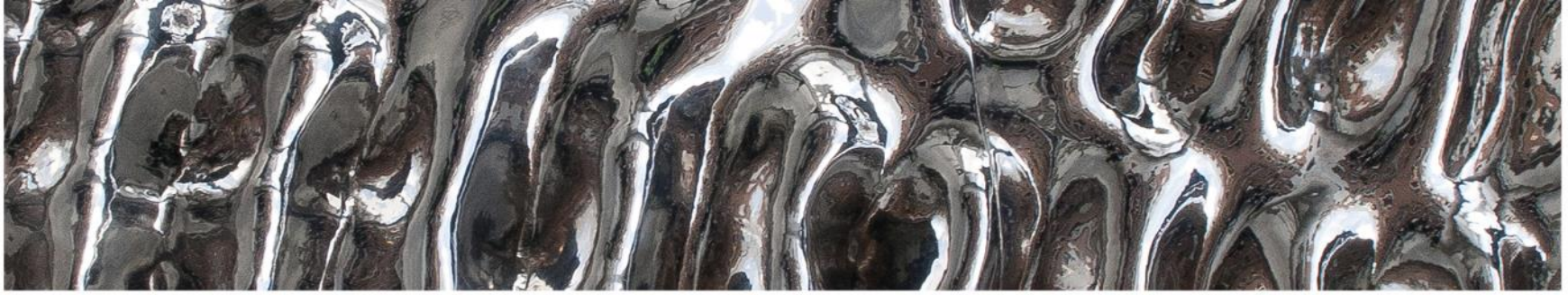


UiO : Department of Informatics
University of Oslo

Margunn Aanestad

Theoretical perspectives on governance

INF 5890 - Monday April 24th 2017

Brief recapitulation of previous lecture

- Governance
  - Within organizations - managerial authority
  - Supply chains – contractual relations
  - Ecosystems – ‘governance through architecture’
- Platforms - a socio-technical «arrangement» of inter-organizational/wider collaboration
  - Core (platform), modules and interfaces
- Platform governance (Tiwana, 2013)
  - Decision rights
    - Centralized/decentralized, strategy/implementation
  - Control mechanisms
    - Gate keeping, metrics, process control, norms/values
  - Pricing

amazon mechanical turk beta

UBER

airbnb

How Platform Coops Can Beat Death Stars Like Uber to Create a Real Sharing Economy

The Battle of Yavin where the first Death Star was destroyed. Credit: Fanpop

We have an epic choice before us between platform cooperatives and Death Star platforms, and the time to decide is now. It might be the most important economic decision we ever make, but most of us don't even know we have a choice.

By Nicol Sarantis

And just what is a Death Star platform? Bill Johnson of StructureC3 referred to Uber and

Feb 2017: Govt White Paper

- Focus on commercial «sharing economy»
  - Taxi + accomodation
- Regulatory provisions:
  - Workers' rights
  - Consumers rights
  - Taxation and other regulatory provisions

https://www.regjeringen.no/no/aktuelt/dep/fin/pressemeldinger/2017/delingsokonomien-gir-muligheter-og-utfordringer/nou-20174-delingsokonomien--muligheter-og-utfordringer/factsheet/id2537776/

Today: Theoretical perspectives on governance

- Between «the market» and «the organization»
  - The market: self-organizing, price as signalling mechanism which ensures coordination
  - The organization: hierarchy, authority/power ensures coordination
- Concepts for today:
  - Collective action dilemmas
  - The notion of commons, governance of commons
  - General theory: polycentric governance
- Practical example: governance of HIS activities in Sri Lanka (Roshan Hewapathirana)

«Belling the Cat» - example of a collective action dilemma

Collective action dilemma

- What it is:
  - In a group of individual actors, if each one is acting according to their own's best interest, the outcome will not be in anybody's interest
  - Example: Free riding in group assignment
  - Example: Environmental destruction
- Fundamental to societal organizing
- Game theory:
  - «The prisoner's dilemma»

Prisoner's dilemma:

Two members of a criminal gang are arrested and imprisoned. Each prisoner is in solitary confinement with no means of communicating with the other. The prosecutors lack sufficient evidence to convict the pair on the principal charge. They hope to get both sentenced to a year in prison on a lesser charge. Simultaneously, the prosecutors offer each prisoner a bargain. Each prisoner is given the opportunity either to: betray the other by testifying that the other committed the crime, or to cooperate with the other by remaining silent. The offer is: If A and B each betray the other, each of them serves 2 years in prison

