My story

Gulnaz Aksenova

PhD candidate in Digital Architecture and Strategic Management

Expected in early 2020

Supervised by

Prof. **Tom Elfring** (school of management),

Prof. **Arto Kiviniemi** (School of Architecture),

Martin Simpson (School of engineering),

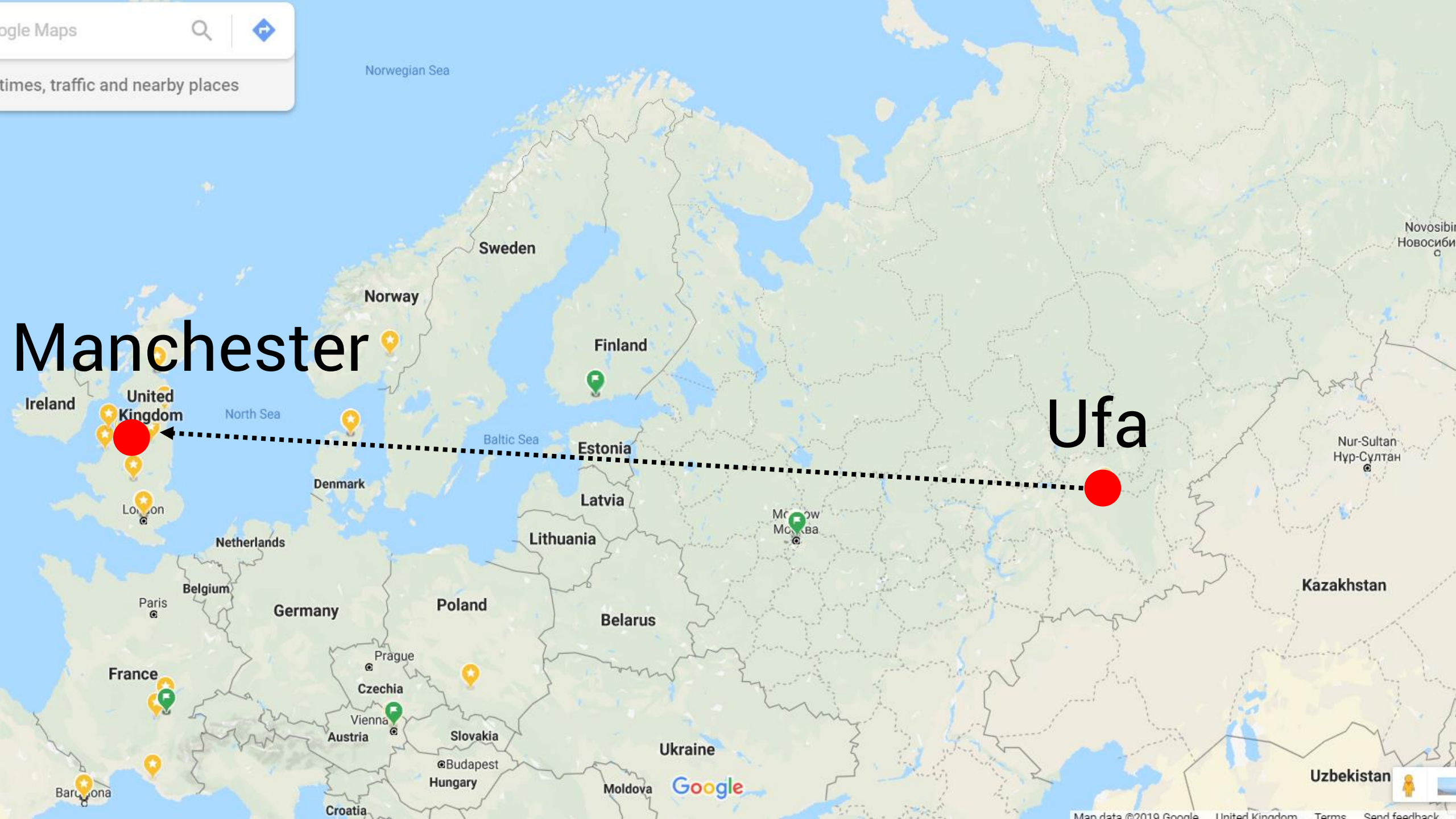and previously by Prof. **Tuba Kocaturk** (School of Architecture)

times, traffic and nearby places

Norwegian Sea

Sweden

Norway

Finland

Ireland

United Kingdom

North Sea

Estonia

Baltic Sea

Latvia

Ufa

Nur-Sultan
Нур-Султан

Denmark

Lithuania

London

Moscow
Москва

Netherlands

Belgium

Paris

Germany

Poland

Belarus

Kazakhstan

Prague

Czechia

France

Vienna

Austria

Slovakia

Ukraine

Budapest

Hungary

Moldova

Croatia

Barcelona

Uzbekistan

Novosibi
Новосиби

Google

MSc in Digital Architectural Design at the University of Salford

2nd generation of students

Completed proudly with distinction

Strelka Institute for Media, Design and Architecture, 2013-2014

(Re)Charge Information Studio
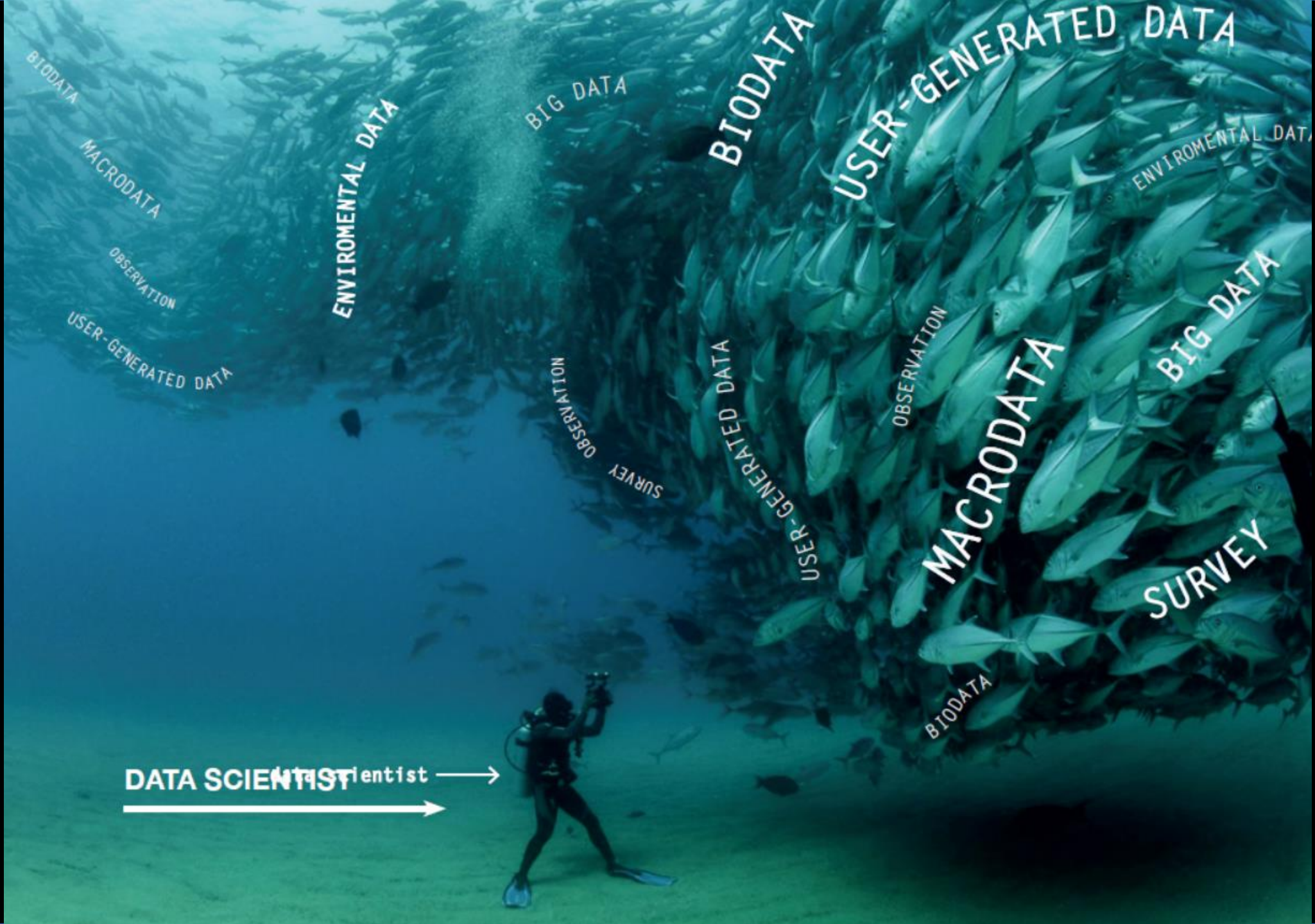
DATALAB METRO

