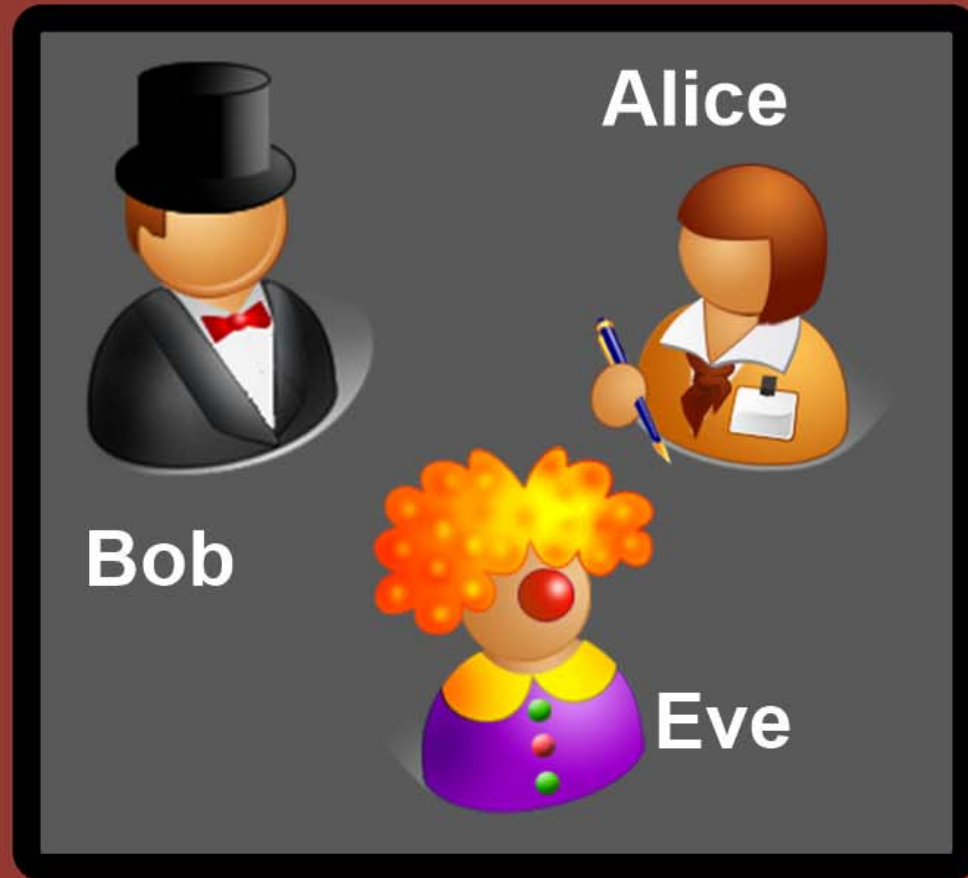


Cyber Scotland



Building a New Nation

Risk, Trust and Governance – Prof Bill Buchanan

Scottish Christmas Cyber Lecture 2012

- **Social Networking and Tracking.** Dr Ian Ferguson.
- **On-line Safety.** Martyn Davidson.
- **Cracking Codes.** Prof Bill Buchanan.
- **Prize.** Scottish Cipher Pupil of the Year 2013

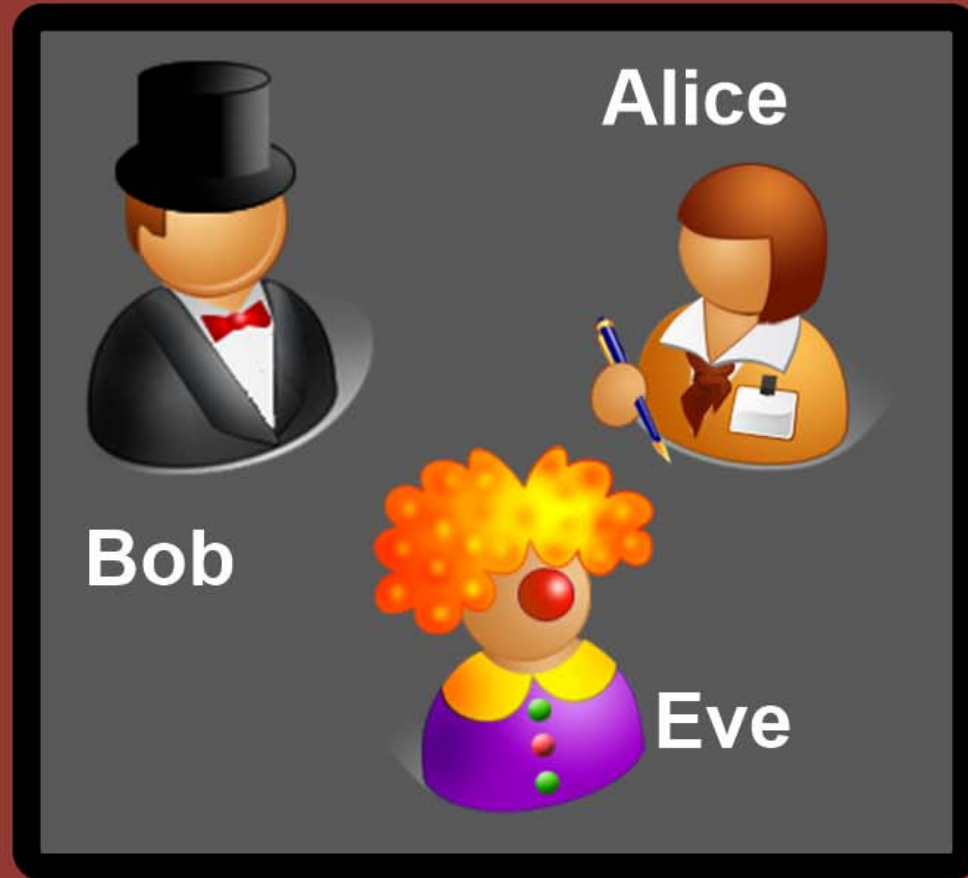


I've just received notification about the Christmas lecture and am emailing firstly to express my thanks and delight that this event is taking place. There is a **woeful lack of interesting events aimed at Scottish Computing pupils** so it is great to see the Cyber lecture.

I am also emailing to ask about the number of pupils we will be allowed to bring – George Heriot's currently has a large number of pupils studying Computing and Information Systems. At Higher and Advanced Higher levels we have 38 pupils ...



Cyber Scotland



Building a New Nation

What's so special about us?