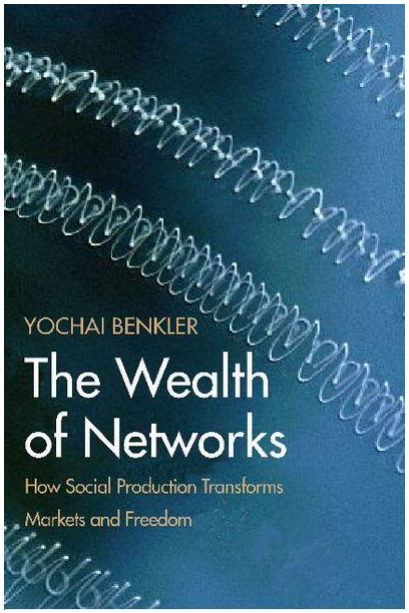
- If A betrays B but B remains silent, A will be set free and B will serve 3 years in prison (and vice versa)
- If A and B both remain silent, both of them will only serve 1 year in prison (on the lesser charge)

Sucessful collective action

- Open source software

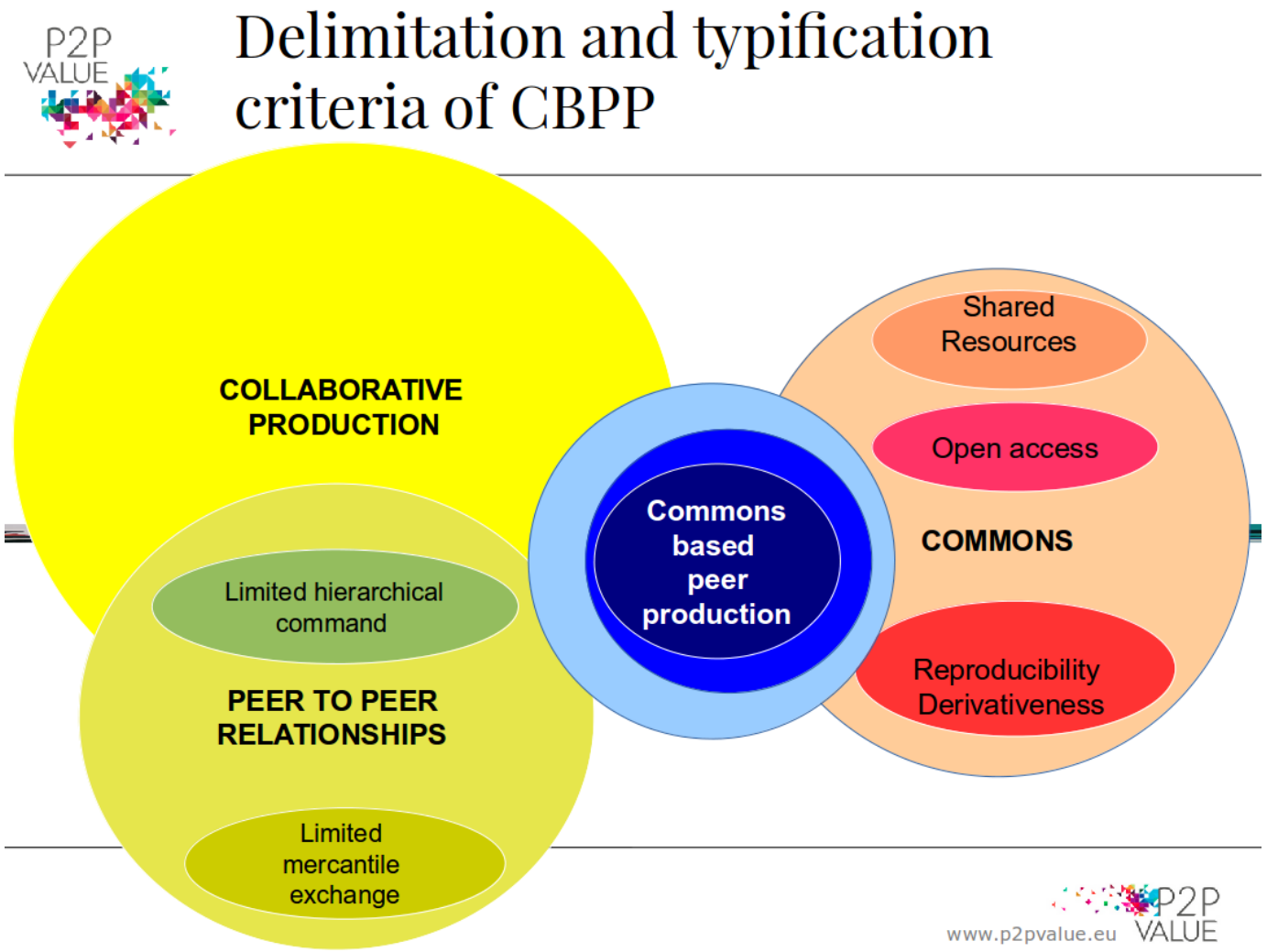
Linux

- More general:
  - Commons-based peer production



  - http://www.benkler.org/wonchapters.html

Commons-based Peer Production



Source: https://p2pvalue.eu/delimiting-commons-based-peer-production/

Readings: Aaltonen and Lanzara 2015

- How can distributed knowledge be harnessed, integrated and steered towards a coherent collective input?
- Wikipedia (Wikimedia) 2001-2009 – the emergence and evolution of governance capabilities
  - i.e. capability to design and implement mechanisms to control and coordinate joint production

The early years: attracting and integrating distributed knowledge resources: (table 1)

Governance problem	How to attract and integrate distributed knowledge resources?
Example of routines	- Writing routine - Version control routines - Reverting routine - Discussion routine
Capabilities	Capabilities are focused to the production of encyclopedia articles: - Individual skills and knowledge in writing on topic -Technological ordering of edits from multiple contributors - Collaborative assessment of edit quality - Discussion focused on article content and its development
Learning	Contributors learn from each other in talk page discussions and by observing reactions to edits
Social structure of capabilities	Capabilities are anchored to small and fluid groupings of contributors and to the technological platform

The growth of complexity: the emergence of a collective governance capability (table 2)

Governance problem	How to control and coordinate a distributed and rapidly growing production system?
Example of routines	- Three-Revert Rule (3RR) routines - Featured Article Review (FAR) routines
