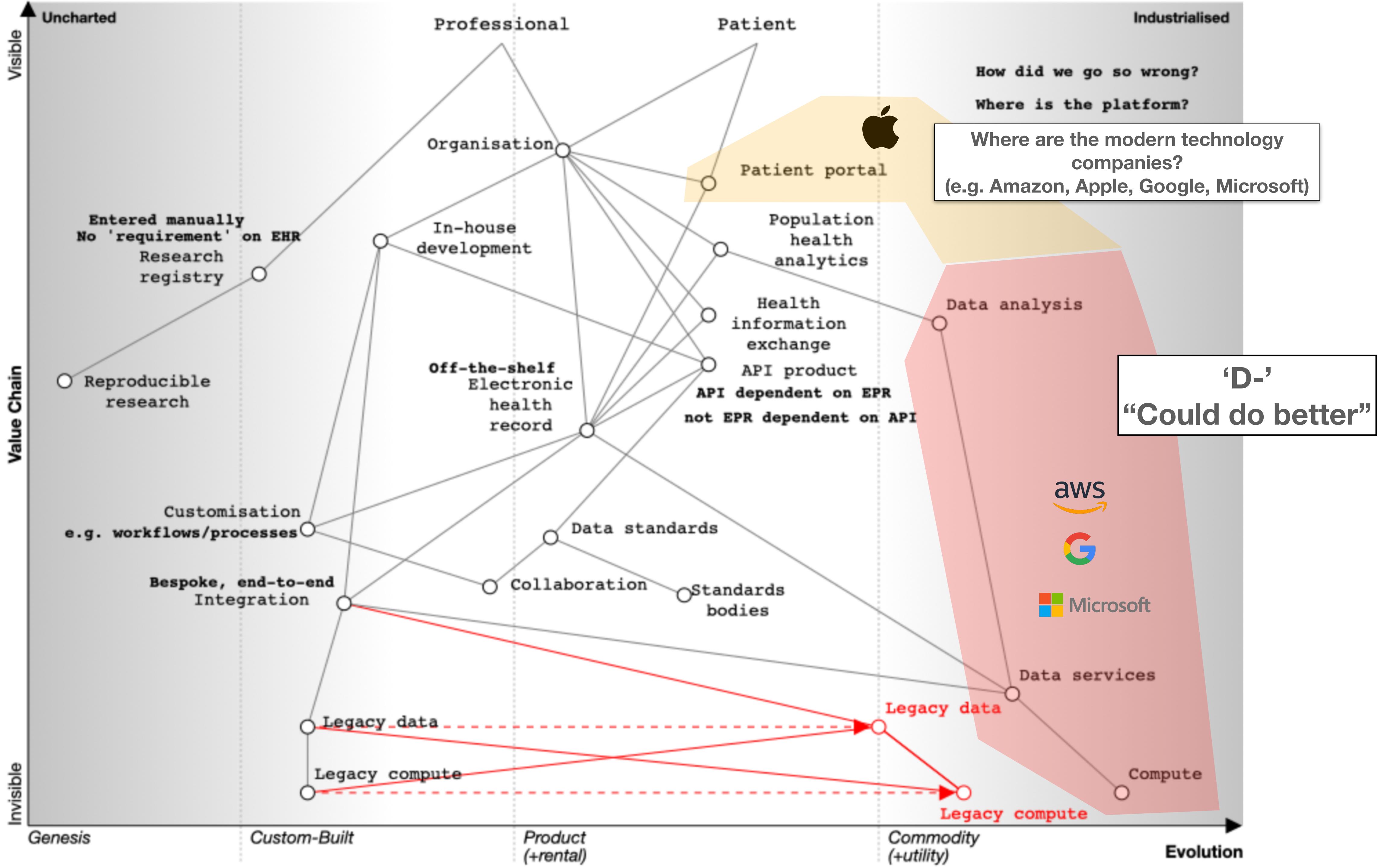
Not really!