Urban Data Goes Personal...

Gulnaz Aksenova & Artur Shakhbazyan

Every sensor, device, individual, vehicle, building and street can be used as a tool to probe city dynamics
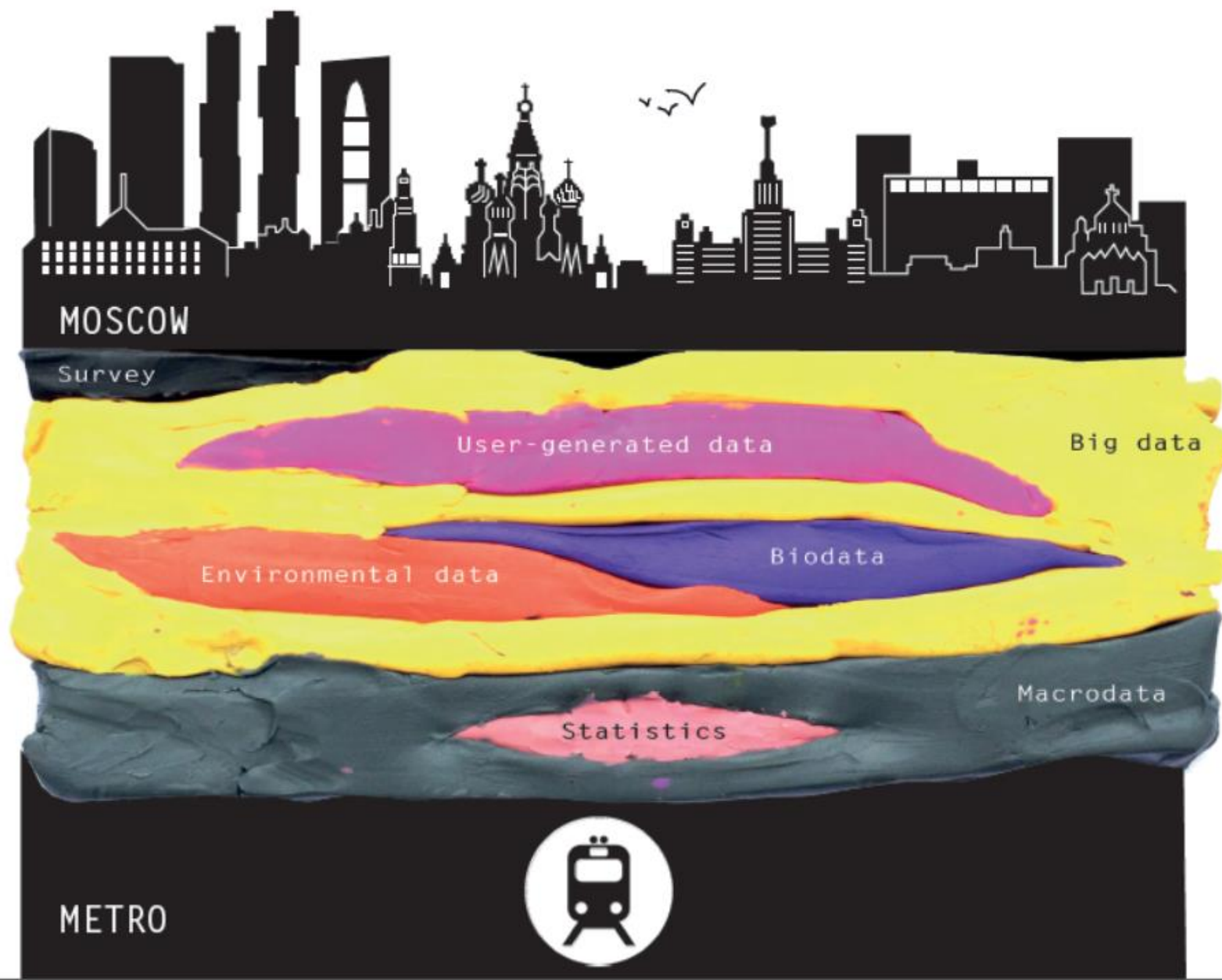
Transport + Infrastructure + People =