Capabilities	New capabilities are anchored to the online social production system rather than to individual contributors or small groupings. Examples: - Capability to control behaviour instantiated by the writing and reverting routines in a radically open system - Capability to improve the quality of articles against a common criteria
Learning	Contributors develop new routines by discussing problems on talk pages and writing metatext; they also learn through the enactment of the new routines
Social structure of capabilities	The enactment of production routines remain widely distributed, but some editorial and administrative agency become more centralized and attached to emerging roles

The age of maturity: maintaining and enhancing the common value (table 3)

Governance problem	How to protect and maintain the online social production system?
Example of routines	- Bot deployment routines - Flagged revisions routines
Capabilities	New capabilities target the collective governance capability itself. Examples: - Capability to stabilize capabilities by automating routines - Capability to balance participation and quality in the production of articles
Learning	Contributors are socialized to a regime of principles, rules, procedures, policies, etc.; learning increasingly happens through norms and rules
Social structure of capabilities	The enactment of production routines remain mostly distributed despite some selective restrictions, while a concentrated and structured system of administrative capabilities is established

Roshan Hewapathirana

- Implementation of DHIS2 Sri Lanka

- Governance in inter-organizational networks
- Beyond OSS/CBPP

DHIS2 as an open source public health IS

- District Health Information System(DHIS2) is an open source public health IS developed by Health Information Systems Programme (HISP) of UiO
- Public health IS is a health record system with a community/population focus, hence, DHIS2 is capable of collecting and analyse of both individual (e.g. weight) and aggregate (e.g. number of malnourished children in a village) health records
- DHIS2 is promoted through country HISPs which are local nodes of the global HISP network (e.g. HISP Sri Lanka)

