

# e-Health and Big Data

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Integration Engine)



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**Prof Bill Buchanan, Niall Burns, Richard Lewis, Dr Lu Fan,  
Owen Lo, Omair Uthmani**  
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# e-Health and Big Data

## Context



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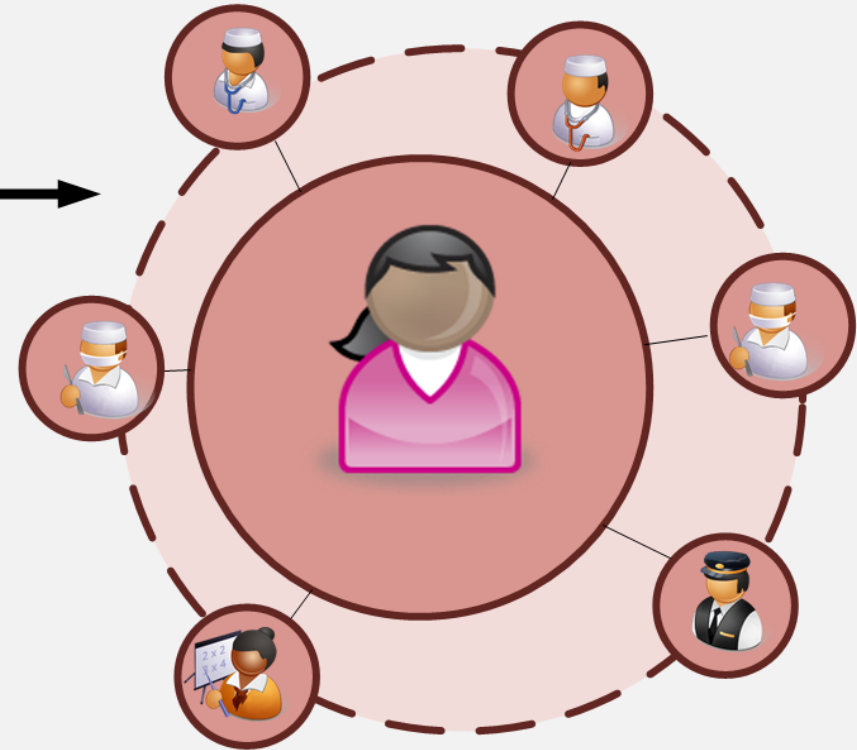
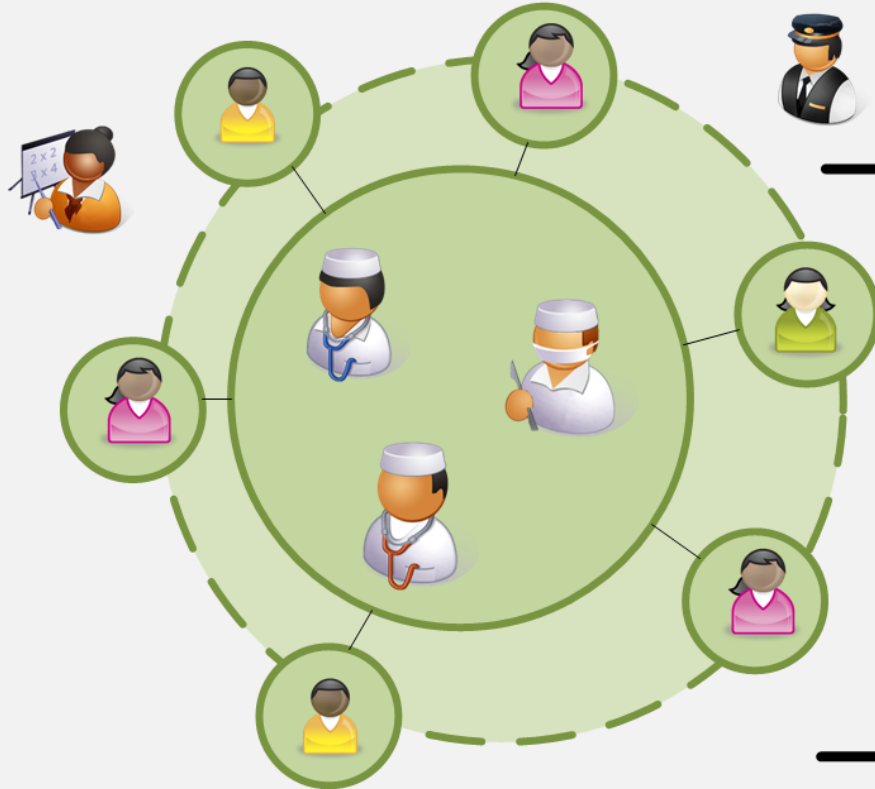
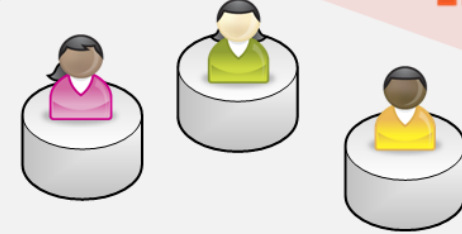
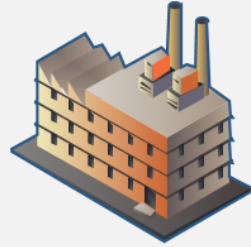
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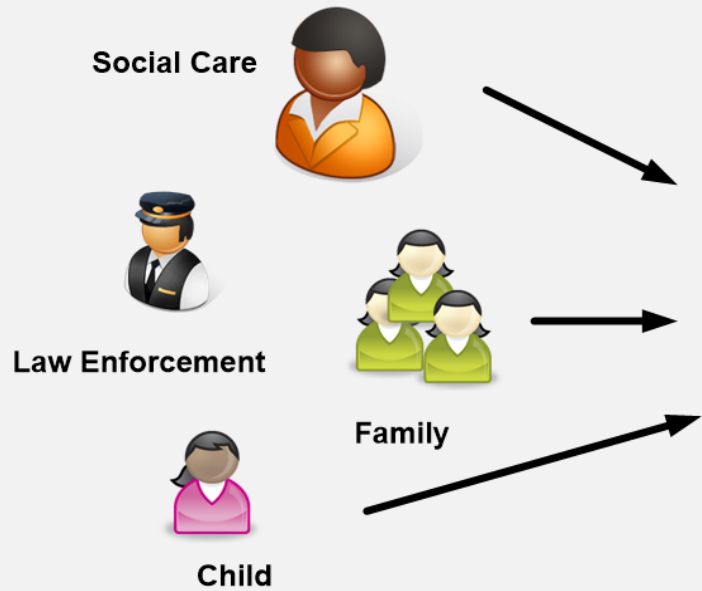
Industrial Age