SENSORY EXPERIENCE IN A CROWDED METRO

UNDEGROUND IS A REPRESENTATION OF ABOVEGROUND
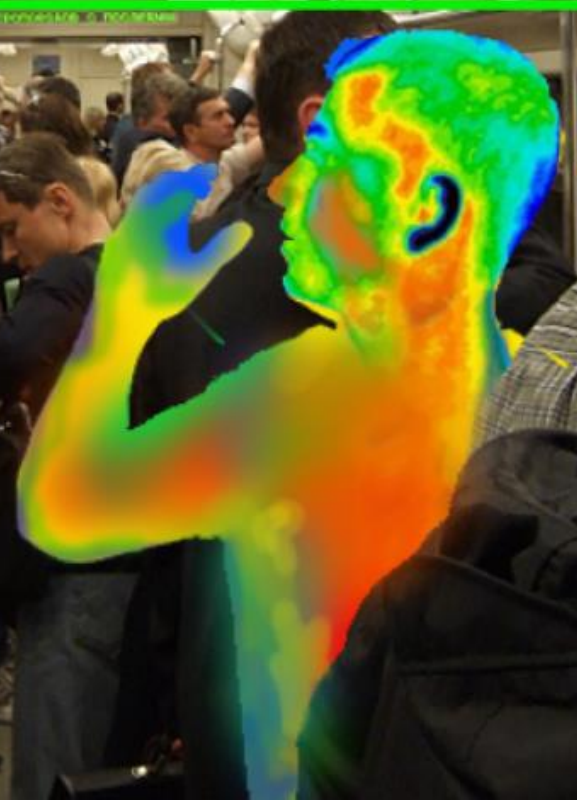
WHAT ARE WE LOOKING FOR

- STRESS
- OBESITY
- INFLUENZA

HEALTH CARE

DATA SOURCES & PRODUCERS

FACE: 👤
- FACIAL EXPRESSION
- IRIS/RETINA OF EYE

BODY: 🧍
- SPEED OF WALKING
- POSTURE
- GAIT
- WEIGHT
- HEIGHT
- BEHAVIORAL TRAITS
- BIO PROCESSES

HANDS: ✊
- PULSE
- SWEAT

VOICE:
- TONE
- PITCH

SKIN: 🖐
- TEMPERATURE

ENVIRONMENT

TYPES & PARAMETERS OF DATA

BIO:
- PULSE
- OXYGENATION
- ELECTROCARDIOGRAM
- BRAIN ACTIVITY
- NERVE SYSTEM ACTIVITY
- GALVANIC SKIN RESPONSE
- GLUCOMETER
- SCALES
- VOICE TONE
- VOCAL TRACT PROPERTIES

POSITION:
- VELOCITY
- ACCELERATION
- MOVEMENT
- GLOBAL POSITIONING SYSTEM

ELECTROMAGNETIC ENVIRONMENT:
- CAPACITY
- CONDUCTION
- MAGNETIC FIELD CHANGE
- CURRENT SENSING
- ELECTROMAGNETIC WAVES MEASUREMENT

HUMAN-SENSIBLE ENVIRONMENTAL ATTRIBUTES:
- SOUND WAVE AND SOUND PRESSURE
- BAROMETRIC PRESSURE
- HUMIDITY
- TEMPERATURE
- AIR MIXTURE
- PARTICLES IN THE AIR
- LUMINANCE
- LIQUID PRESSURE
- LIQUID PRESENCE

INVISIBLE ENVIRONMENTAL CHARACTERISTICS:
- GAS MIXTURE
- GAS FLOW
- LIQUID MIXTURE

- CAMERA
- SMART PHONES DETECTOR
- SMART-CARD
- SCANNER

WHAT ARE WE LOOKING FOR

HEALTH CARE
- STRESS
- OBESITY
- INFLUENZA
- SHIZOPHRENIA
- SMOKING
- DRUG ADDICTION
- ALCOHOLISM

ECONOMY
- CLOTHES
- FRAGRANCE
- SMARTPHONE MODEL
- TRAVEL PATTERNS

DEMOGRAPHICS
- AGE
- GENDER
- LANGUAGE
- RACE

DATA SOURCES & PRODUCERS

FACE: 👤
- FACIAL EXPRESSION
- IRIS/RETINA OF EYE
- FACIAL CHARACTERISTICS

BODY: 🚹
- SPEED OF WALKING
- POSTURE
- GAIT
- PROXIMITY
- WEIGHT
- HEIGHT
- EXTREMITIES
- BEHAVIORAL TRAITS
- BIO PROCESSES

HANDS: ✋
- PULSE
- SWEAT
- FINGERPRINTS

VOICE: 🎤
- TONE
- PITCH
- LANGUAGE

SMELL 👃

SKIN: 🖐
- COLOUR
- TEMPERATURE

ENVIRONMENT

OTHER

TYPES & PARAMETERS OF DATA

BIO:
- PULSE
- OXYGENATION
- ELECTROCARDIOGRAM
- BRAIN ACTIVITY
- NERVE SYSTEM ACTIVITY
- GALVANIC SKIN RESPONSE
- GLUCOMETER
- SCALES
- VOICE TONE
- VOCAL TRACT PROPERTIES

POSITION:
- VELOCITY
- ACCELERATION
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ELECTROMAGNETIC ENVIRONMENT:
- CAPACITY
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HUMAN-SENSIBLE ENVIRONMENTAL ATTRIBUTES:
- SOUND WAVE AND SOUND PRESSURE
- BAROMETRIC PRESSURE
- HUMIDITY
- TEMPERATURE
- AIR MIXTURE
- PARTICLES IN THE AIR
- LUMINANCE
- LIQUID PRESSURE
- LIQUID PRESENCE

INVISIBLE ENVIRONMENTAL CHARACTERISTICS:
- GAS MIXTURE
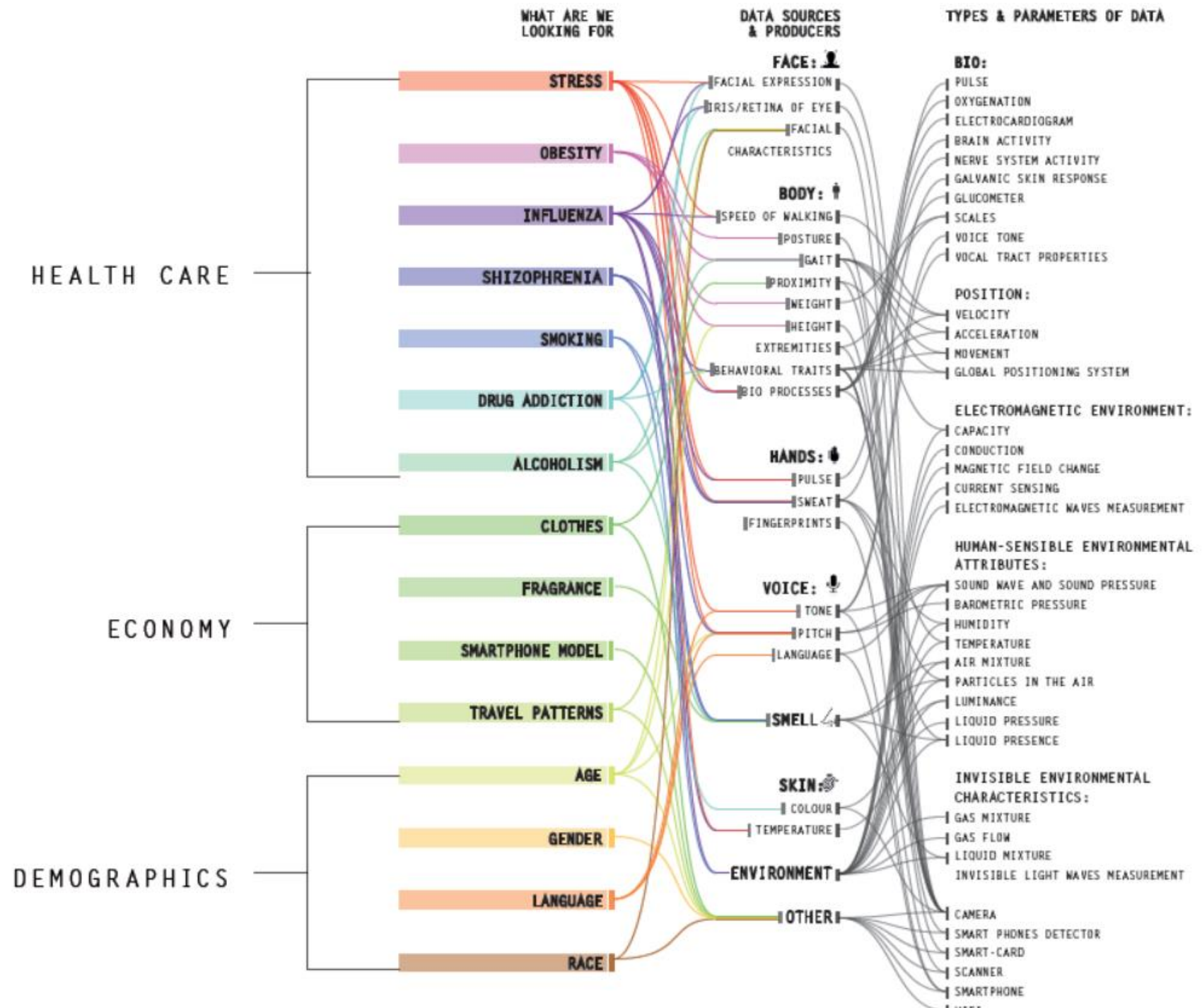- GAS FLOW
- LIQUID MIXTURE
- INVISIBLE LIGHT WAVES MEASUREMENT