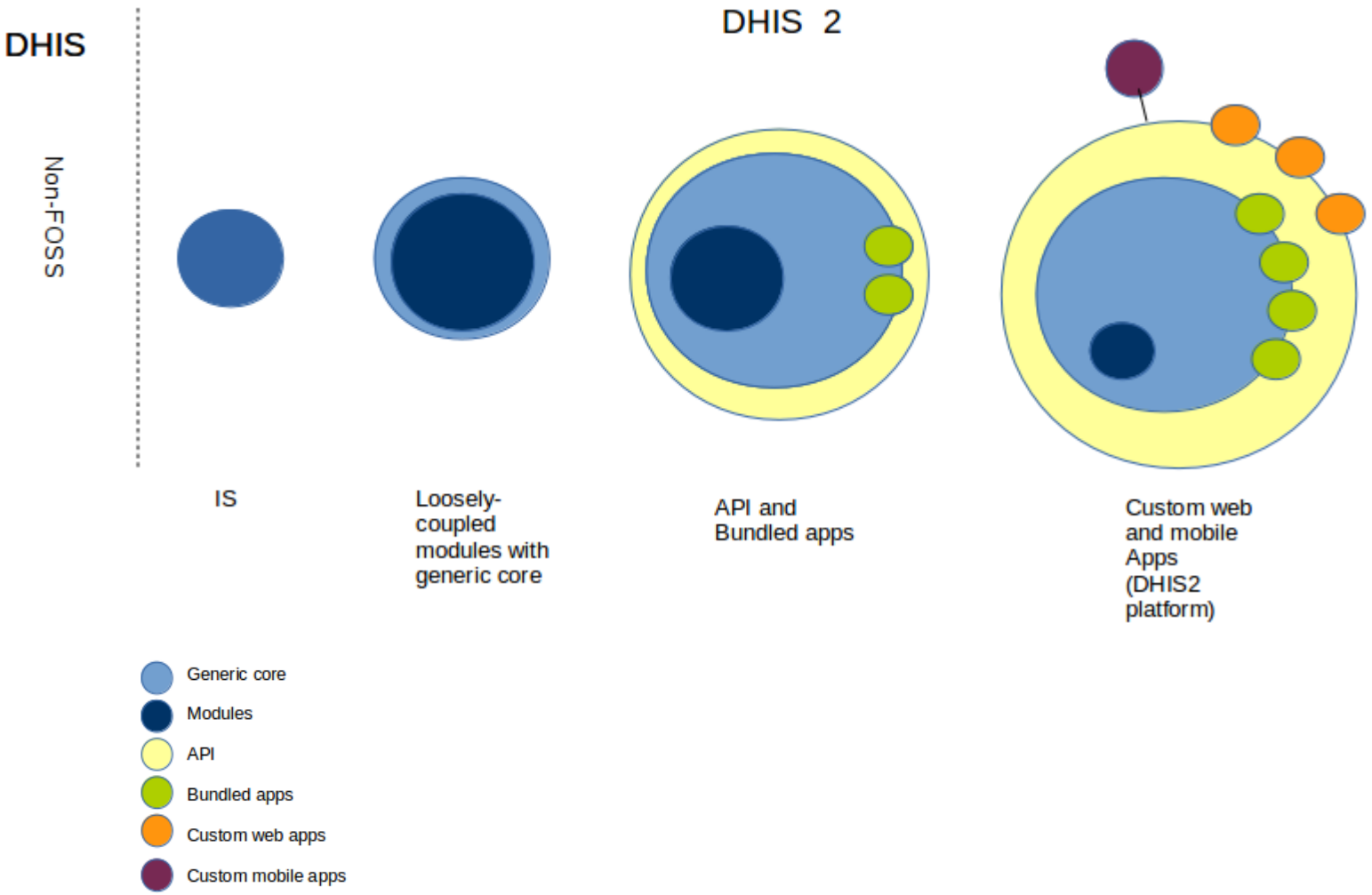
DHIS2 as an open source public health IS

- Current versions of DHIS2 has
  - a generic core (e.g. database connectivity) developed by UiO
  - bundled apps (e.g. Tracker Capture, Dashboard)
  - 'App Store' maintained by UiO for selected apps
  - Web Apps (e.g. Tabular Tracker Capture)
  - Widget Apps (e.g. Social Media Video for Dashboard)
  - Android Apps (e.g. Aggregate Data Capture)
  - Application Programming Interfaces (e.g. Web/Mobile API) which enable development of custom apps
  - generic Android (e.g Tracker Capture) and Java mobile clients (e.g. Mobile Aggregate Reporter) developed by UiO

More about FOSS

- FOSS – globally recognized software development practice, which allows free access to source code with the permission to modify and redistribute the code and derivatives
- Early FOSS development model
  - Core developer team (Committers), volunteer developer community and users
  - Bazaar model (Ebart, 2008) to describe the volunteer developer community
  - Similar to *Commons Based Peer Production*
  - e.g. Chromium web browser, Linux distribution CentOS
- Commercial (2nd generation) FOSS
  - extending and aligning generic FOSS features with customer needs and providing 'after sales' services for a fee
  - e.g. Chrome web browser and Red Hat Linux
  - James Dixon (2009): Single Vendor Commercial Open Source Model and Service/Support Commercial Open Source Model
  - Third Party Service Provider Model (Krishnamurthy, 2003)