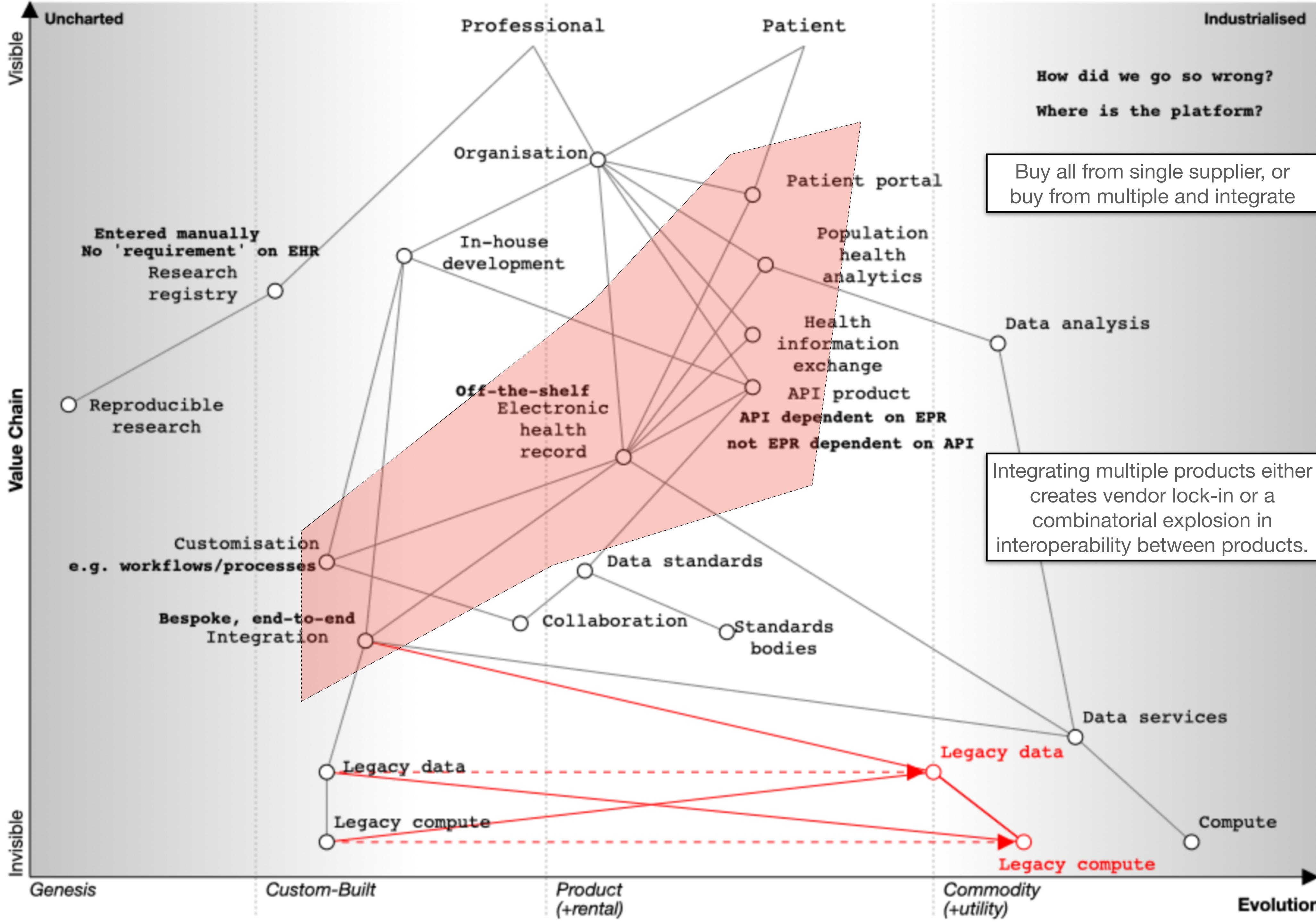
What do we have currently?