- CAMERA
- SMART PHONES DETECTOR
- SMART-CARD
- SCANNER
- SMARTPHONE

**DISPROPORTIONAL OVEREMPHASIS
ON TECHNOLOGIES AND INDIVIDUALS**

(Deutsch, 2011; Kiviniemi 2013)

Sisyphus is a work of Mongoose Studio

fable 'Swan, Pike and Crawfish' by Ivan Andreevich Krylov
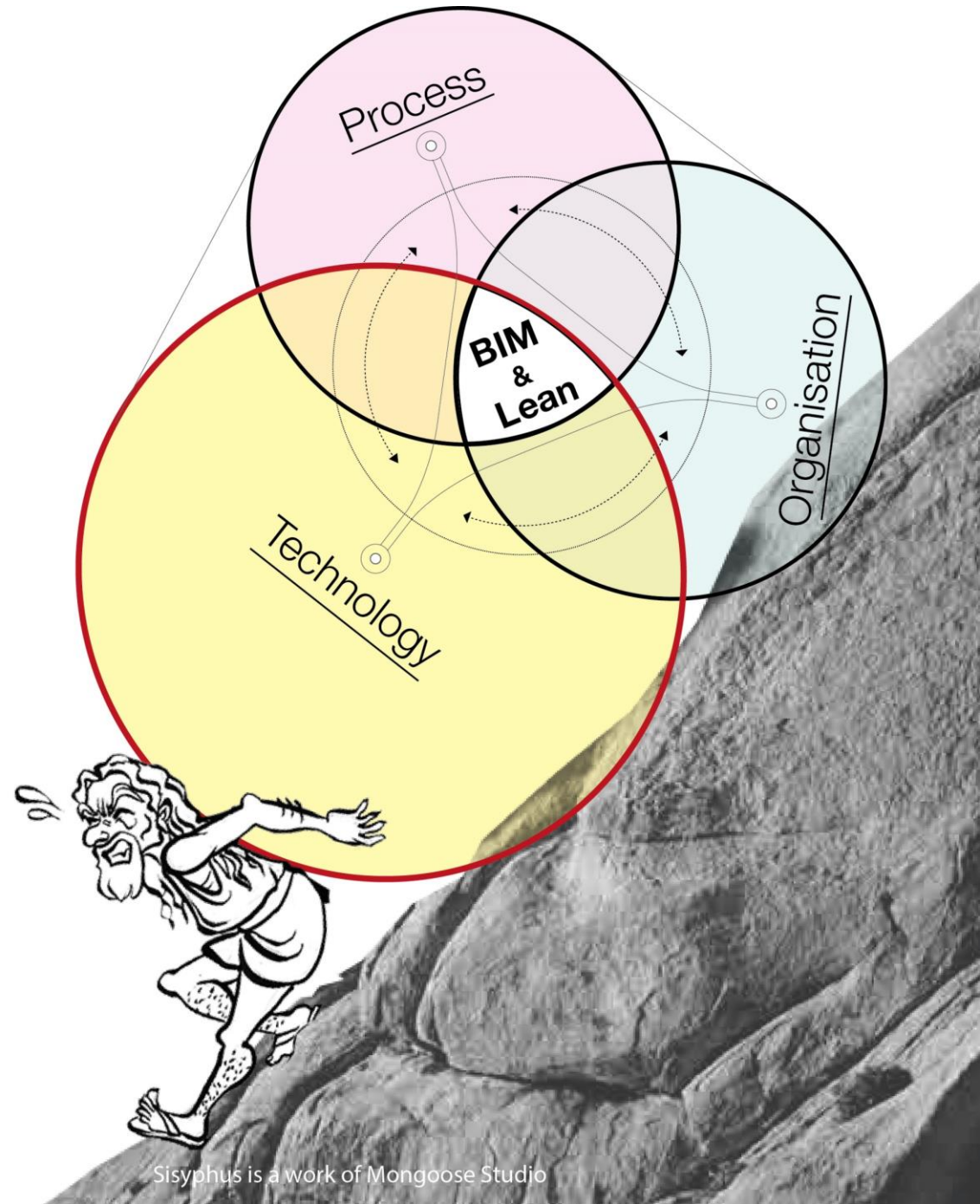
ARCHITECTS

CONTRACTORS

OWNERS

Когда в товарищах согласья нет,
На лад их дело не пойдет,
И выйдет из него не дело—только мука.