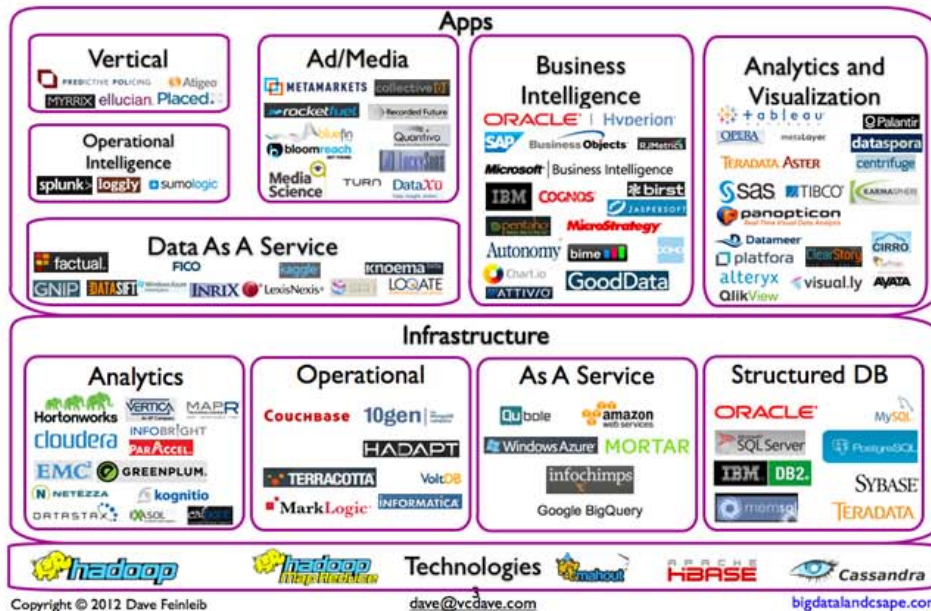
Industrial Age



Information Age



The Big Data Landscape



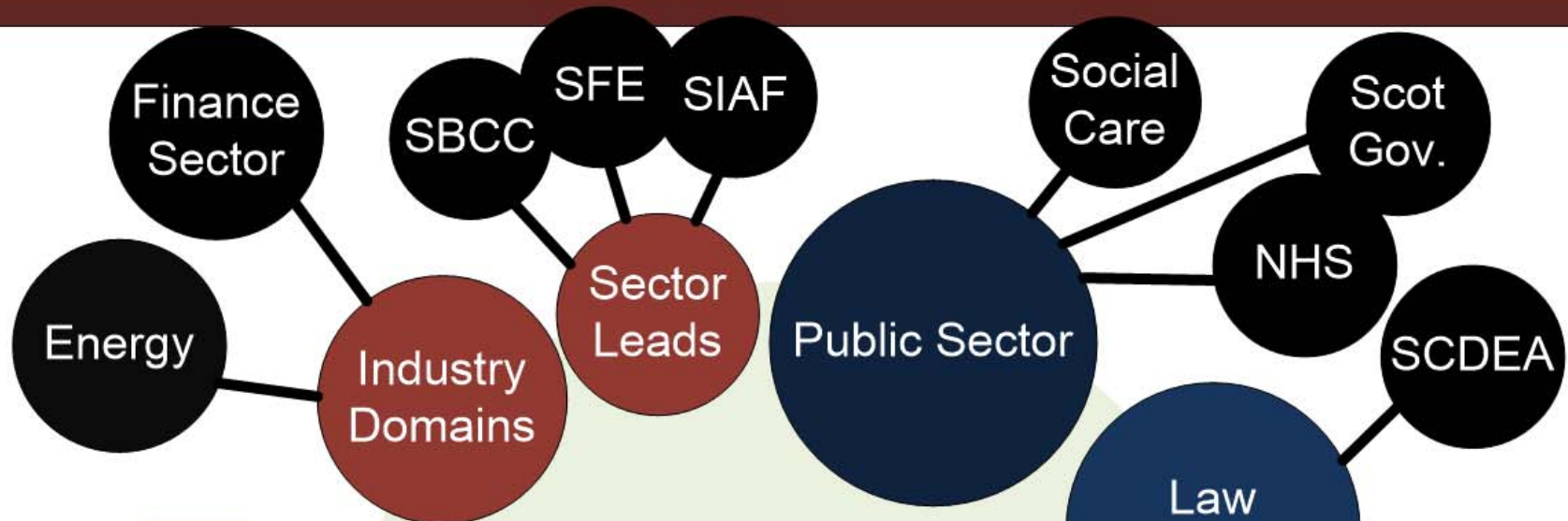
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dave@vcdave.com

bigdatalandscape.com

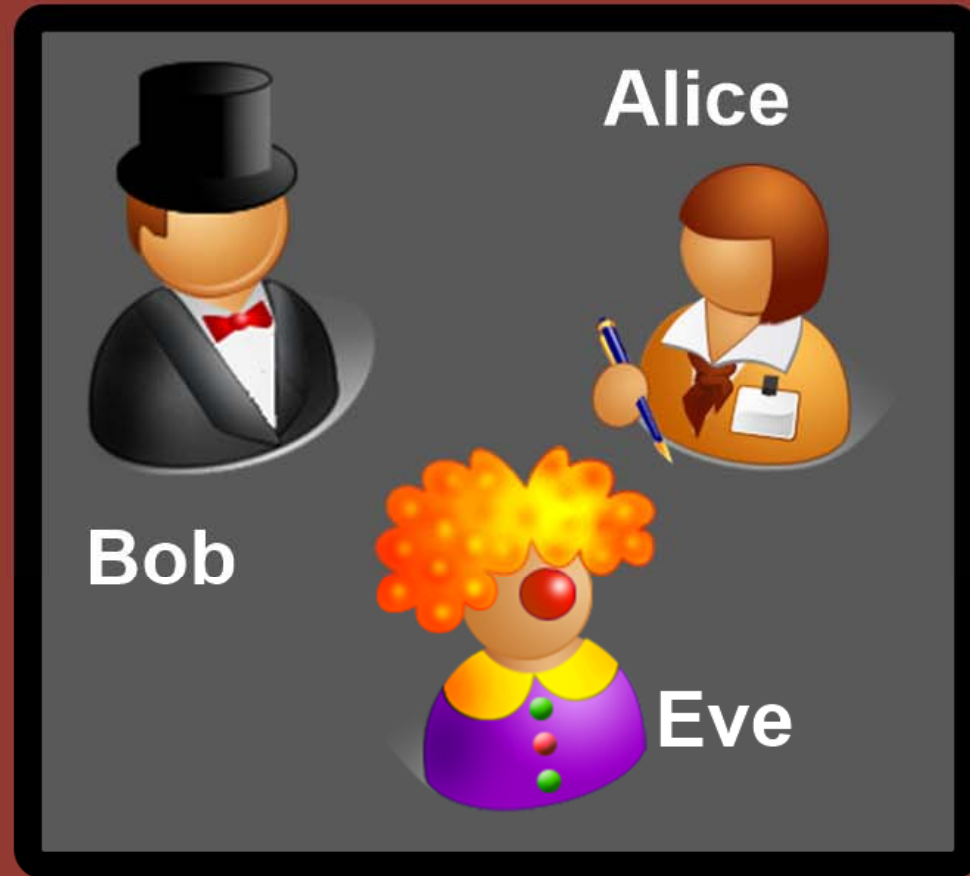


Volume: 12 TB of Tweets per day.
Variety: Video, images, voice, text, sensors.
Veracity: Trust
Velocity: 500 million calls records analysed
 90% of all data in Cloud product in last two years.
 2,500,000,000,000,000 bytes/day – 2.5 Quintillion Bytes
 1,000,000,000 Hard disks



Strengths

Cyber Scotland



Building a New Nation

Some Weaknesses?