Information Age



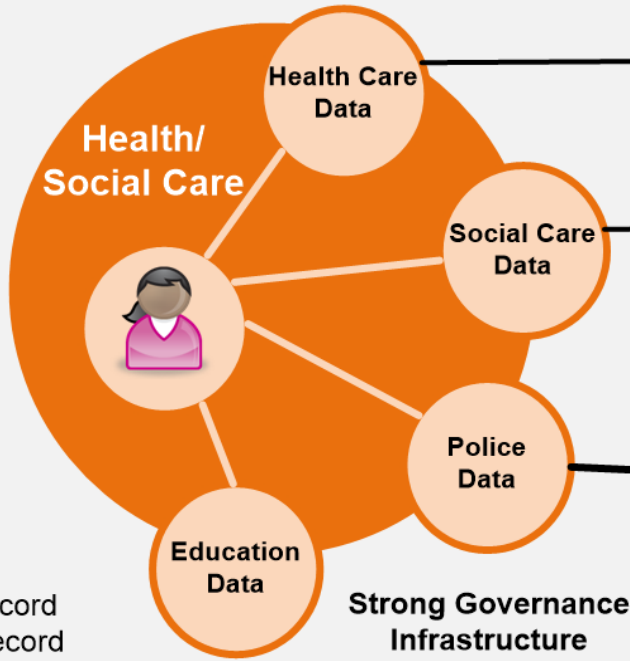
**Centralised, Non-integrated,  
Ad-hoc, Clinician Focused, Reactive,  
Clinician Control of Records**

**Distributed Patient Care, Holistic,  
Patient Focused, Pre-emptive,  
More Patient Control of Health**



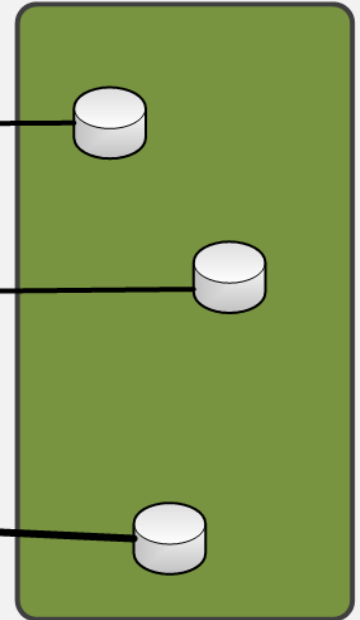
**Risk Assessors:**  
 Posted Concerns  
 Attendance Records  
 Health Problems  
 Crime Trace

**Records:**  
 Child's Action Plan



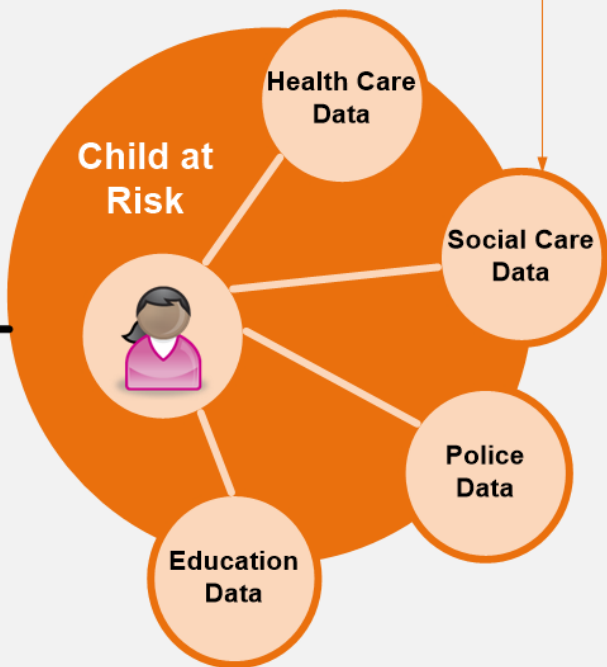
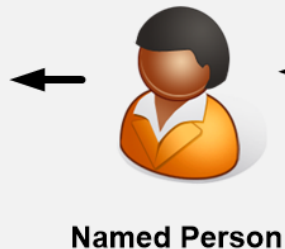
**Risk Assessors:**  
 Early Warning Score  
 Frailty Index