http://oldsamara.samgtu.ru/part_4/page_10/cards/skazka/51.jpg
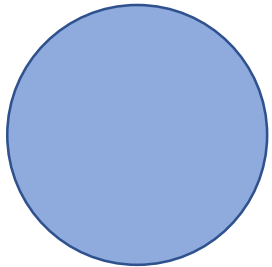
PhD in Digital Architecture
supervised by
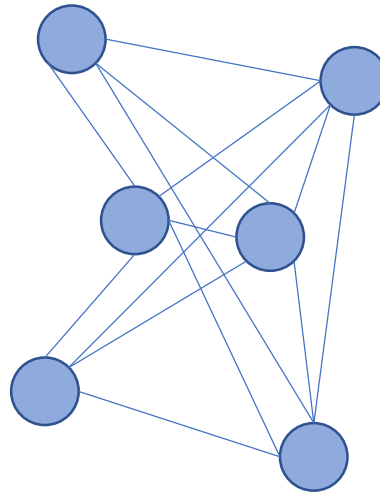Prof. Arto Kiviniemi and Prof. Tuba Kocaturk
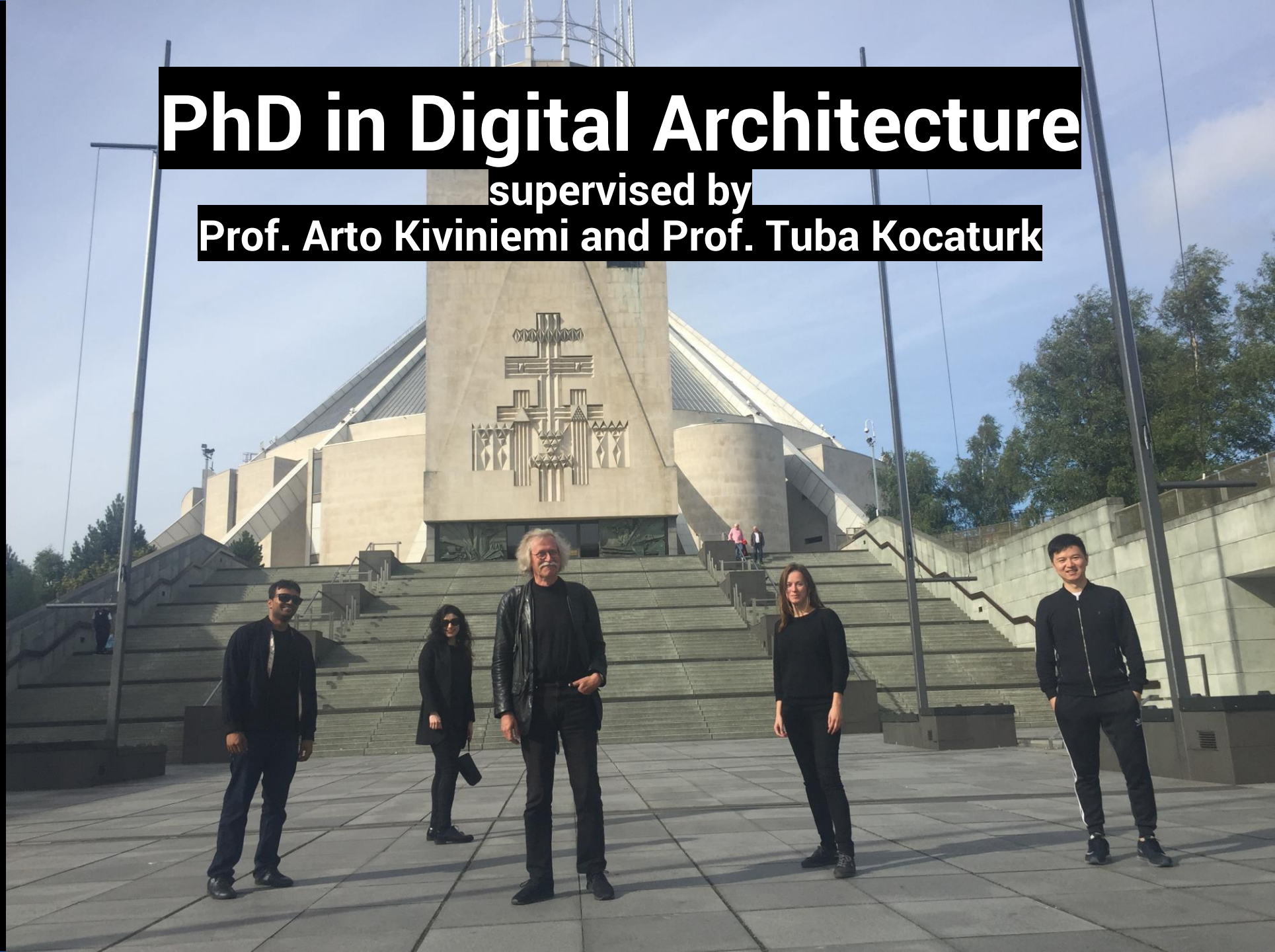
Gap in the Literature

Literature on BIM, Management and Innovation is mostly **focused on**

Individual Projects' Organisational capabilities

Less On Project Networks
(Supply Chain)

Even Less On Business Ecosystem
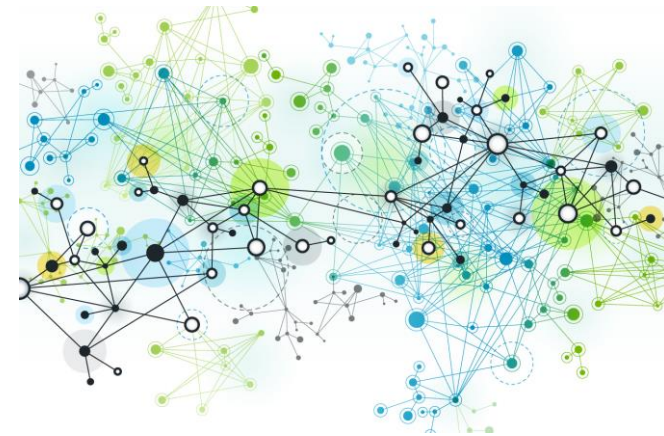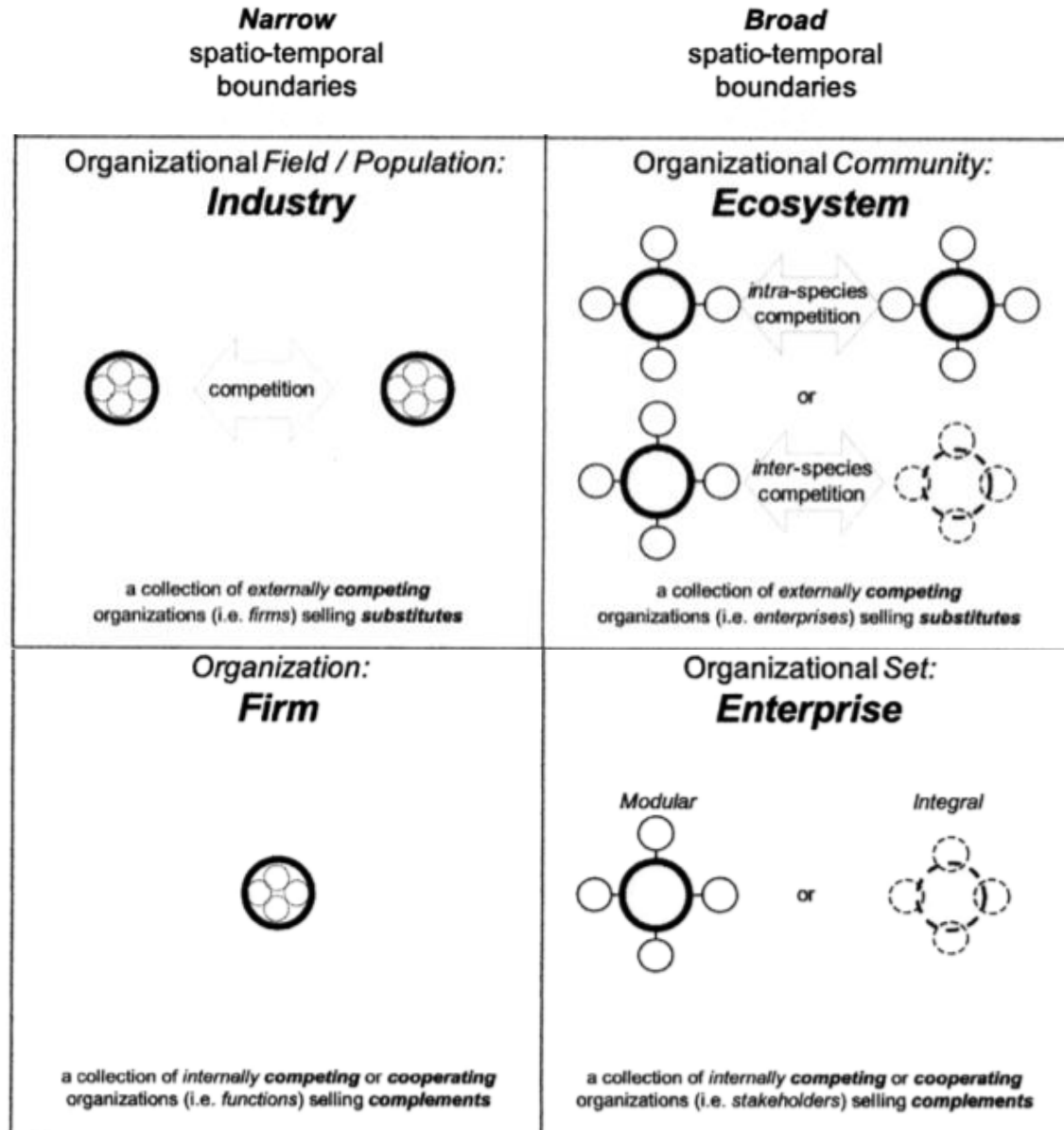
Adapting to the changing environment