Lack of Standards



Graduate Supply

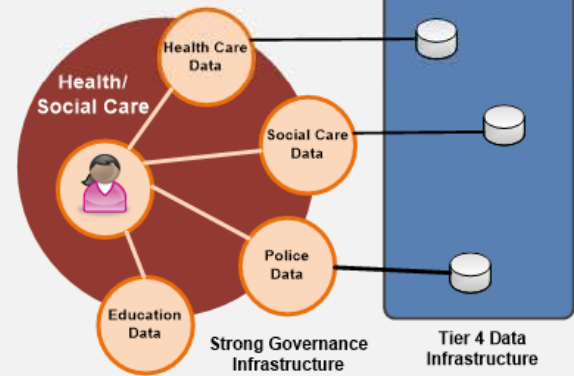
Lack of Citizen Integration



Critical Infrastructure



Public/Private/Hybrid Cloud



Lack of sharing across the public sector

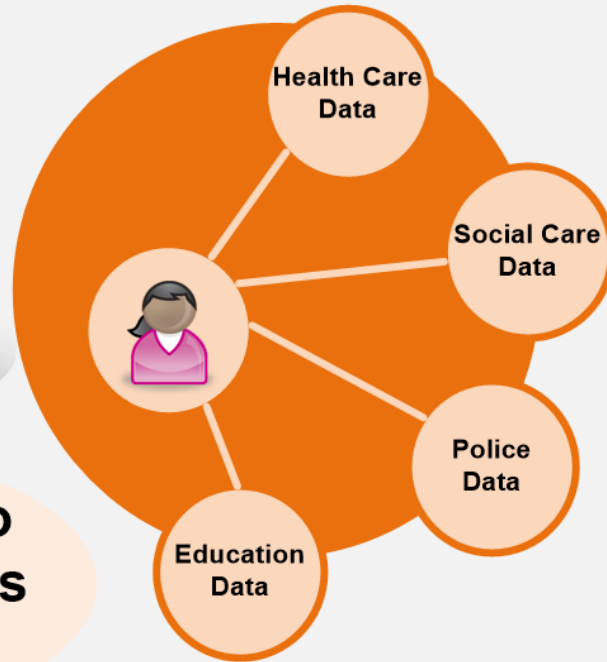


Broadband Infrastructure Index
June 2012 Source: Point Topic

Poor coverage

Weaknesses

What to do with Big Data?



Let us be unique!

Let's have proper auditing

Let's define ownership and governance

Let us interface with the public sector over the Internet

Give it back to us ... and let us control it.

Improve Lives and Reduce Risk and Harm

Let's integrate citizens into every part of the infrastructure

Balance the Risk ... and let us decide

BIG BROTHER



theguardian Your search terms... Society

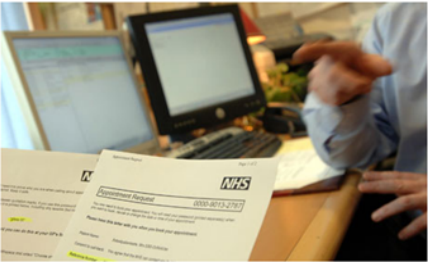
News | Sport | Comment | Culture | Business | Money | Life & style | Travel | Environment | Tech | TV | Video | Dating | Offers | Jobs

News > Society > NHS

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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The Telegraph

Wednesday 21 November 2012

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Health News | Health Advice | Diet and Fitness | Wellbeing | Expat Health | Pets Health

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

145

74

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



dreich27

11/13/2012 06:02 PM

1) is this in the **interest of people whose hypochondriac and worrying tendencies** are made worse by all the medical information on the internet?

2) how much will it **cost**?

3) what's wrong with the current system where you can **request your records from the surgery**?

4) how will it be **secured a) from hackers b) from your boss c) from your intimidating other half or family member** who is standing next to you at the computer and demanding that you log in?

5) is this going to cause doctors to have to go through your records with a **fine-toothed comb to weed out an ill-advised comment made in 19-when-ever** when the idea that patients could sue or access their records online was very remote.





Thierrytt

11/13/2012 04:00 AM

My partner's doctor here in France hands over the hard copy of any documents to her. This includes notes and letters passed between doctors and other specialists. **He keeps an electronic copy. This means we have all the x-rays, DVDs of MRI scans etc.** He gives a regular print out of any notes made.

The notes are released on the processing of the Carte Vitale which has a photo of the patient.

Other doctors can have access to her records through the Carte Vitale system.

It puts the patient at the forefront of treatment.

When I moved to France from the UK some years ago I obtained a photocopy of my medical records. It contained notes in code which **made no sense to me whatsoever.** I could find nothing regarding hospital treatments, the fact I had broken my leg when 11 yrs old, had my tonsils out etc. No vaccines as a child or adult were noted. **The french doctor said the notes were worse than useless.**

Why is the NHS so out of date?





ivan_opinion

11/13/2012 06:26 AM

NFN – Normal for Norfolk.

FLK – Funny Looking Kid.

GLM – Good Looking Mom.



Who, other than **hypochondriacs, narcissists, neurotics, ME 'sufferers', DLA scroungers and the mentally ill, wants this?** And, for all the groups mentioned, this will only make them feel worse, do no good at all and increase costs. How much will it cost, how secure will it be and how late will it be? **If doctors cannot be frank in the notes, they will end up being defensive and guarded**, which will be bad for everyone. Sadly, **NFN, FLK and GLM** have largely disappeared but this is the death knell.

The truth is, however, that a patient-accessible record system **is essential for the dismantling and selling-off of the NHS**. Alternative providers, doctors and Prince Charles' quacks and businesses run by Hunt and Lansley's mates **will be able to read them, print them, import them and invoice services accordingly**. "Oh, I see you've never had any of my very special water, never tried acupuncture, had this scan." That is what this is about, whether you agree with it or not.



Thierrytt

11/13/2012 05:13 AM

The problem is that the doctors may not be telling the "truth". My partner was **diagnosed as a psychiatric case when she lost use of her legs**. A letter from the neurologist who examined her said she had had an **MRI scan. That had never taken place. All doctors treating her afterwards took that as gospel.**

I reviewed her case and discovered that and **other serious errors by other neurologists, rheumatologist and ophthalmologists.**

In the end I requested the MRI scan and all accompanying tests for **Multiple Schlerosis and every one proved positive**. A review of all previous tests including one when she had lost vision in one eye had pointed to MS.

Maybe **knowing the patients can see all the results of tests etc may lead doctors to be more careful.**

My partner is french and medical records rest with the patient. The doctor keeps an electronic copy.

The Telegraph

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Health News Health Advice Diet and Fitness Wellbeing Expect Health 2012

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.

PHOTOGRAPH BY AP/WIDEWORLD

The move to allow health records online despite the opposition by Andrew Lansley, the previous health secretary, is seen as a major step towards transparency.