Evolution of DHIS2



FOSS implementation in SL context

- Summary of the DHIS2 implementation timeline
  - 2010, customized for maternal and child health, rolled-back in 2012
  - In 2013 implemented for Tuberculosis control with GF ATM funding
  - In 2014, re-implementation for maternal and child health failed
  - In 2014 Nutrition Surveillance with Unicef funding
  - From 2016 re-implemented for maternal and child health and scaling-up for national implementation

DHIS2 implementation in SL context . . .ctd

Low resource setting: multi-sector stakeholder approach

- Actors internal to health system include Ministry of Health (Line Ministry, Provincial Health Ministries) and Health Programmes (vertical) – e.g. Family Health Bureaus, Common goal: DHIS2 implementation
- Actors external to health system
  - FOSS developer (HISP/UiO)
  - FOSS implementer (HISP SL)
  - Funding agencies/Development partners – WHO, Unicef, GF ATM
  - Academia – UiO, University of Colombo
  - Standards Development Agencies – WHO, National eHealth Steering Committee (eHealth Policy). ICT Agency (National eGov Policy)

DHIS2 implementation in SL context . . .ctd

- Governance
  - Ministry of Health expected a centralized/hierarchical governance
  - During initial stages of implementation, multi-sector actors are not under the jurisdiction of Ministry of Health
  - National Foundation for Open Source Health Software (NFOSHS)
  - Established in 2013 with a centralized governance model
  - Failed to thrive

DHIS2 implementation in SL context . . .ctd

- Implementation effort can be described as a *Collective Action*
  - Common goal of DHIS2 implementation
  - Poly-centric approach (with stakeholder specific goals)
- FOSS implementation ‘project’ to ‘ecosystem’
  - Governance shifts towards orchestration (Tivana, 2013)
  - Decision rights shifted from FOSS developer (HISP) to organization which commissions FOSS implementation (Ministry of Health)

Governance of FOSS platform ecosystem

	Traditional platform (Tiwana, 2013)	Commercial FOSS as a platform
Orchestration of PE	Platform Owner (HISP)	Organization commissioning FOSS implementation (Ministry of Health)
App decision	Platform owner	Bundled apps - HISP Custom Apps- Ministry of Health
Gate-keeping	Platform owner (HISP by controlling DHIS2 blueprints and development trunk and API)	Ministry of Health (selecting implementer, choosing apps to be implemented/custom developed, control over funding agencies, standards)
Metrics	Performance targets of bundled apps	Business Goals (health outcomes, national policies) for custom apps
Process control	Platform Owner	By Client Organization
Relational control	Clan Control (open source developer community)	Trade off between hierarchical and poly-centric

Summary

- FOSS paradigm shifted from peer production to collective action
- Commercial FOSS Architecture evolved from IS to PE
- FOSS implementation governance can be seen as orchestration of FOSS PE, with exceptions in
  - Shifting orchestration from platform owner to client
  - app produced by the platform owner and custom apps developed by third party service providers

Types of goods

	Excludable	Non-excludable
Rivalrous	**Private goods** food, clothing, cars, parking spaces	**Common-pool resources** fish stocks, timber, coal
Non-rivalrous	**Club goods** cinemas, private parks, satellite television	**Public goods** free-to-air television, air, national defense

Governing the Commons

- «Commons» – common pool resources, e.g. for common land for hunting, grazing
- Enclosure
  - 18th century, England
- Hardin (1968): «Tragedy of the Commons»
  - Susceptible to over-exploitation
- Heller (1998): «Tragedy of the Anti-commons»
- Elinor Ostrom (1990): “Governing the Commons: The Evolution of Institutions for Collective Action”

Design principles for Common Pool Resource (CPR) institutions

1. Clearly defined (clear definition of the contents of the common pool resource and effective exclusion of external un-entitled parties);
2. The appropriation and provision of common resources that are adapted to local conditions;
3. Collective-choice arrangements that allow most resource appropriators to participate in the decision-making process;
4. Effective monitoring by monitors who are part of or accountable to the appropriators;
5. A scale of graduated sanctions for resource appropriators who violate community rules;
6. Mechanisms of conflict resolution that are cheap and of easy access;
7. Self-determination of the community recognized by higher-level authorities; and
8. In the case of larger common-pool resources, organization in the form of multiple layers of nested enterprises, with small local CPRs at the base level.