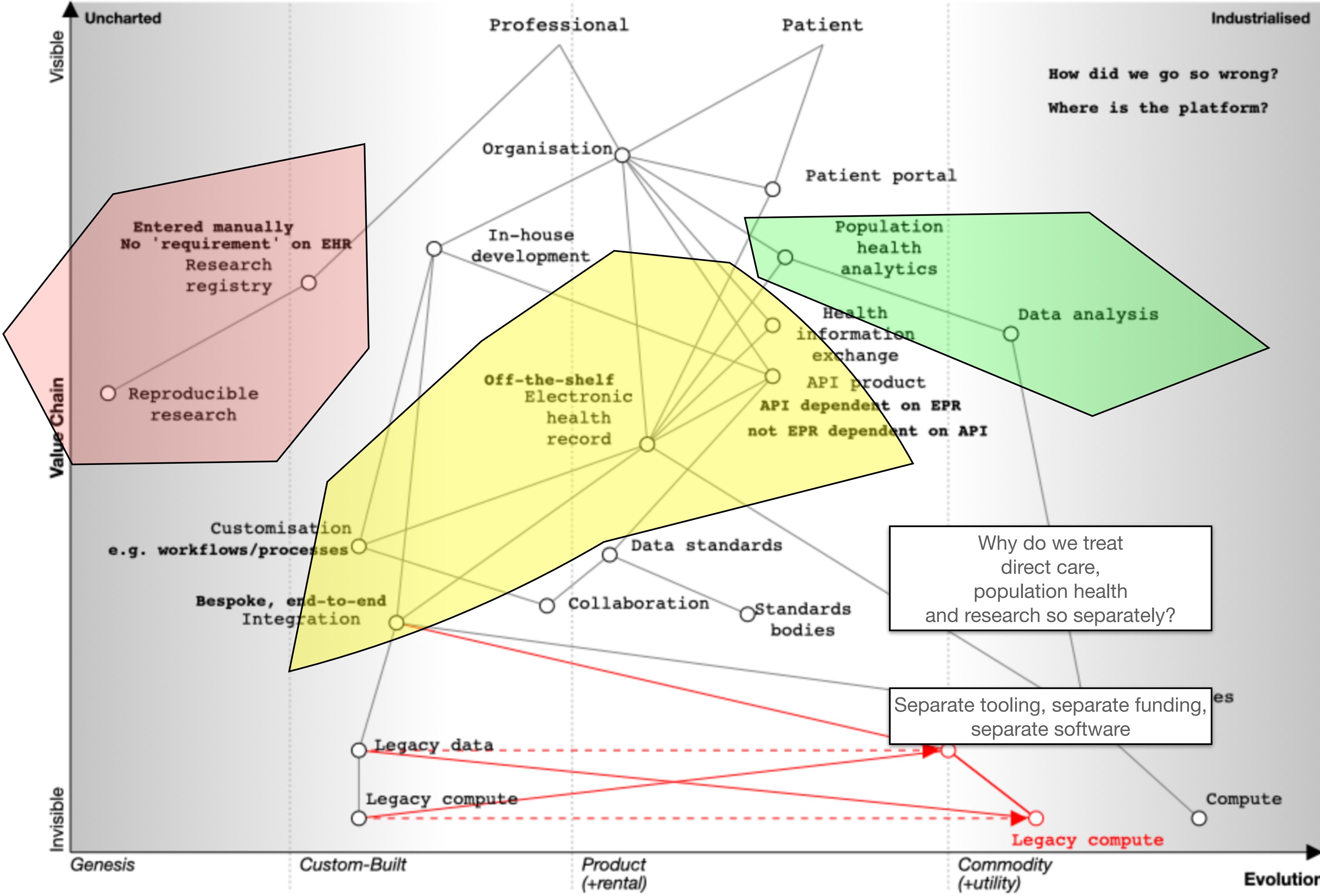
Can we sense check?