By Robert Woollam, **Public Health Editor**

7:58AM GMT 13 Nov 2012

146 likes

14 Facebook

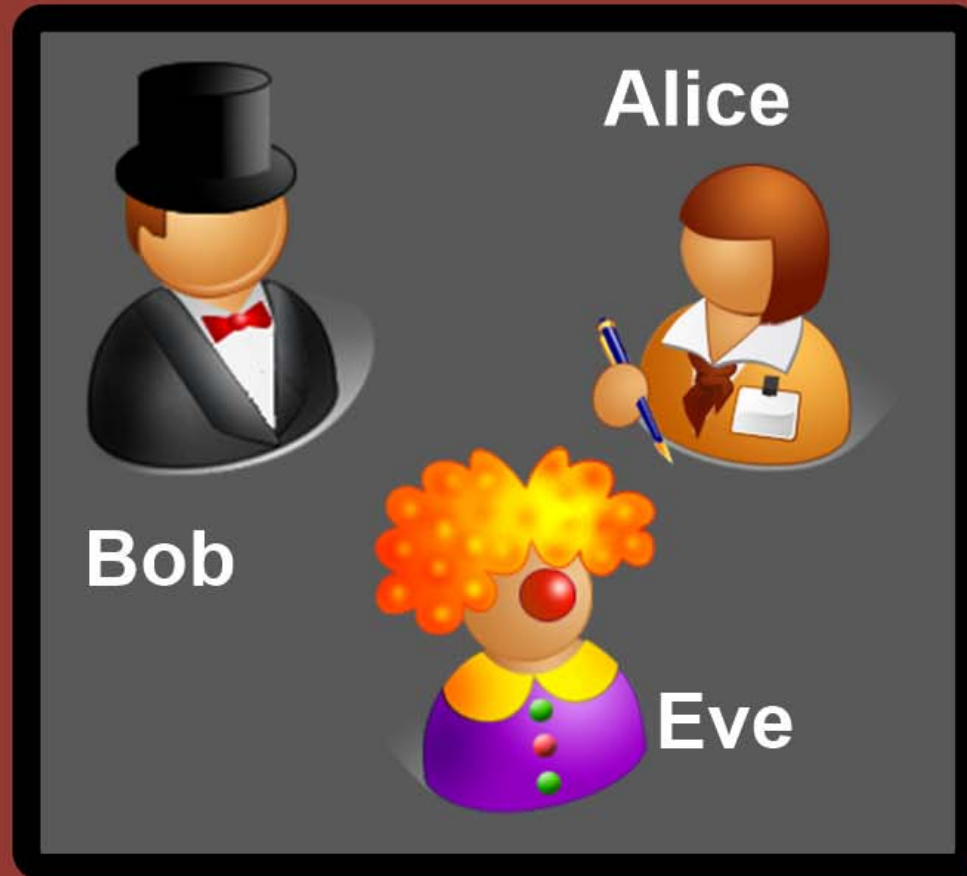
HEALTH MOST VIEWED

- 1. Flu vaccine effectiveness exaggerated, scientists claim
- 2. Women suffering liver disease because they try to drink like men
- 3. Healer hit by 'insult expert' over email
- 4. The problem with perfection: Is it all right for girls just to be all right?
- 5. 'Living like' of liver disease due to obesity, alcohol and sedentary. Prof Dame Sally Davies warns

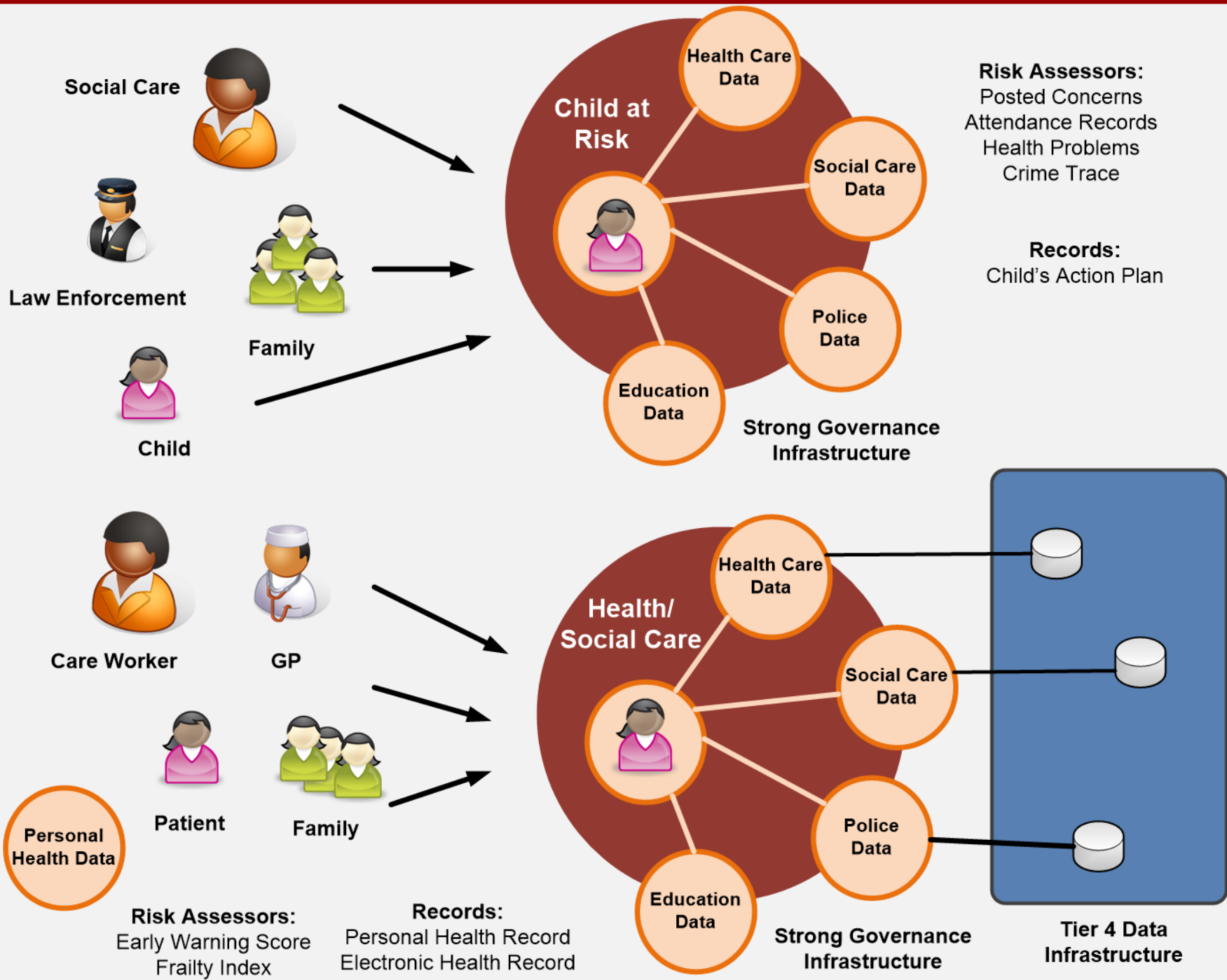
EDITOR'S CHOICE

Finance: Aftabman: Goodfellow, Sir Boris?