**Records:**  
 Personal Health Record  
 Electronic Health Record



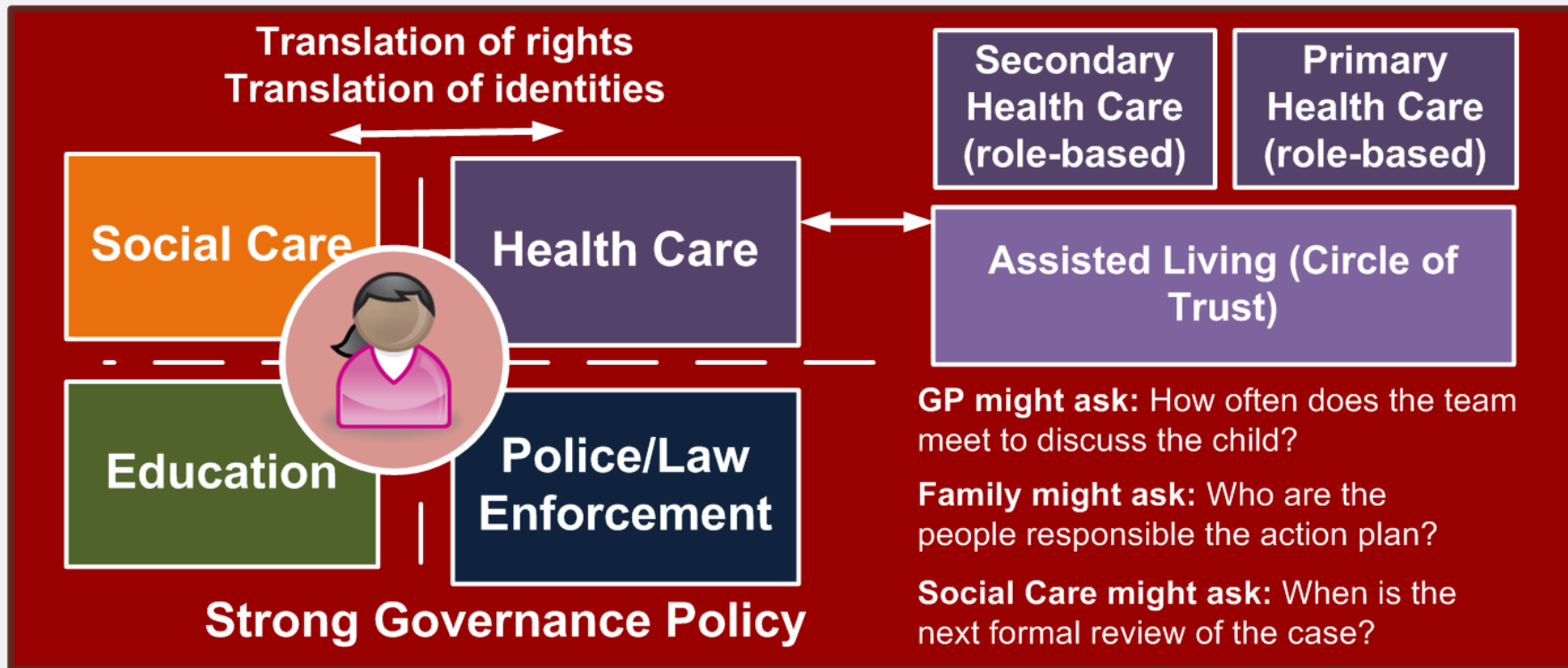
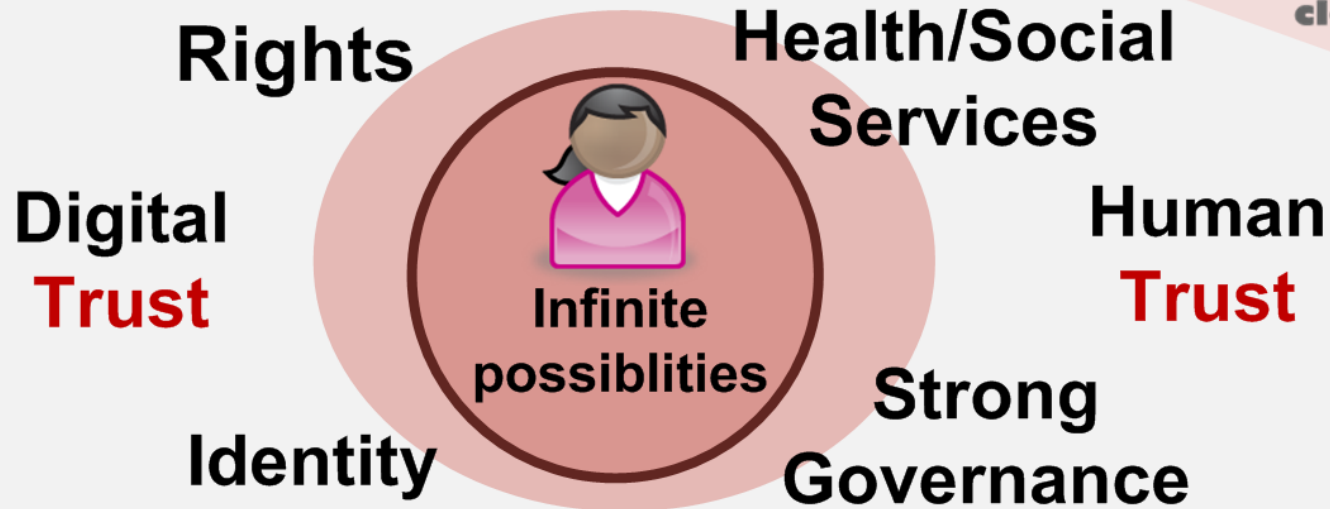
**Tier 4 Data Infrastructure**