Visual studio code
03-current-state









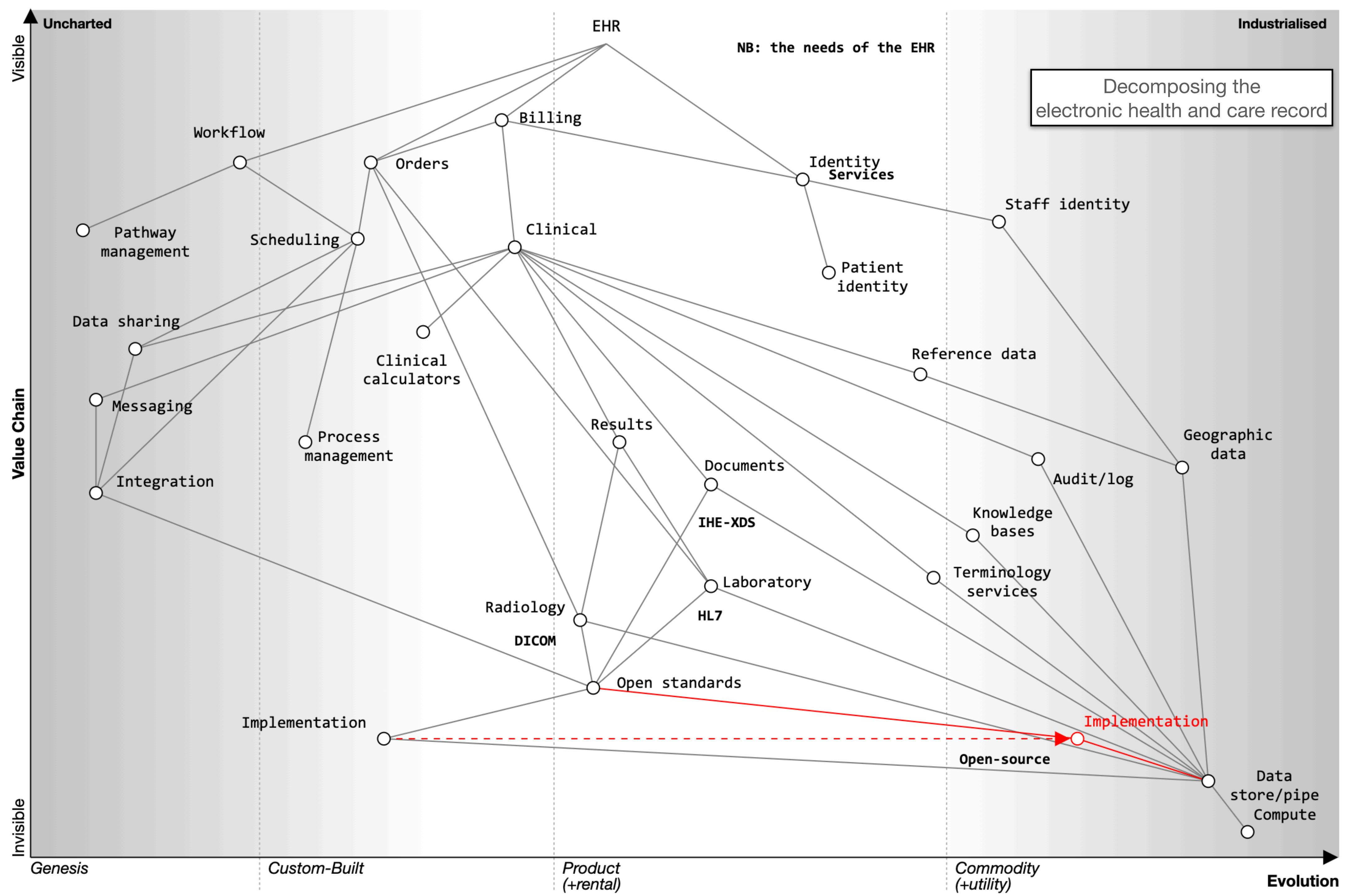
What does an EHR need, anyway?