Information Commons

- Open Data (NRC, EU …)
  - Demand to publish not only research results, but also data
- Justifications:
  - Transparency will help to verify and/or reproduce studies
  - More efficient cooperation
  - Allows novel discoveries
  - Efficiency and potential for innovation
- «wisdom of crowds»

Example:
NHS England's *care.data* scheme

- Aim: Extract data from GP's records:
  - «Lacking pieces of the puzzle»
  - Clinical and biomedical information:
    - Family history, referrals, diagnoses, prescriptions etc.
    - Blood pressure, body mass index, cholesterol level etc.
  - NHS no., postcode, birth date, etc. (not name)
- To be collected by HSCIC (est. April 2013)
  - The Health and Social Care Act 2012
  - Not intended for care (had SCR), but for research, planning, audit etc.

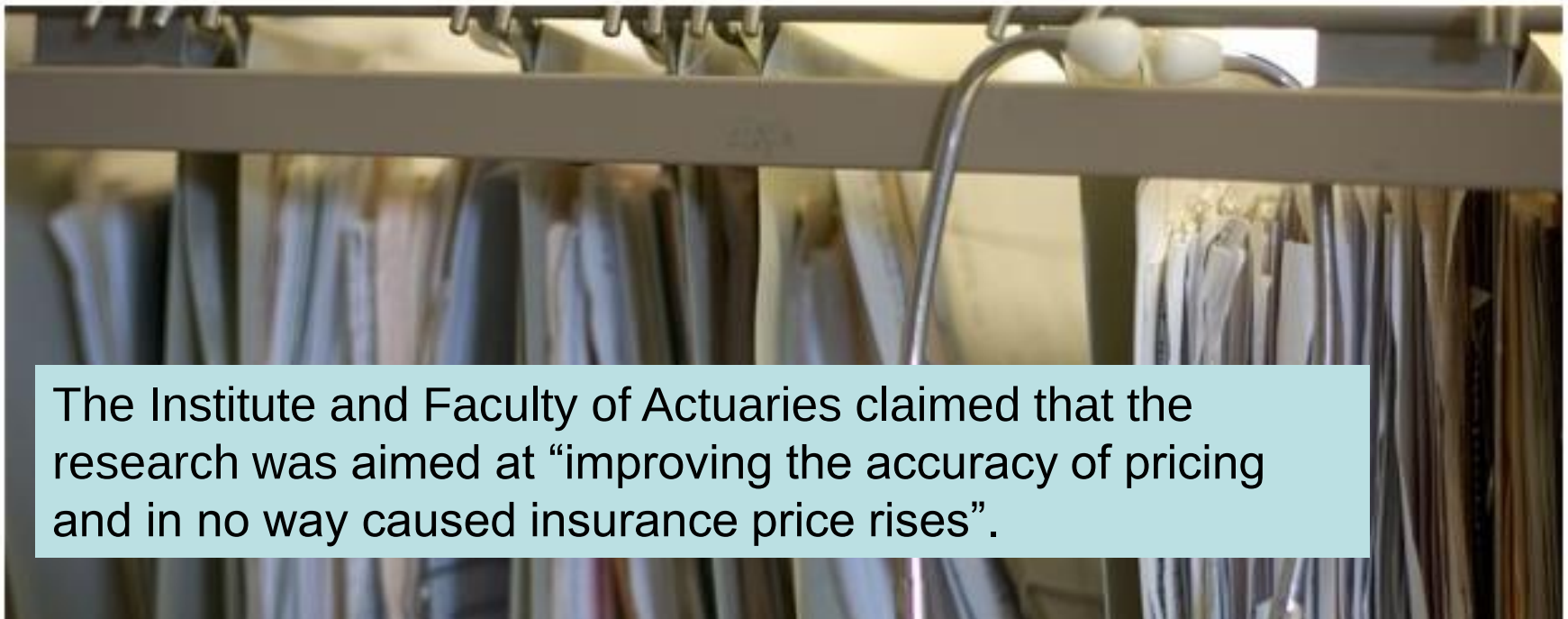
Paper: Vezyridis and Timmons (2017)

- Increasingly debated (late 2013- early 2014):
  - The risks associated with data extraction/transfer
  - The opt-out option
  - The use by ‘third parties’
  - The information campaign (Jan 2014)
- Feb 17th 2014: postponed 6 months:
  - to permit "more time to build understanding of the benefits of using the information, what safeguards are in place, and how people can opt out if they choose to".
  - But ….