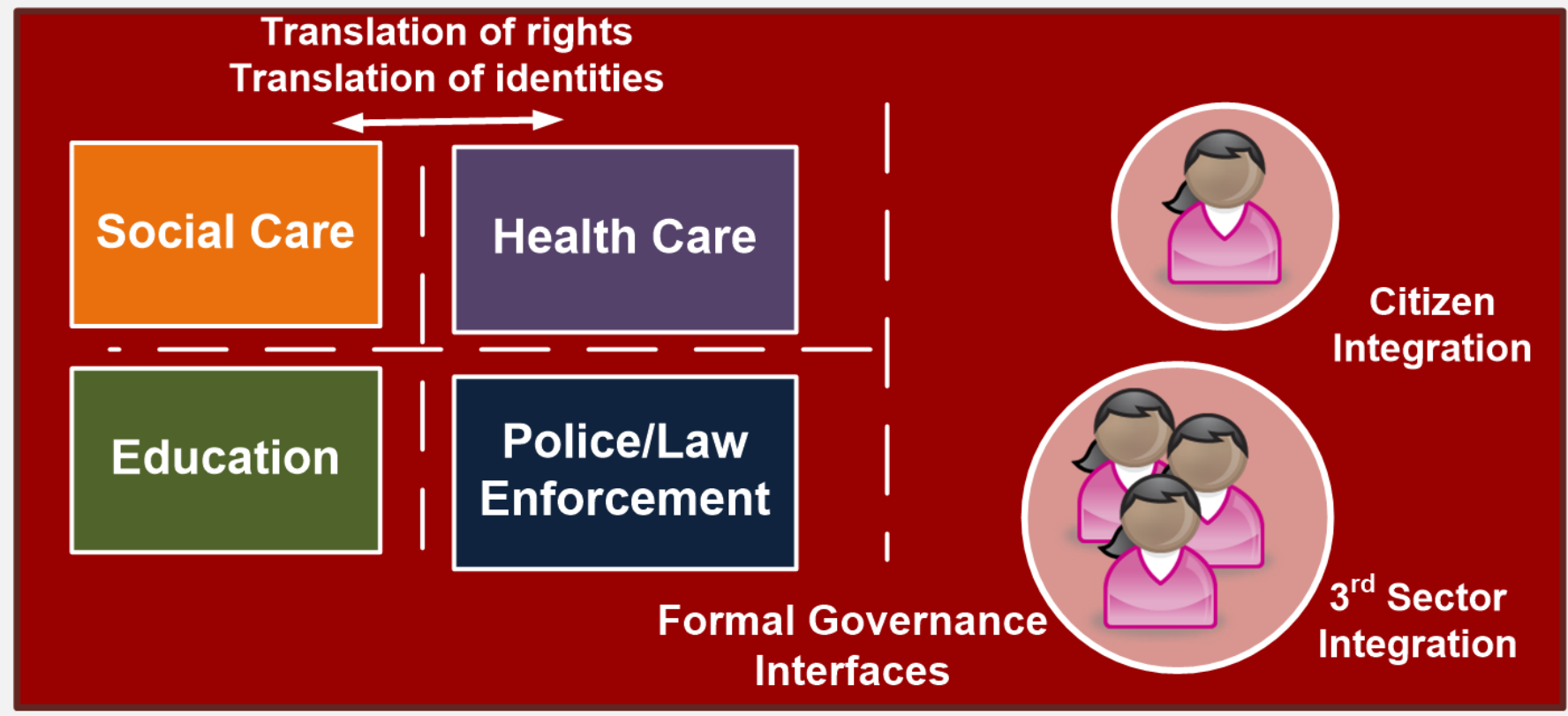
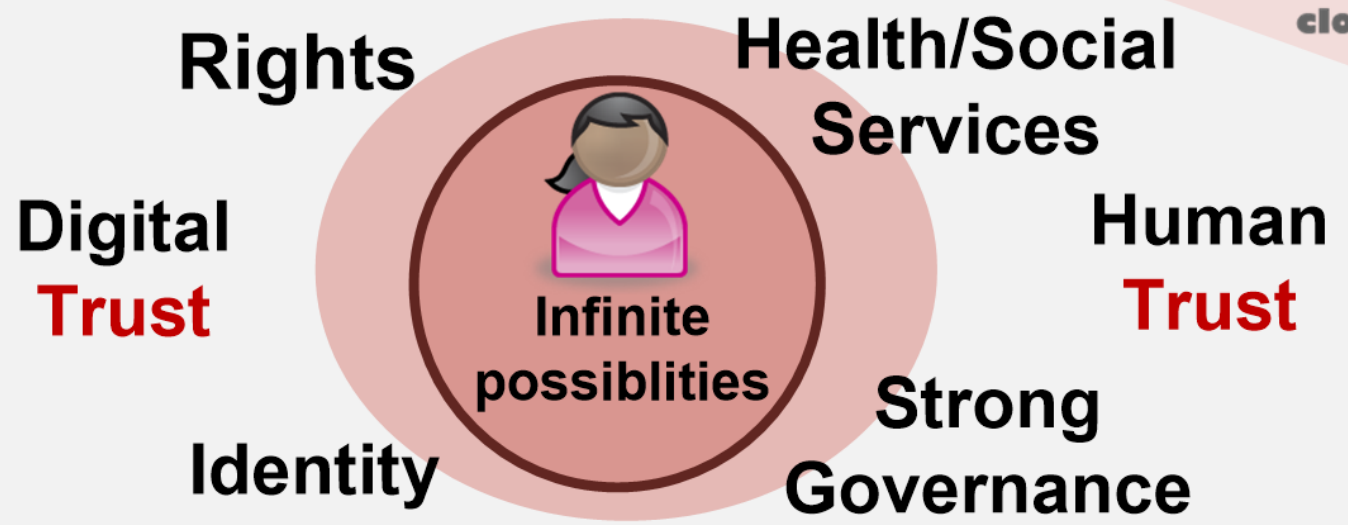
**Trust Access to Action Plan  
for the Required Time Limit**



**Possible Trust Access to parts of  
the Electronic Health Record**







# e-Health and Big Data

## Governance, Trust and Access Framework



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**Cloud-based Infrastructure for Clinical Services**