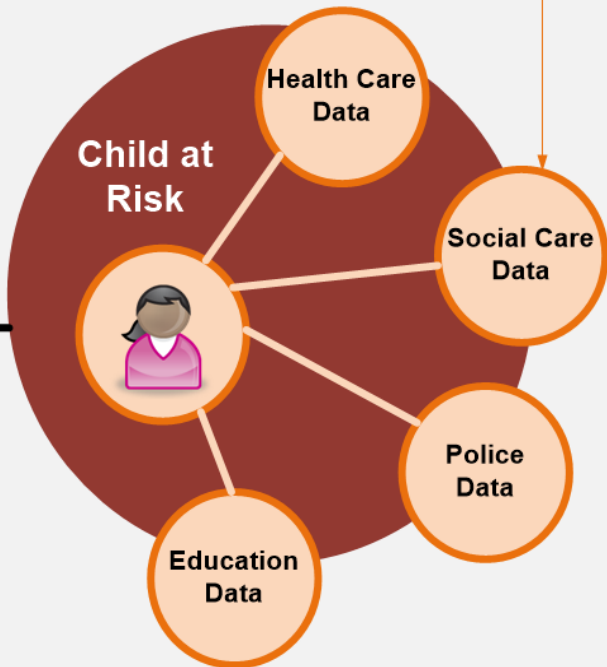
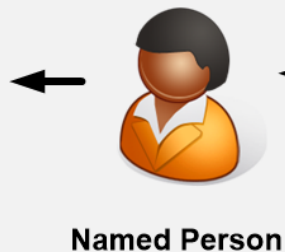
Cyber Scotland



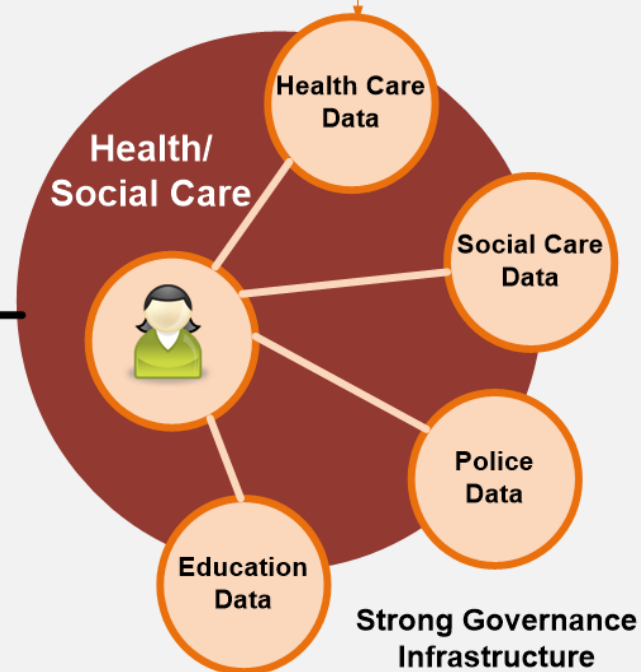
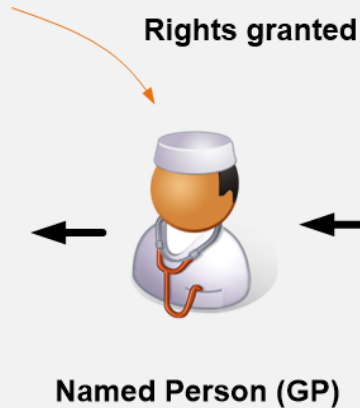
Building a New Nation
Opportunities