Image courtesy: https://s14-eu5.ixquick.com/cgi-bin/serveimage?url=https%3A%2F%2Fwww.xkl.com%2Fwp-content%2Fuploads%2F2015%2F09%2FnetworkDesign.jpg&sp=48222c7d99a186e2a96aab03736f1db0
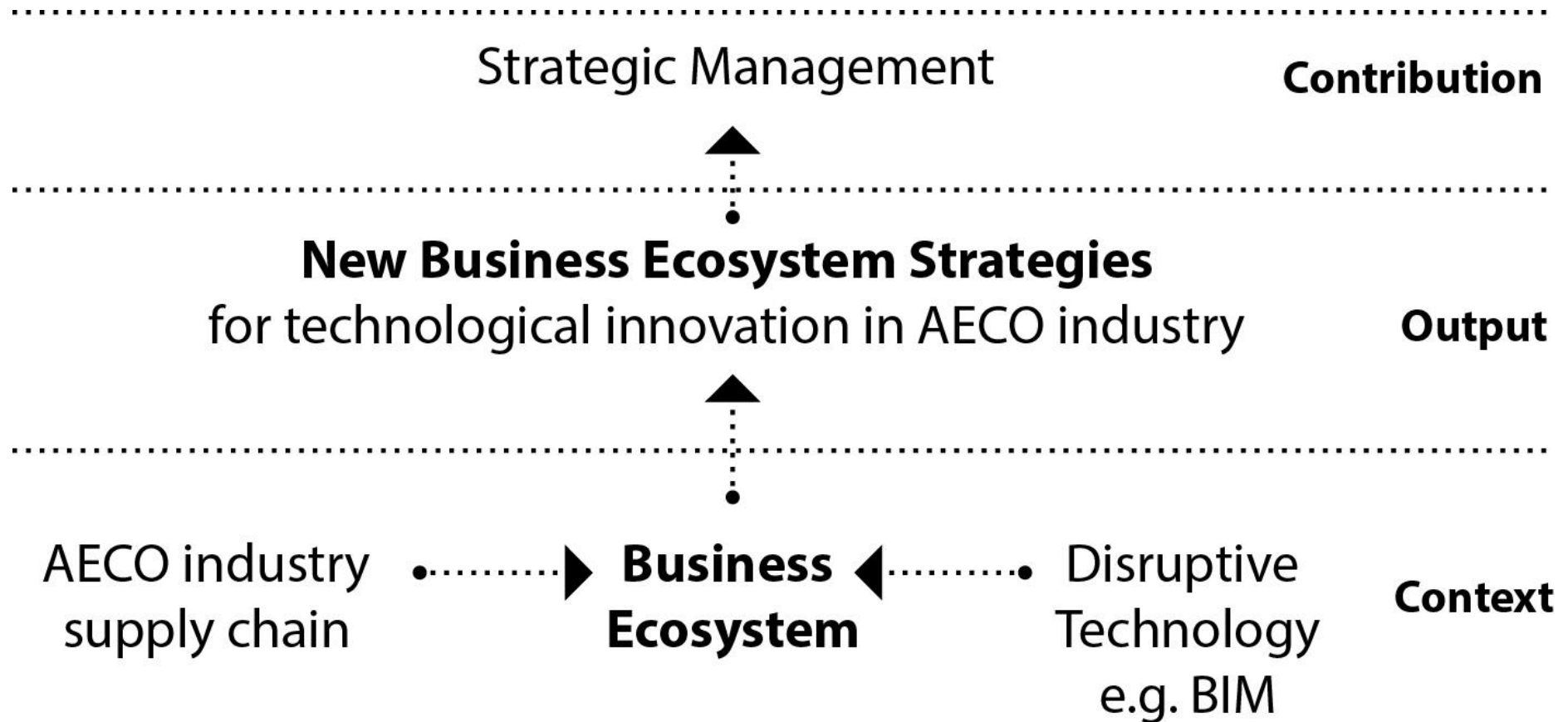
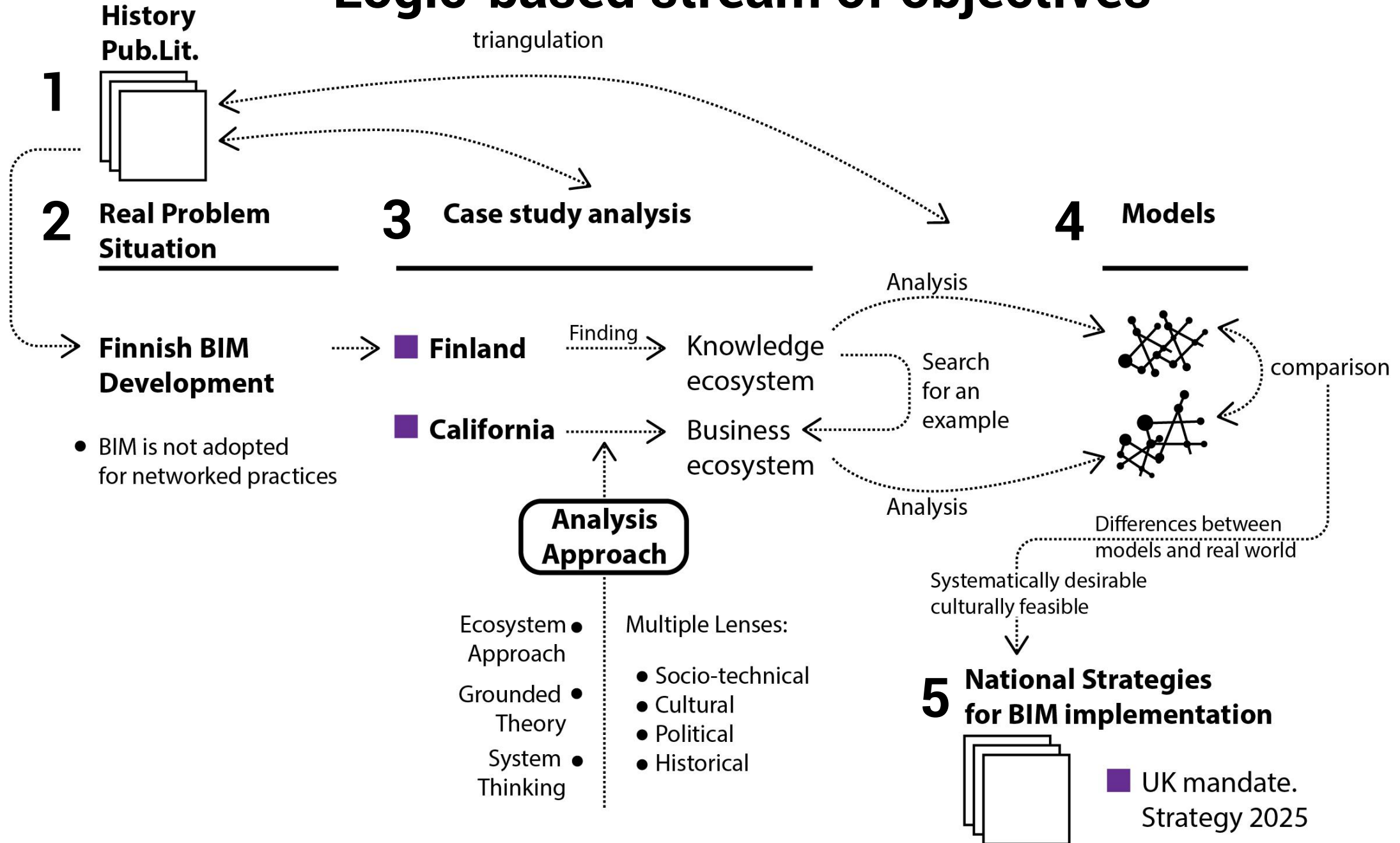# Business ecosystem definition