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HöIP

**Trusted Services: Assisted Living**

dallas

<sitekit> web excellence

Microsoft

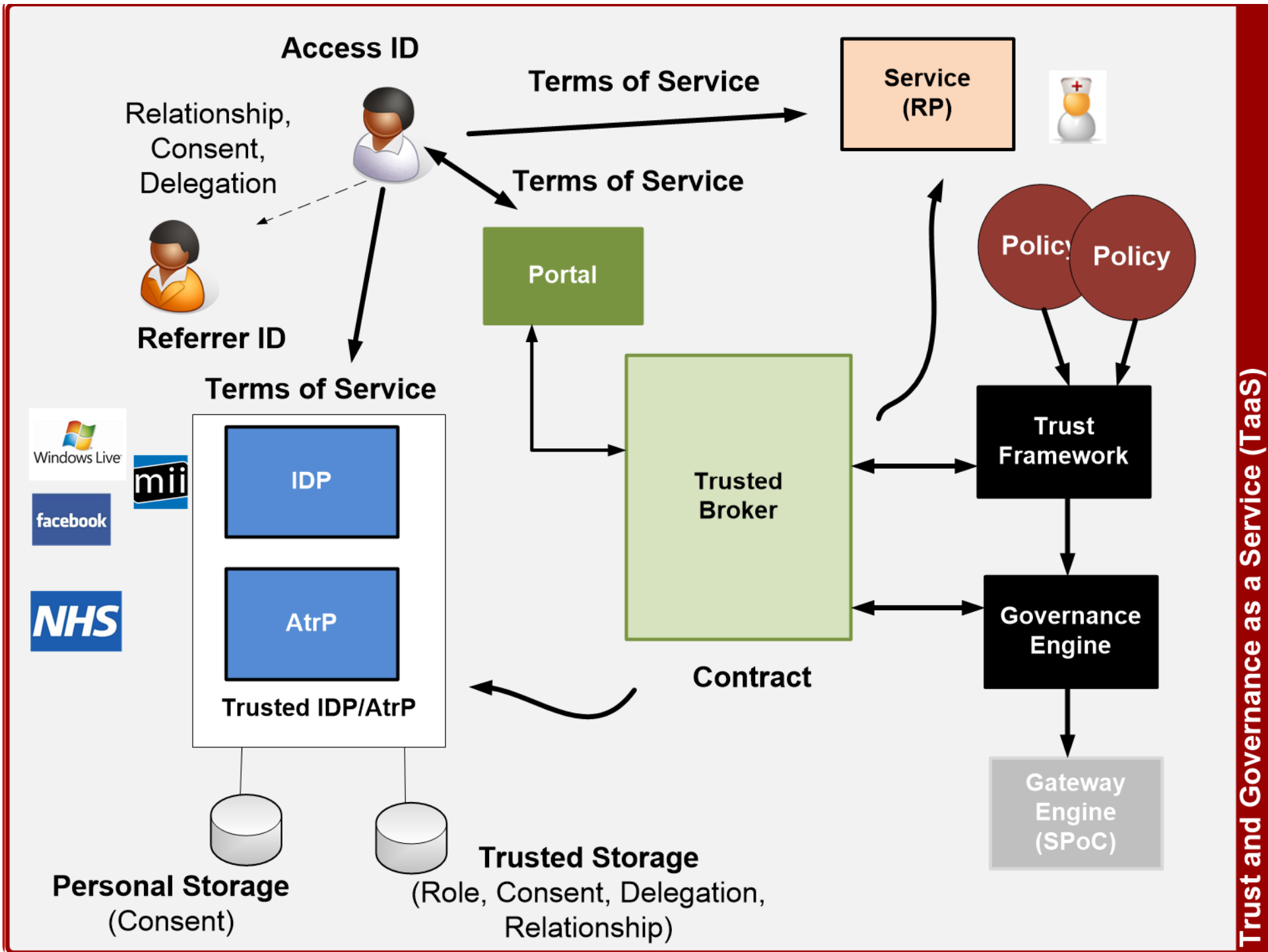
**Delivering Assisted Living at Scale**

The Scottish Institute for Policing Research

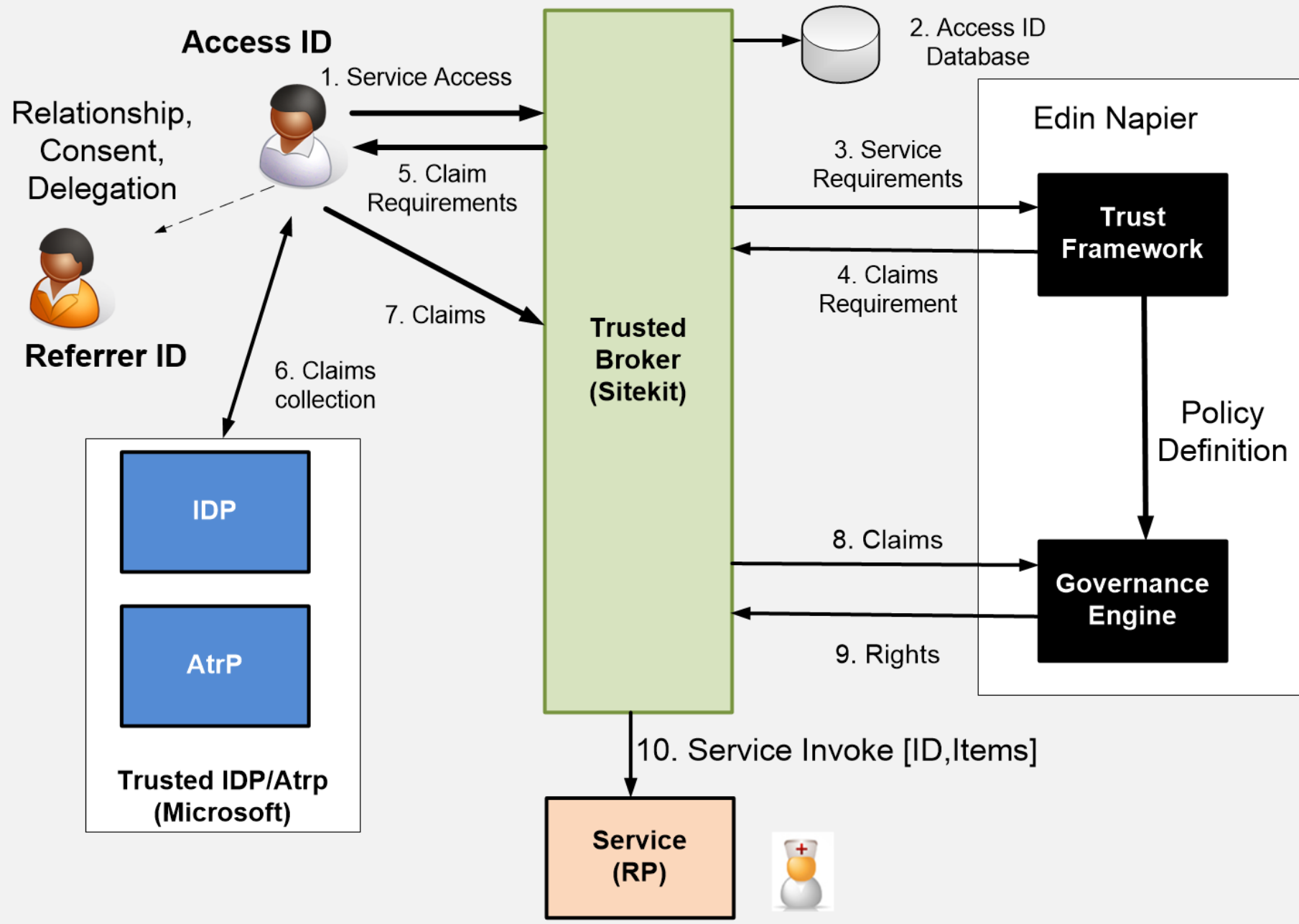
miiCard<sup>®</sup>  
My Internet Identity