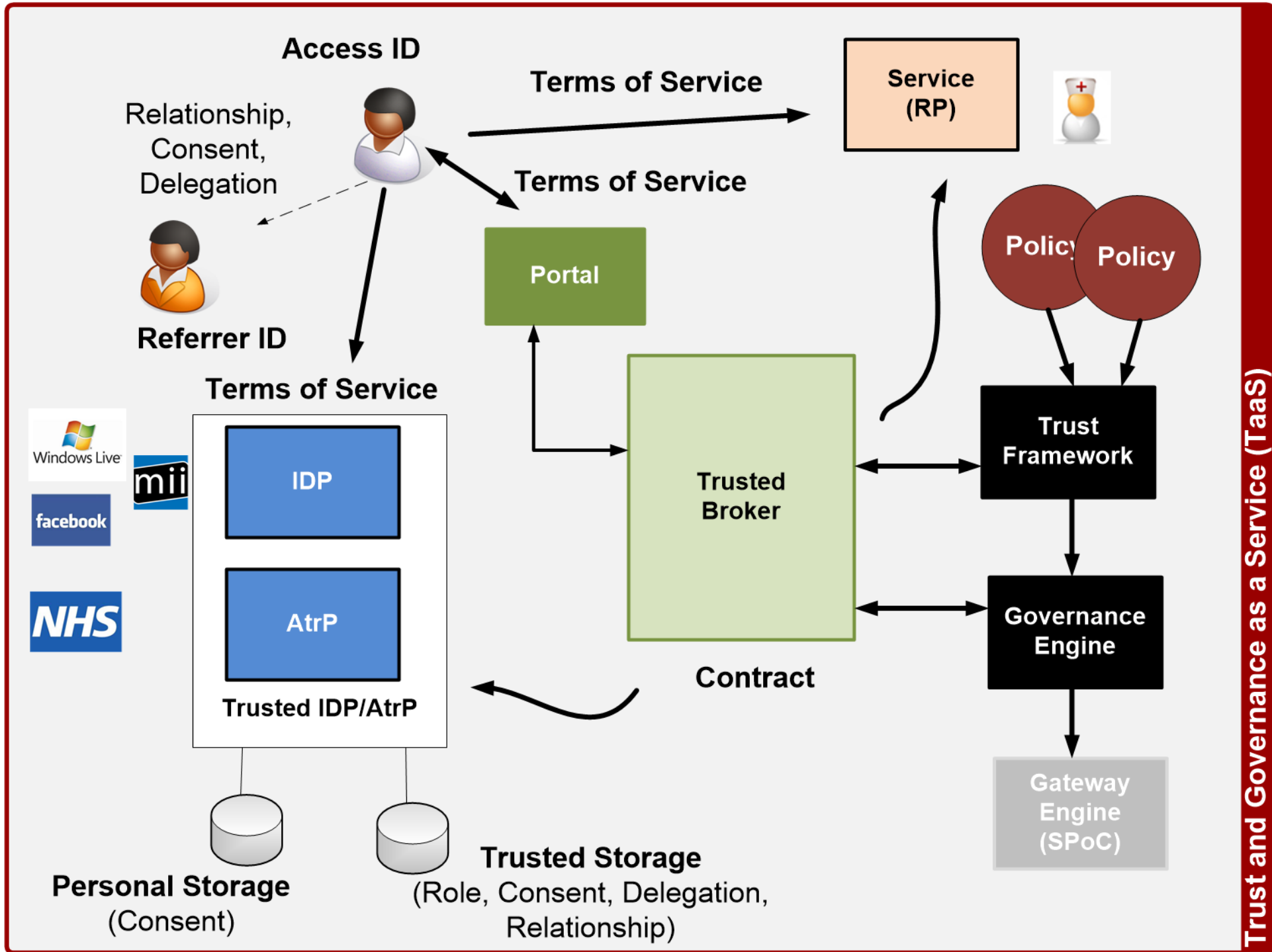


**Trust Access to Action Plan
for the Required Time Limit**

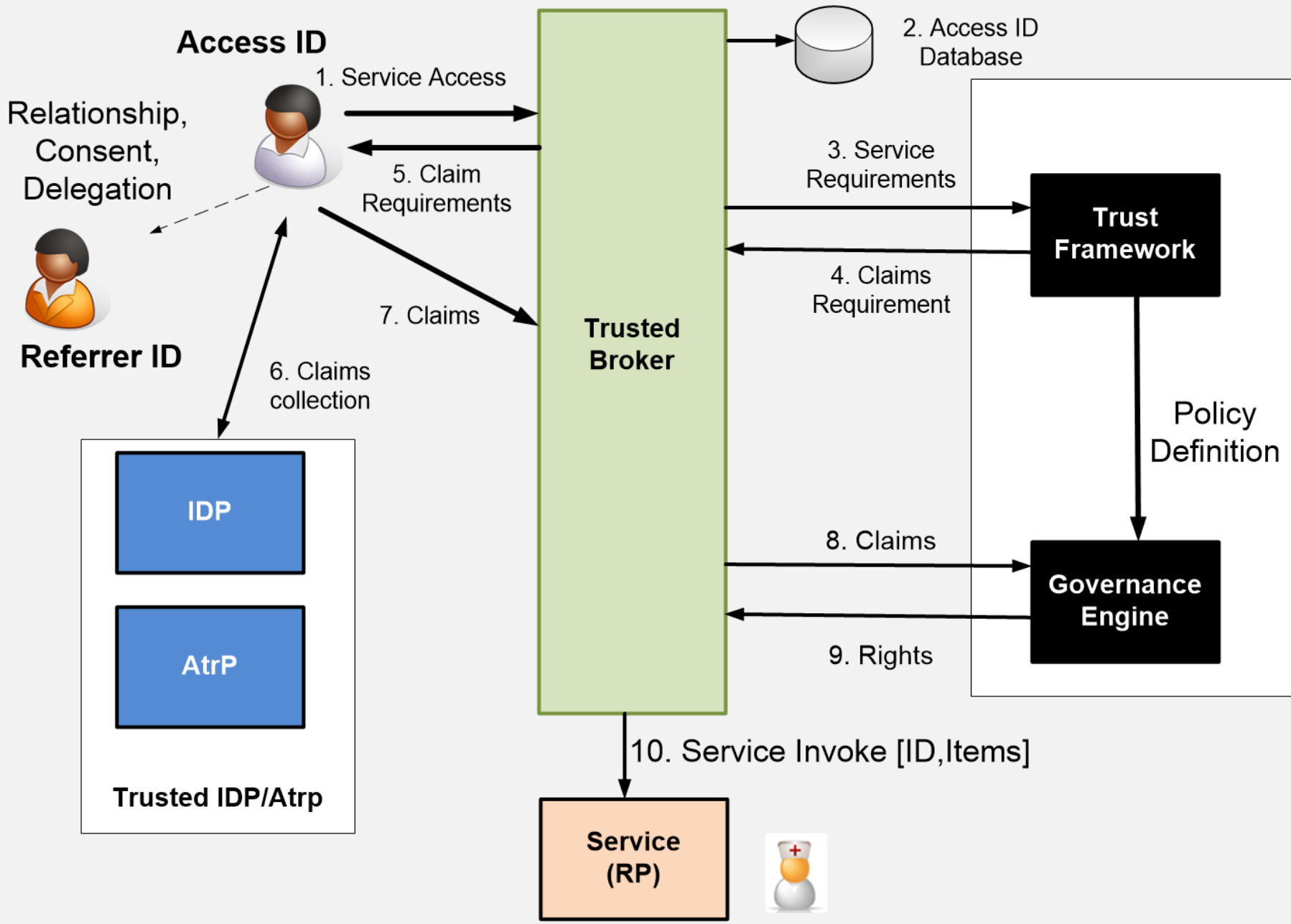


**Possible Trust Access to parts of
the Electronic Health Record**

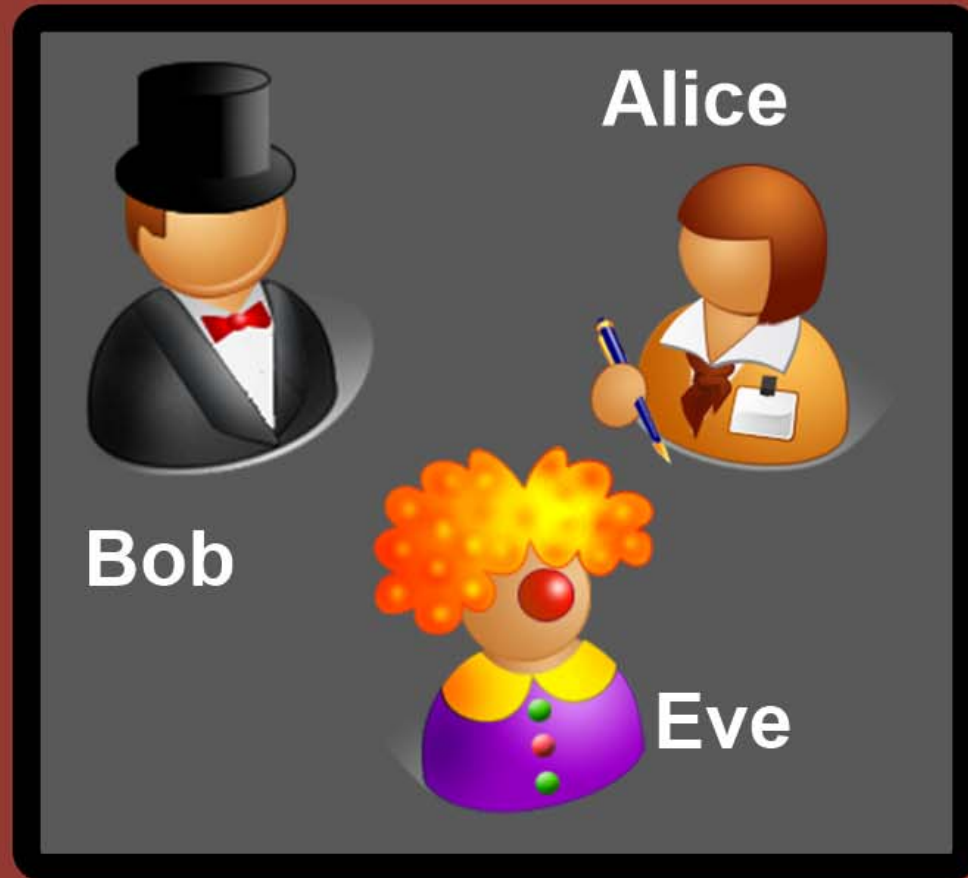




Trust and Governance as a Service (TaaS)