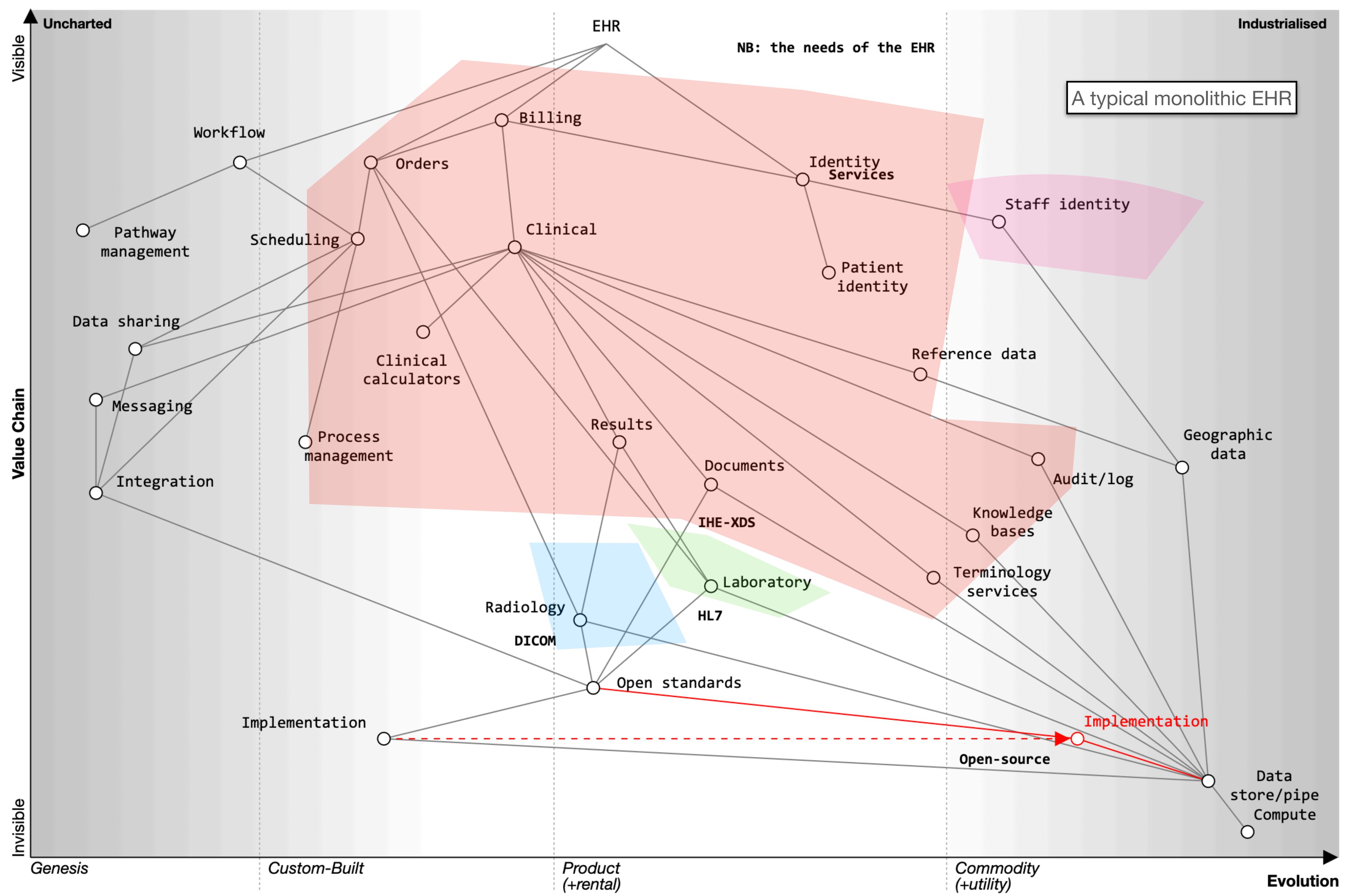
There are two broad options:

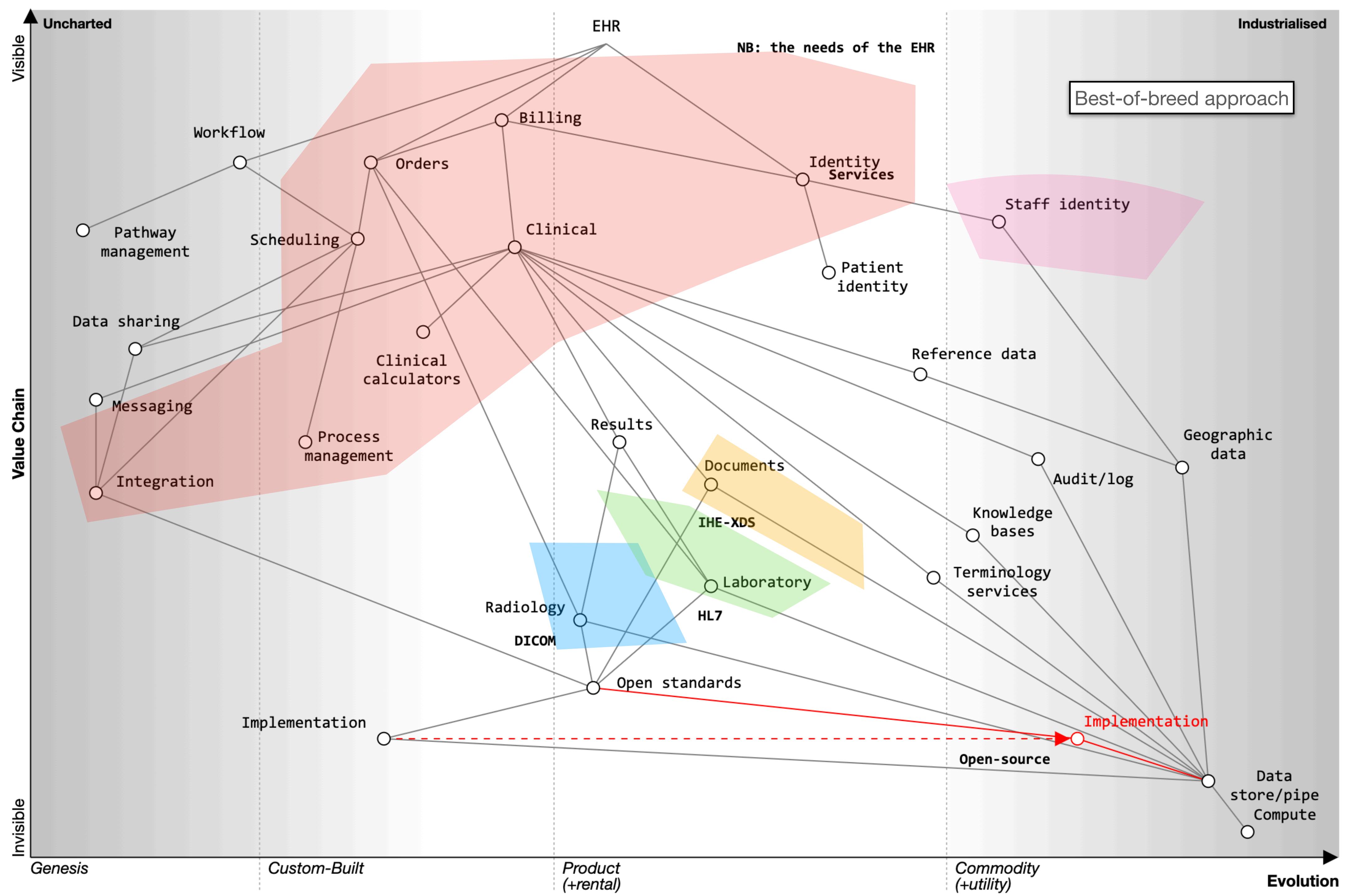
- ‘Monolithic’ (truly a monolith, or coupled by single vendor)
- Best of breed (multiple vendors)

Let’s pretend we’re building an EHR. What do we need?