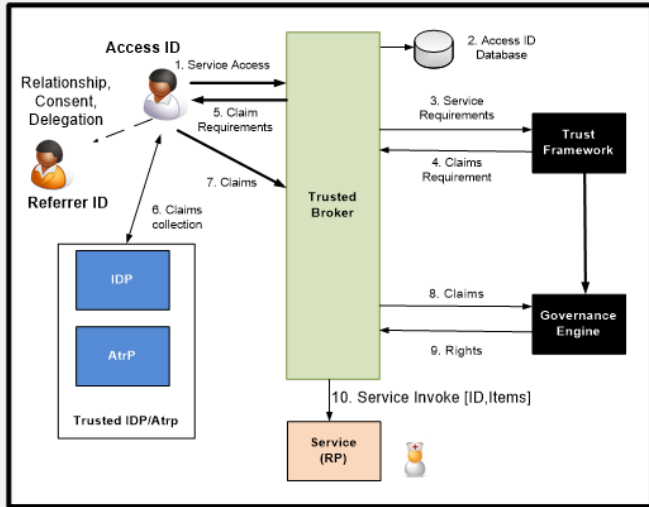
mydex

flexiant<sup>™</sup>  
utility computing on demand



Trust and Governance as a Service (TaaS)

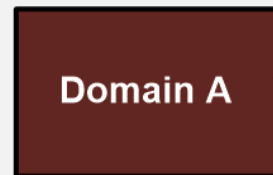
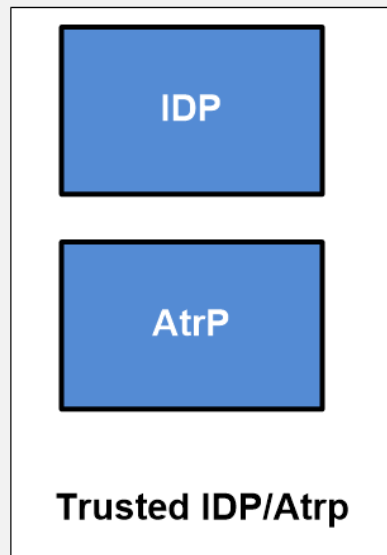




**Referrer ID**



Relationship,  
Consent,  
Delegation

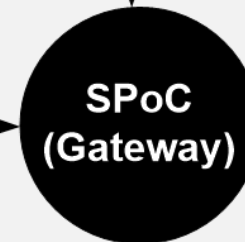


Domain Ontology  
Service Definition



Policy  
Definition

Services



**Trust Framework**

**Service**

ServiceA.Role.GP  
ServiceA.Consent[R<sub>ID</sub>]  
ServiceA.Relationship[R<sub>ID</sub>]  
ServiceA.Delegation[R<sub>ID</sub>]

**Trust Identity**

Level1\_IDP  
Level2\_IDP  
Level1\_IDP  
Level1\_IDP

**Trust Attributes**

(NHS.PATIENT.CHI[R<sub>ID</sub>] and NHS.ROLE.GP)  
(NHS.PATIENT.CHI[R<sub>ID</sub>] and UK.PATIENT.CON[R<sub>ID</sub>])  
(NHS.PATIENT.CHI[R<sub>ID</sub>] and NHS.ROLE.GP[R<sub>ID</sub>])  
(NHS.PATIENT.CHI[R<sub>ID</sub>] and NHS.ROLE.GP.DEL[R<sub>ID</sub>])

**Governance Rules**

Permit [Role | Content Relationship | Delegate ] for [CRUD] access to [Service] using [Context]

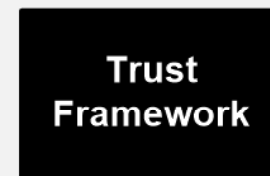
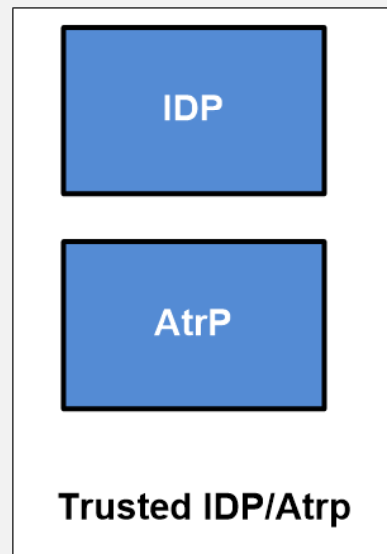
**Referrer ID**



Relationship,  
Consent,  
Delegation



**Access ID**

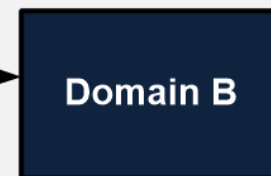
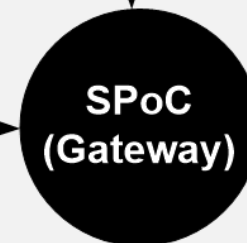
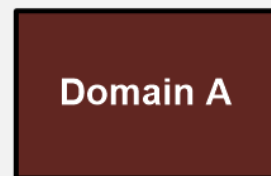