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Building a New Nation

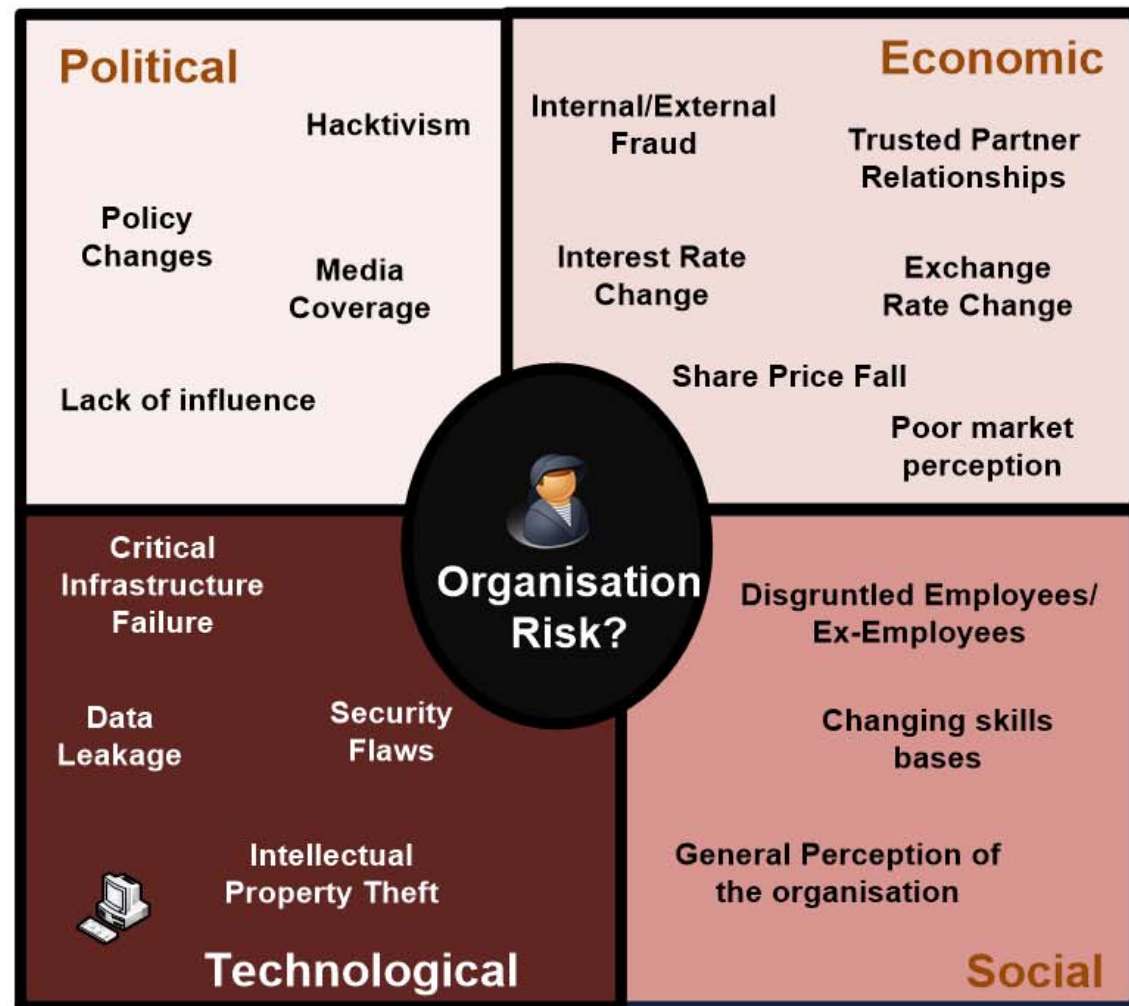
Risk

Understanding Risk



What is ... a threat ... a risk ... a vulnerability ... the motivation?

- Wide range of threats to organisations.
- Organisations now highly dependent on their information infrastructure.
- Real-time threat analysis needed to cope with threats.

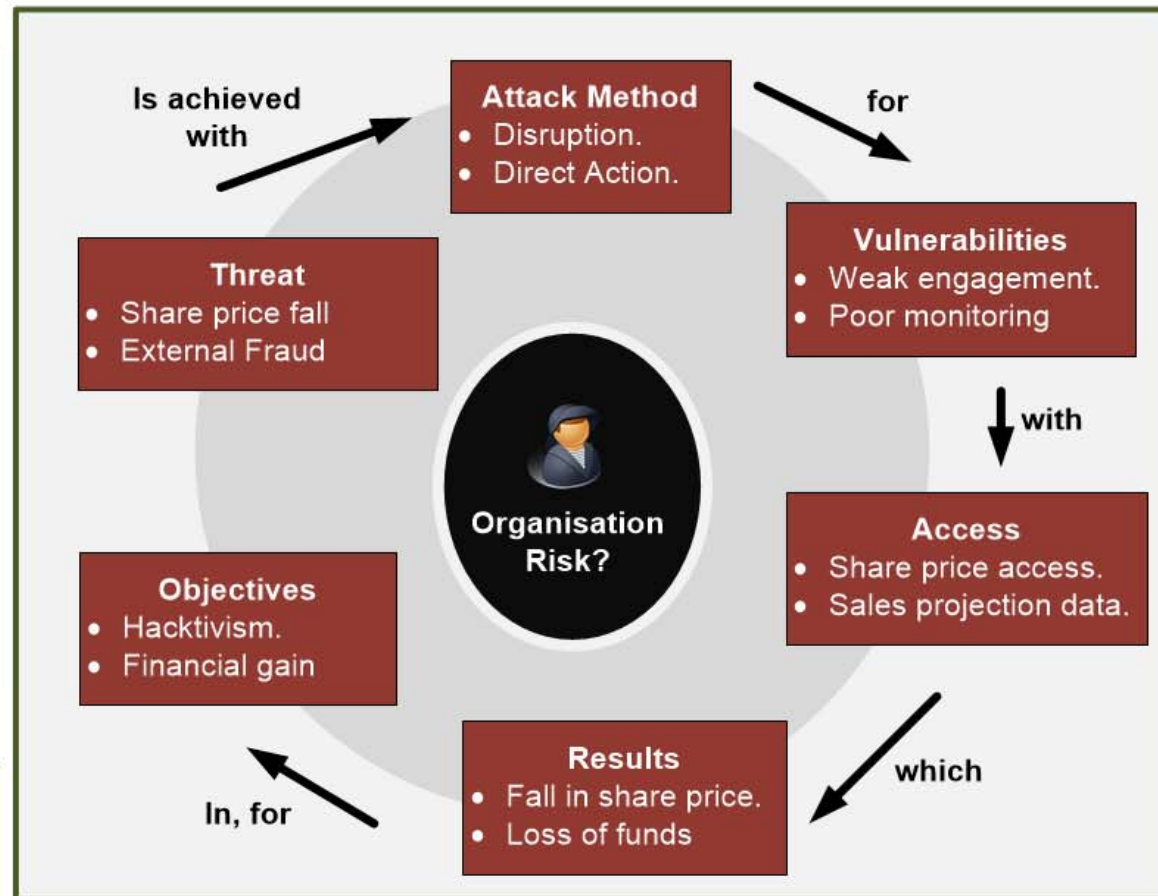


Understanding Risk



What is ... a threat ... a risk ... a vulnerability ... the motivation?

- Risk Taxonomy/Ontology required within the organisation.
- Business and Technical staff struggle to communicate on risk.