is
a constellation of collaborating and interacting set of private, public and academic organisations who play the **key roles in the development or the** reconstruction of existing industries with BIM. They are characterised by types of roles, connections and **strategies for value co-creation** (Moore, 1990, Iansiti & Levien, 2004)

Overview for the PhD topic

Strategic Management — **Contribution**

New Business Ecosystem Strategies
for technological innovation in AECO industry — **Output**

AECO industry supply chain → **Business Ecosystem** ← Disruptive Technology e.g. BIM — **Context**

Logic-based stream of objectives

triangulation

1 **History Pub.Lit.**

2 **Real Problem Situation**

Finnish BIM Development

- BIM is not adopted for networked practices

3 **Case study analysis**

■ **Finland** — Finding → Knowledge ecosystem

■ **California** — Business ecosystem

Analysis Approach

Ecosystem ● Approach

Grounded ● Theory

System ● Thinking

Multiple Lenses:

- Socio-technical
- Cultural
- Political
- Historical

Analysis

Search for an example

Analysis

4 **Models**

comparison

Differences between models and real world

Systematically desirable culturally feasible

5 **National Strategies for BIM implementation**

■ UK mandate. Strategy 2025

Historical Qualitative Case Study:

Finnish knowledge ecosystem for BIM development and implementation

1st case study analysed

Joint collaboration between Canada and UK

The research is financed by an SSHRC grant

2014-2016 (#430-2014-01070).

Finding 1:

BIM implementation is limited to intra-organisational practices to improve productivity

Finding 2:

Disconnect between business, knowledge, innovation ecosystems and public funding support

Finding 3:

Ecosystem of AECO industry have not changed much (meaning the ecosystem still operates in a traditional way)