Domain Ontology  
Service Definition

Policy Definition



Services



# e-Health and Big Data

## Enablers and Barriers?



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### NHS told to abandon delayed IT project

£12.7bn computer scheme to create patient record system is to be scrapped after years of delays

Denis Campbell, health correspondent  
The Guardian, Thursday 22 September 2011  
Jump to comments (44)



The NHS has spent billions of pounds on a computerised patient record and booking system, which has never worked properly. Photograph: Martin Godwin

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PFI schemes taking NHS trusts to brink of

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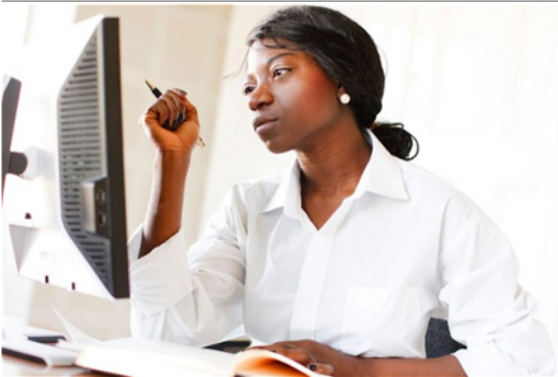
Wednesday 21 November 2012

## The Telegraph

HOME > HEALTH > HEALTH NEWS

### Patients will view their NHS records online in three years

NHS patients will be given online access to their health records in the next three years under plans to be announced by the Government today.



The move for online health records comes despite the decision by Andrew Lansley, the previous health secretary, to cancel a massive NHS national database. Photo: ALAMY



By Robert Winnett, Political Editor  
7:00AM GMT 13 Nov 2012

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#### PROMOTIONS

#### HEALTH MOST VIEWED

TODAY PAST WEEK PAST MONTH

1. Flu vaccine effectiveness exaggerated, scientists claim
2. Women suffering liver disease 'because they try to drink like men'
3. Henley hit by 'mutant super rat' invasion
4. The problem with perfection: Is it all right for girls just to be all right?
5. 'Rising tide' of liver disease due to obesity, alcohol and infections, Prof Dame Sally Davies warns

#### EDITOR'S CHOICE

Rowan Atkinson: Goodbye, Mr Bean?



Doctors' surgeries will have to set up services to allow anyone to see their health files, book appointments and order repeat prescriptions on the Internet.

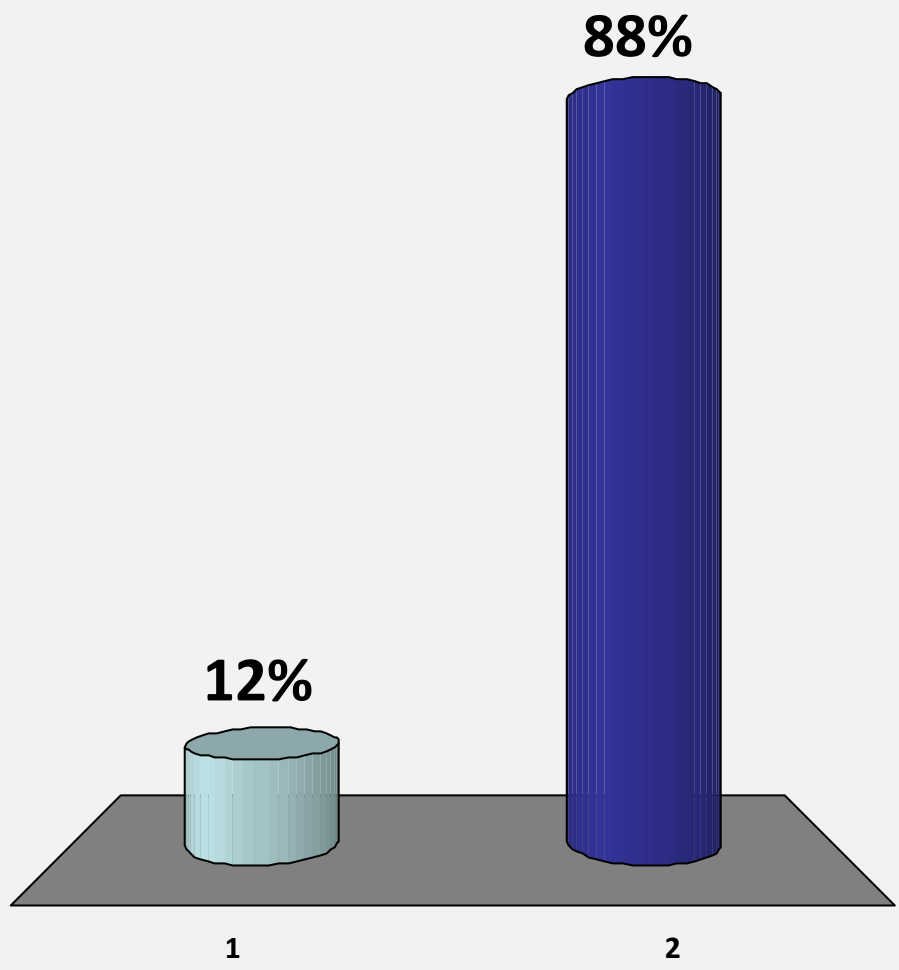
The new campaign is being spearheaded by Jeremy Hunt, the Health Secretary.

"Looking after their own health, and the health of their families needs to be as straightforward as possible.