Get two risk management experts in a room, one financial and the other IT, and they will NOT be able to discuss risk. Each has **different context ... different vocabularies, definitions, metrics, processes and standards** (Woloch, 2006)



Cyber Scotland



Bob

Alice



Eve

Building a New Nation
Hacktivism

A cause or a fight?



Who? ... Why? ...
Where? ... When?

- One person's freedom fighter is another's terrorist.
- One person's cause is another person's fight.

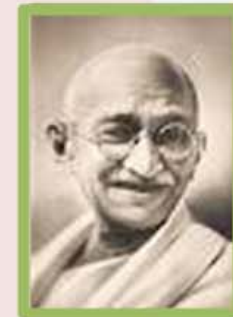
Martin Luther King



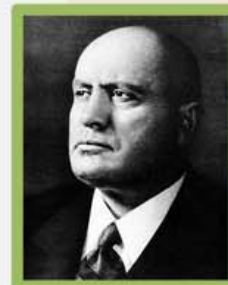
Che
Guevara



Dalai Lama



Mahatma Gandhi



Benito Mussolini



Adolf Hitler

Hacktivism



Who? ... Why? ...
Where? ... When?

- Attacks against an organisation for political reasons.
- Who?
- Why?
- Where?
- When?

2012

- Anonymous focus on India on censorship.
- Virgin Broadband over PirateBay block.
- SOCA (Serious and Organised Crime Agency) over arrests, also Norwegian Lottery and Bild.
- Home Office sites over Gary McKinnon case.

2010, Mastercard and Visa

- Why: Decision to stop processing payments to the whistle-blowing site Wikileaks,
- Result: DDoS attacks on Visa, Mastercard, om.nl and politie.nl

2011, Tunisian government websites

- Why: Censorship of the Wikileaks documents
- Result: DDoS attacks against sites. Some Tounisians assisting in these attacks.

2009. Climate Research Unit of East Anglia University

Why: Emails published showed conspiracy to suppress data that contradicted their conclusions on global warming (Russian FTP server)

2011, HBGary

Why: HBGary were going after Anonymous
Reward: Emails published, Web site defaced.

2010, Australian Government.

Why: Australian Government's attempt to filter the Internet.

2012. Department of Justice and the FBI. Denial of service attack

2011. Sony's PlayStation Network.

- Why: Sony were suing Geohotz, who jailbroke the PlayStation 3.
- Result: Afterwards, a group of hackers claimed to have 2.2 million credit card numbers from PSN users for sale



Hacktivism



Who? ... Why? ...
Where? ... When?

- Attacks against an organisation for political reasons.
- Who?
- Why?
- Where?
- When?

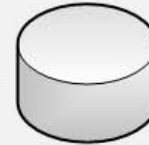


**HBGary Federal CEO
Aaron Barr to unmasked
Anonymous with a list
HBGary contacts with NSA,
Interpol, McAfee, and many
others**



**Hbgaryfederal used CMS
and comprised by:**

<http://www.hbgaryfederal.com/pages.php?pageNav=2&page=27>



**Username, passwords
(stored as hash values),
email database**



**Passwords broken by
Rainbow tables**



"ranger12"

"martin12"



**CEO Aaron Barr and COO Ted
Vera had weak passwords (six
characters and two numbers) –
which were easily broken**

Passwords found for CEO and COO

Hacktivism



Who? ... Why? ...
Where? ... When?

- Attacks against an organisation for political reasons.
- Who?
- Why?
- Where?
- When?



“ranger12”

“martin12”

CEO Aaron Barr and COO Ted Vera used the same password for a range of systems: Twitter, email, Linked in, and so on.



Support.hbgary.com



Remote login to support.hbgary.com from Ted Vera's account



Flaw exploited in system to escalate privilege



Gigabytes of research and backup data

Aaron was a System Administrator for their Gmail Apps Hbgary account



Complete control of company email

Hacktivism



Who? ... Why? ...
Where? ... When?

- Use strong passwords.
- Never re-use passwords (30% of users do).
- Patch systems.
- Watch out for social engineering.
- Beware of unchecked Web sites.
- Get an SLA from your Cloud provider.
- Don't store emails in the Cloud.
- Restrict access from outside.



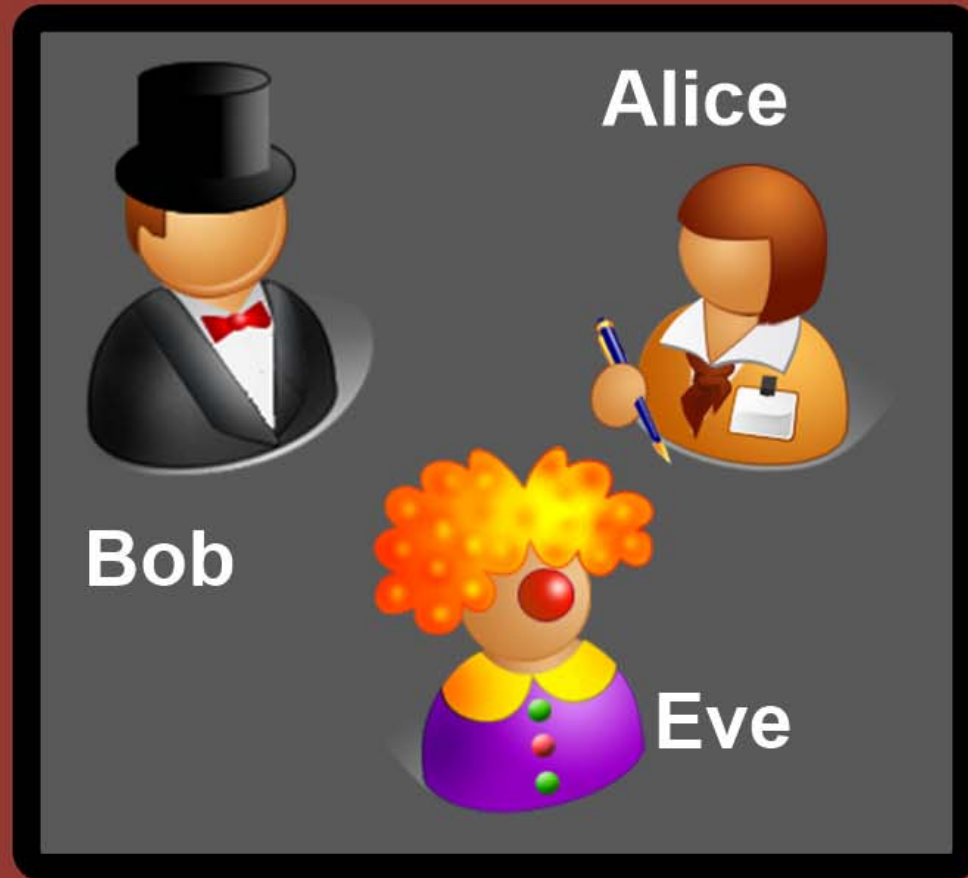
Now for another site owned by
Greg Hoglund, owner of
HBGary

Social Engineering ... to gain
root password for Greg's site



Web site taken offline and user
registration database published

Cyber Scotland



Bob

Alice

Eve

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Risk, Governance and Trust