Visual studio code
04-epr





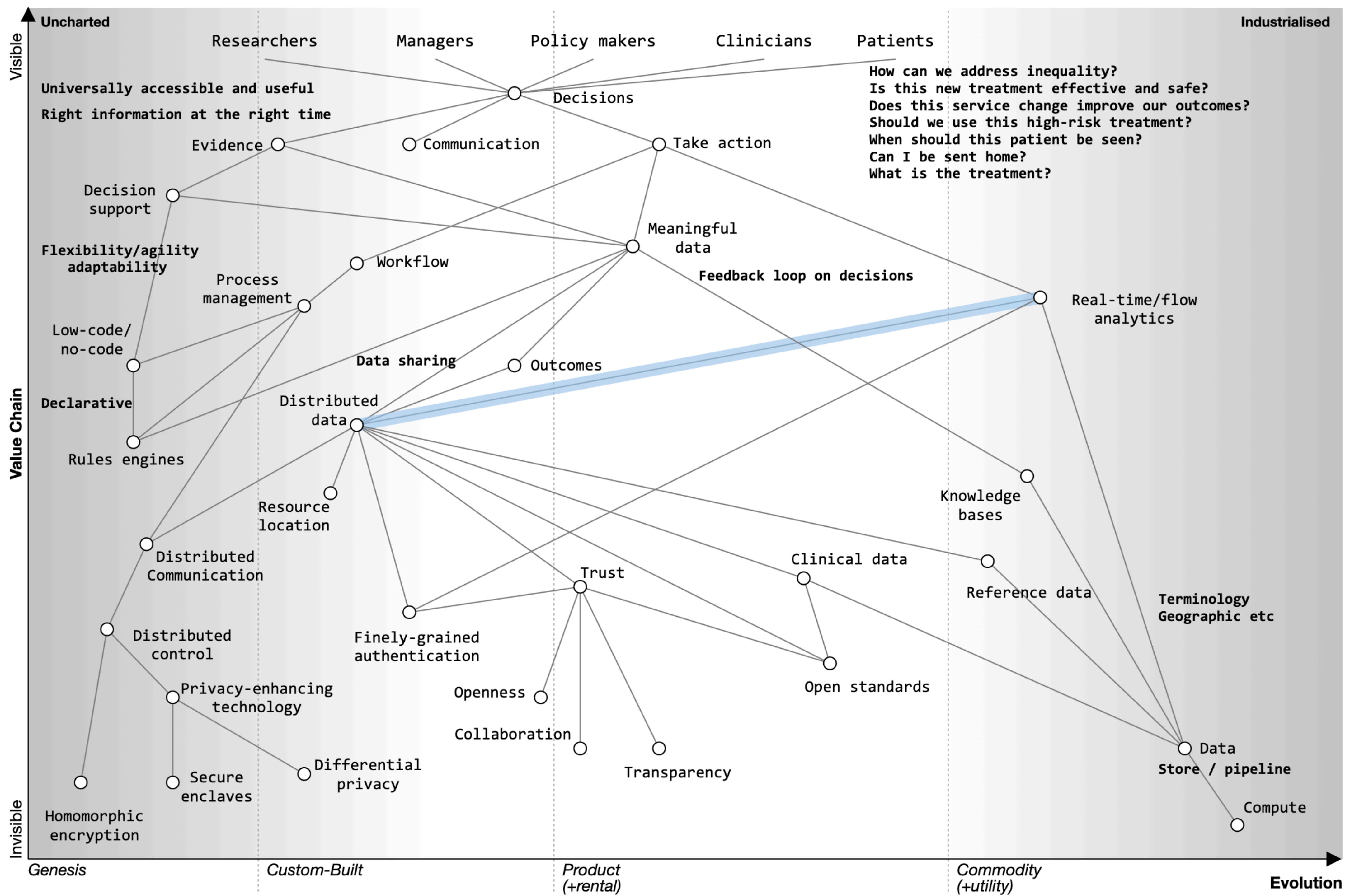


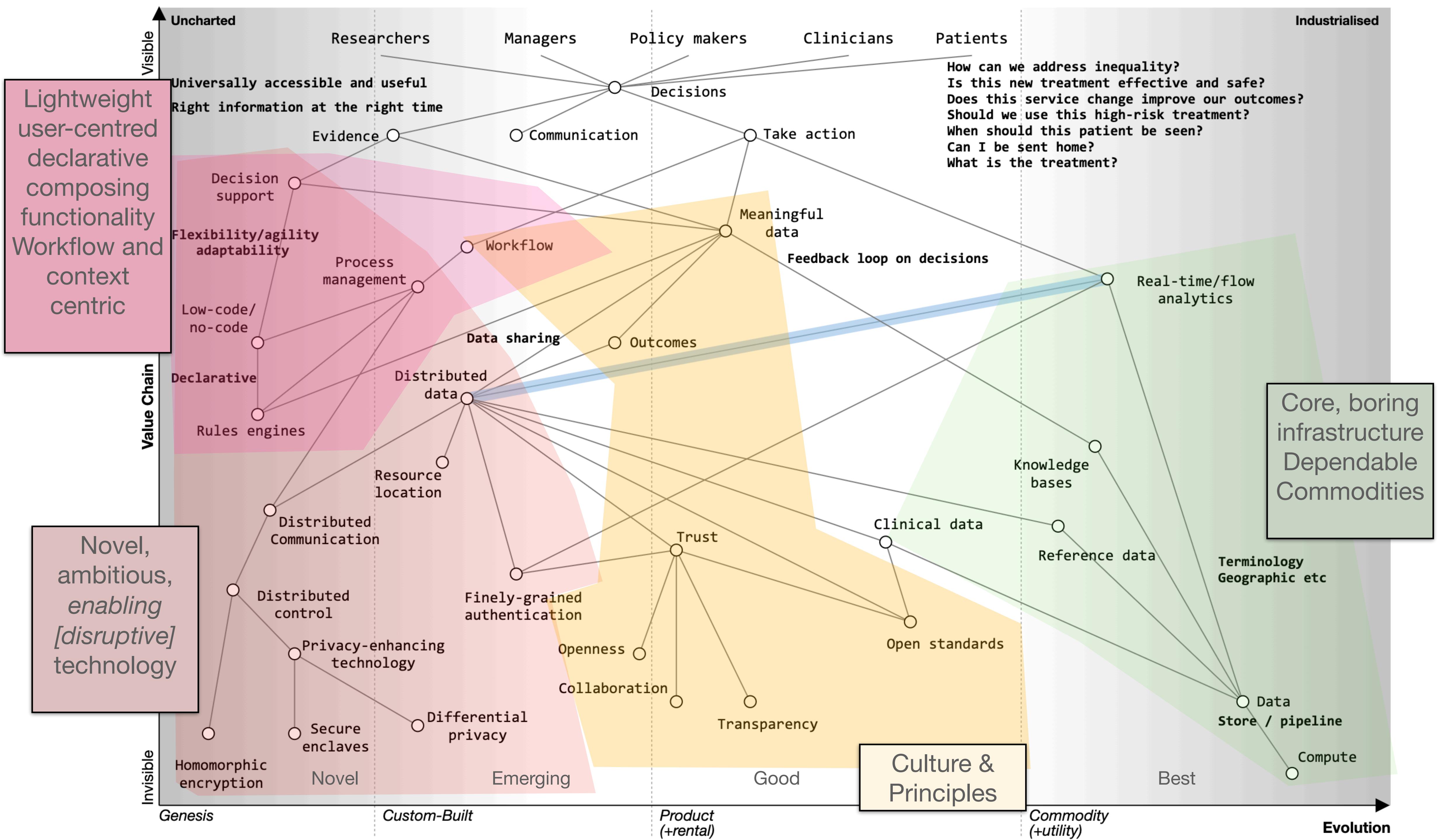
Thinking in context of the needs of an organisation-centric EPR is not good for the health of the nation.

We need to start with user needs.

Visual studio code
04-true-needs

*PS. The organisation is not the user, in general
but they hold the purse-strings*





So, what's our plan?



In which areas should we focus?

- **Clinically meaningful data** - including outcomes, measured and used to inform *value and performance - with fast feedback to support continual and routine evaluation.*
- **Data sharing** - how do we do this, safely, distributed, at scale, with consent and control?
Look to privacy-enhancing technologies (PETs), secure enclaves, differential privacy and homomorphic encryption
- **Trust** - how do we build 'systems' that inculcate trust? Needs foundation of ongoing monitoring and quality improvement. *Look to PETs.*
- **Implementation** - most should *not* be custom-built, and much *shared / for the commons*. Data sharing, and implementation of data standards open-source. *Modern technology companies must treat cloud as more than simply moving data centres to someone else's kit! Open-source is a strategic bet.*

The use of standards should *not* be a differentiator; you don't choose your browser based on its implementation of http. Differentiation by suppliers can and must be higher up in the value chain! *Better value.*

- **Data store / pipelines / compute** - again, why are we still building and running data centres?