"Looking after our health should be easy — in an age where people can do their banking or shopping online, it should be just as simple to view your health records, order a repeat prescription or book a GP

# Within three years do you think you will be able to get access to your EHR?

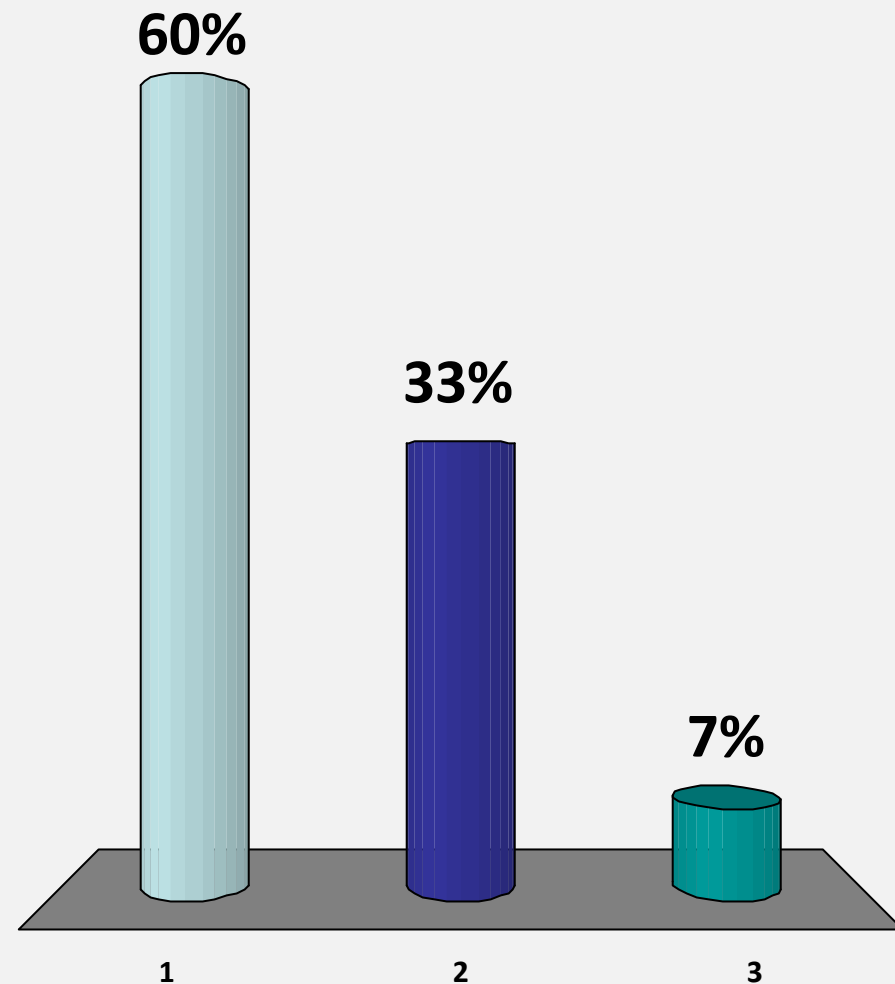
- 1. Yes.
- 2. No





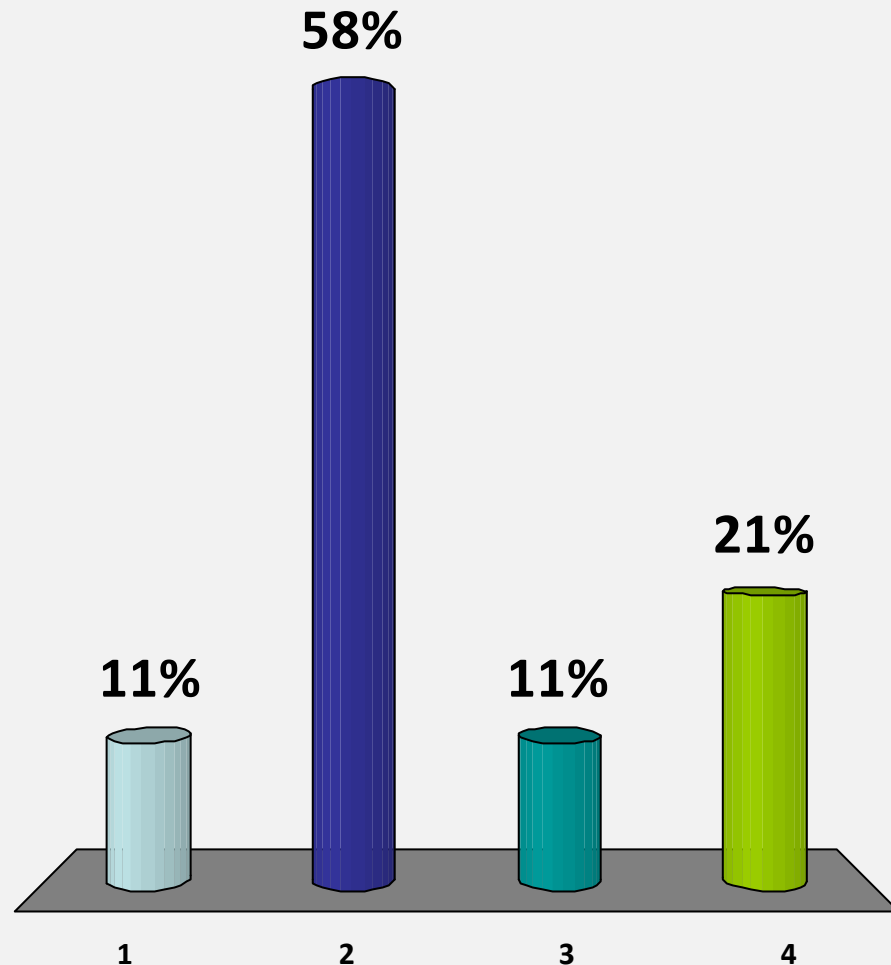
# If you had access to your EHR, what would you want access to?

1. All of your record.
2. A summary of the record.
3. None of the record.



## If you had access to a EHR, when is the situation that you would most value it?

1. All the time.
2. When you were ill.
3. When someone in your family was ill (and you had their consent to access their record).
4. When you disputed your treatment.



# What is the greatest issue in providing citizen access to EHRs?

1. Poor security within the health care system.
2. Resistance from health and social care professionals.
3. Lack of understanding of the usage of the Internet from citizens.
4. Difficult to change existing systems to allow access.
5. Poor access to the Internet.