The Telegraph

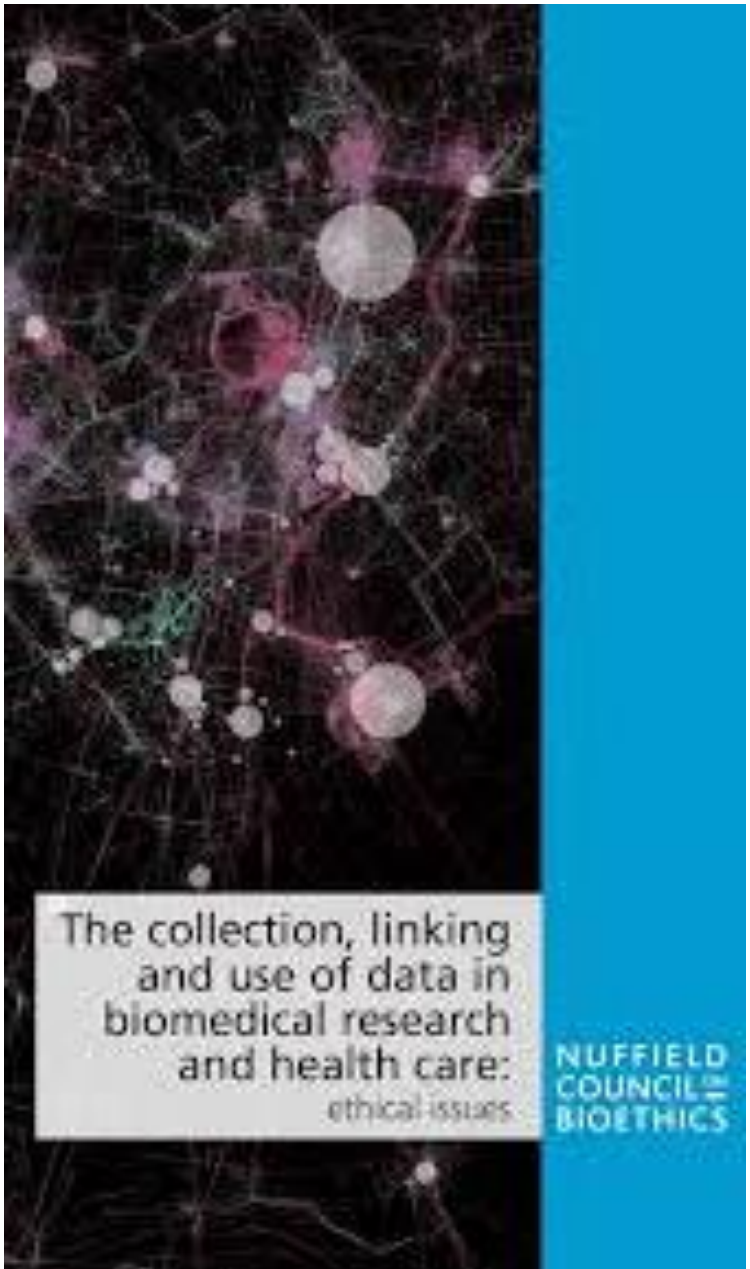
Hospital records of all NHS patients sold to insurers

Hospital records of all NHS patients sold for insurance purposes days after controversial plans to extract patient data from GP files put on hold