BIM technologies were implemented under the old way of doing things

(Miettinen & Paavola, 2014)
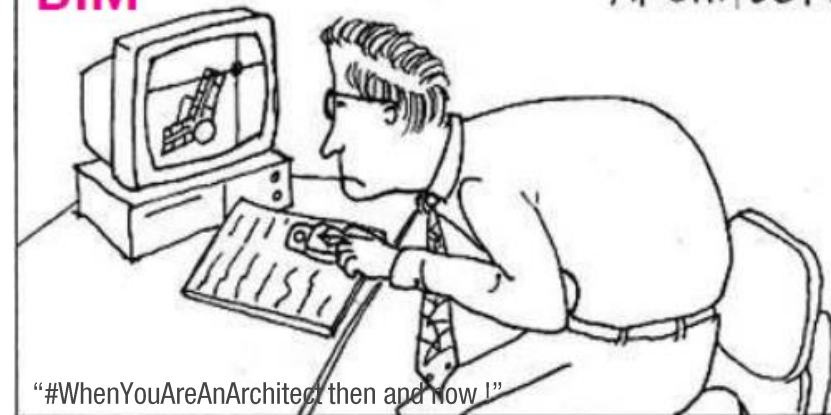
<1970s

1970s

1970s>

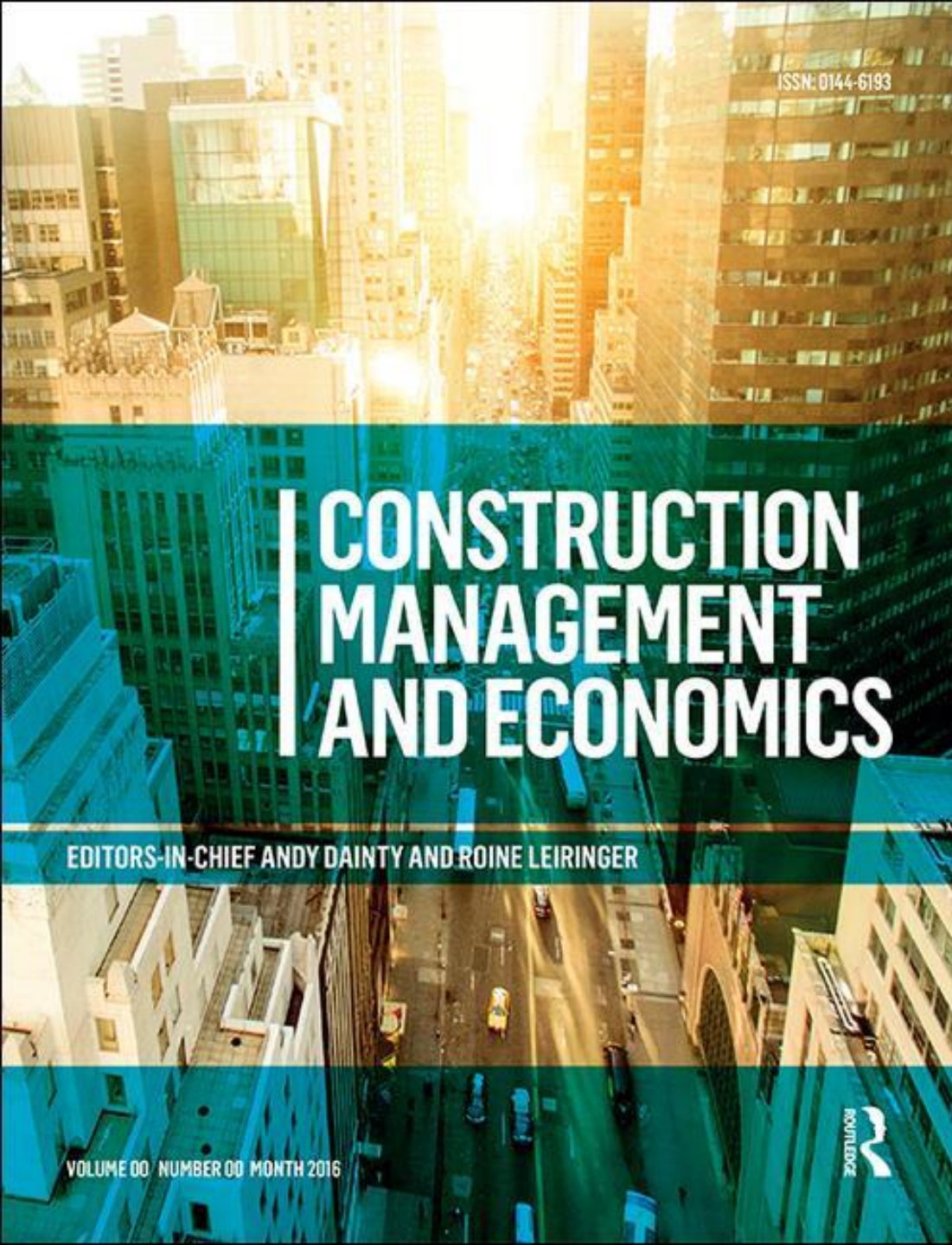HAND DRAWING — ARCHITECTS THEN...

CAD — ARCHITECTS NOW...

BIM — ARCHITECTS NOW...

"#WhenYouAreAnArchitect then and now !"

Published in 2018:

From Finnish AEC Knowledge Ecosystem to Business Ecosystem: Lessons Learned from the National Deployment of BIM

- Gulnaz Aksenova[a], Arto Kiviniemi[a], Tuba Kocaturk[a], Albert Lejeune[b]

- [a] School of Architecture, University of Liverpool, Liverpool, UK; [b]ESG-UQAM, Université du Québec à Montréal, Montreal, Canada
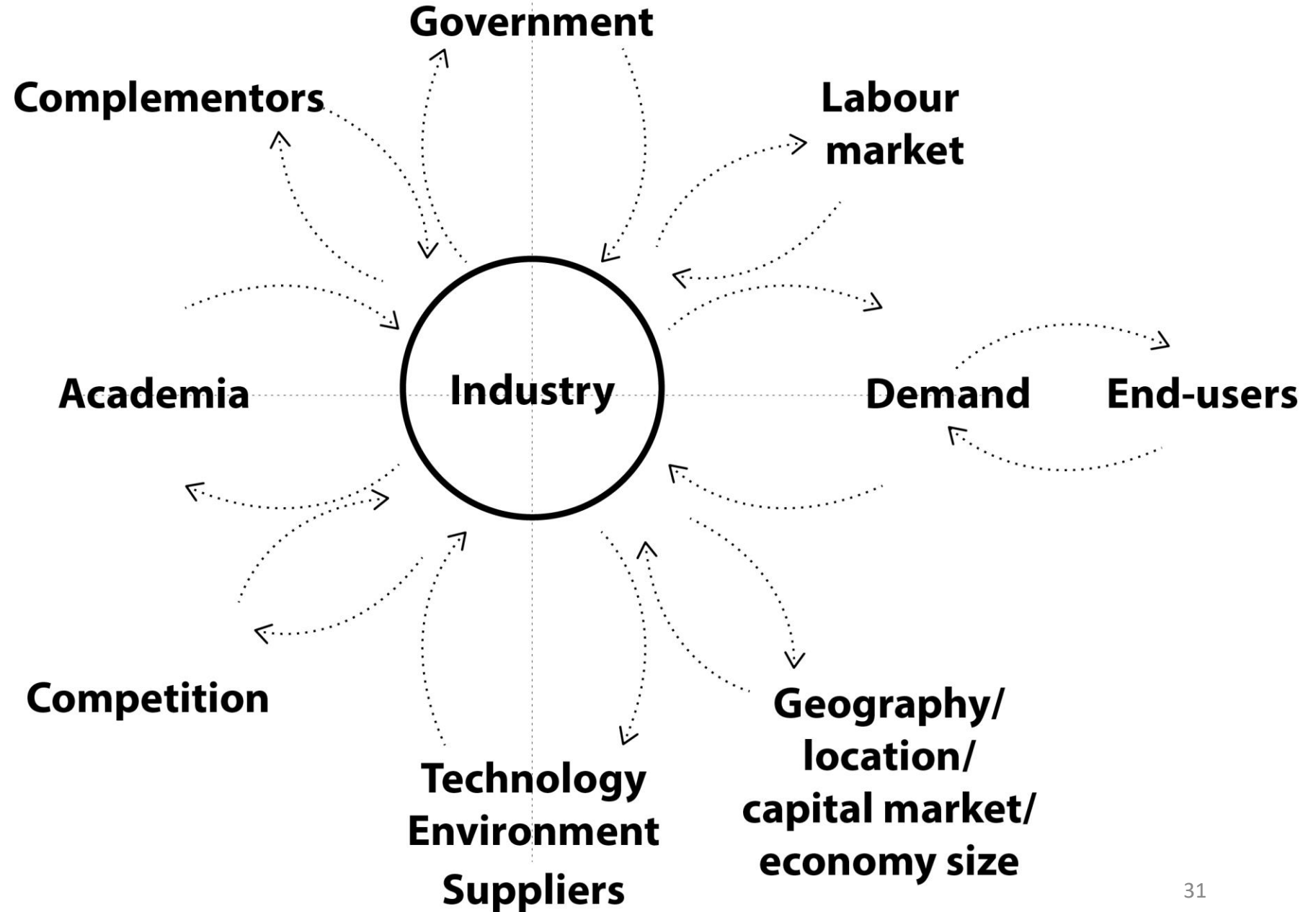
Study:
Evolution of Californian Construction Industry

Visiting scholar at Stanford University

CIFE
CENTER FOR INTEGRATED FACILITY ENGINEERING

Critical co-evolving proponents of ecosystem of Californian construction industry

Government

Complementors

Labour market

Academia

Industry

Demand   End-users

Competition

Technology Environment Suppliers

Geography/ location/ capital market/ economy size

New Wave: Contribute to Dark Side of inter-organisational networks

- Results are similar to the Finnish case

- Inter-organisational relationships and desire of individual large incumbent organisations to capture value for themselves were damaging to the industry innovation

- Critical components of ecosystem evolution:

Agency, Culture, Incentives, Capabilities

"There cannot be smart cities without smart buildings.

It is a chicken and egg problem"