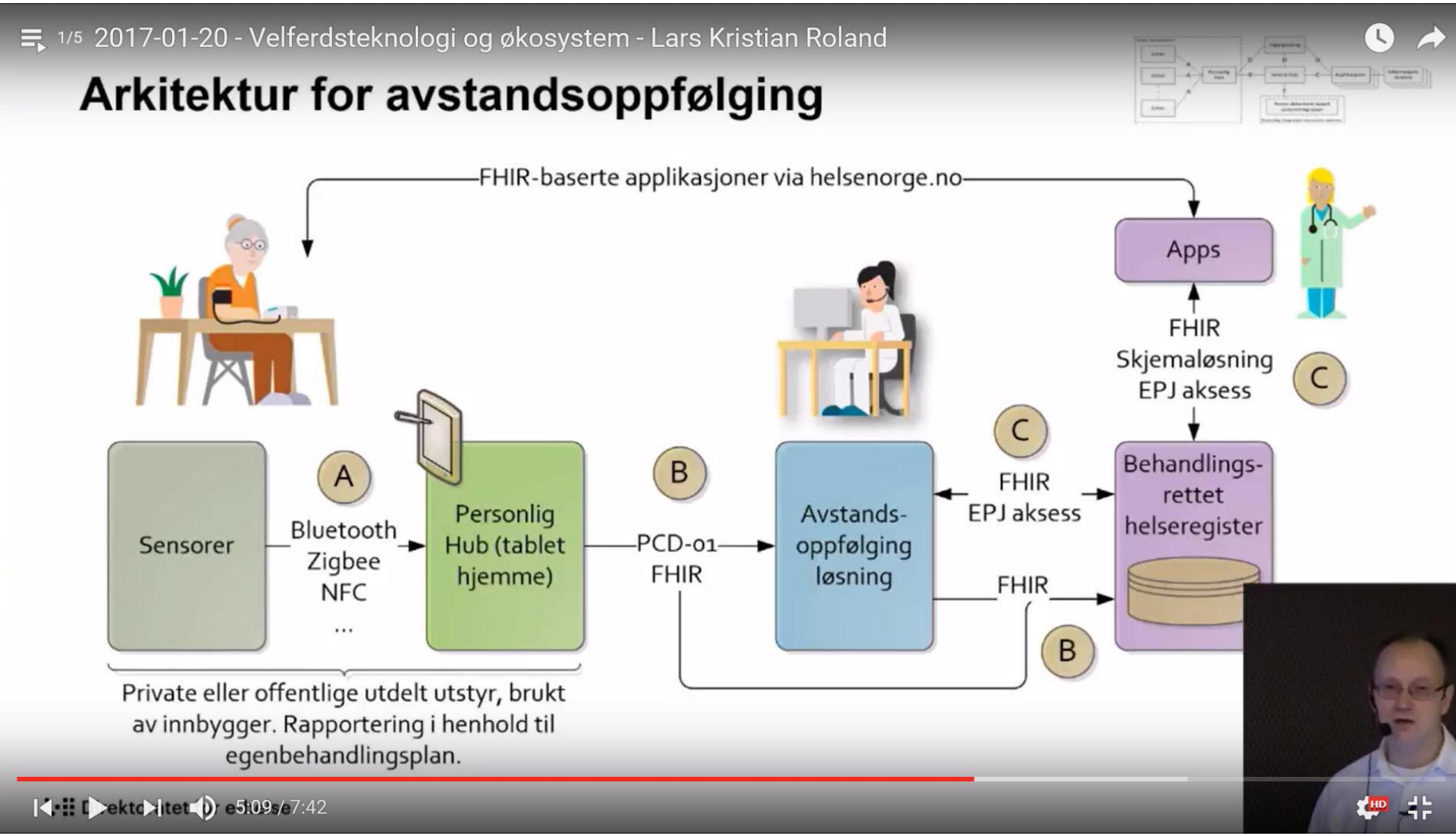
The Institute and Faculty of Actuaries claimed that the research was aimed at “improving the accuracy of pricing and in no way caused insurance price rises”.

- HSCIC's 'Information Governance Assessment' (August 2013)
  - access to individual patients records "can enable insurance companies to accurately calculate actuarial risk so as to offer fair premiums to its customers. Such outcomes are an important aim of Open Data, an important government policy initiative."
- Further debates:
  - Spring 2014: Advisory Group, appointment of National Data Guardian for health and care
  - October 2014: Plan for phased introduction, «pathfinders», relaunch June 2015, but in September all pilots are put on hold, leader resigns
  - July 2016: cancelled



- Nuffield Council on Bioethics:

- …existing information governance measures don't keep pace with developments…
- "The use of data …should be in accordance with a publicly statable set of morally reasonable expectations and subject to appropriate governance" (p.94)


1/5 2017-01-20 - Velferdsteknologi og økosystem - Lars Kristian Roland
Arkitektur for avstandsoppfølging
FHIR-baserte applikasjoner via helsenorge.no
Apps
FHIR
Skjemaløsning
EPJ aksess
C
Sensorer
A
Bluetooth
Zigbee
NFC
...
Personlig Hub (tablet hjemme)
B
PCD-01
FHIR
Avstands-oppfølging løsning
C
FHIR
EPJ aksess
Behandlings-rettet helseregister
FHIR
B
Private eller offentlige utdelt utstyr, brukt av innbygger. Rapportering i henhold til egenbehandlingsplan.
5:09 / 7:42

Readings 2: McGinnis 2016

- Poly-centric governance
  - Multiple mechanisms of collective decision-making and conflict resolution at multiple levels of aggregation

Polycentric system of governance:

1. Structure
    1. Multiple centers of decision making (decision units)
    2. With overlapping jurisdictions/areas of responsibility
2. Process
    1. Process of mutual adjustment
    2. Where new formal/informal collaboration may be established
3. Outcomes
    1. Interactions generate a regularized pattern of order
    2. Efficient, sustainable,

Additional readings:

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