

So far, some case stories, some quick conceptualisations

Next, case Nokia and an interim summary

And then innovation policy and (eco)systems, including universities roles in them



Case Nokia – a long path

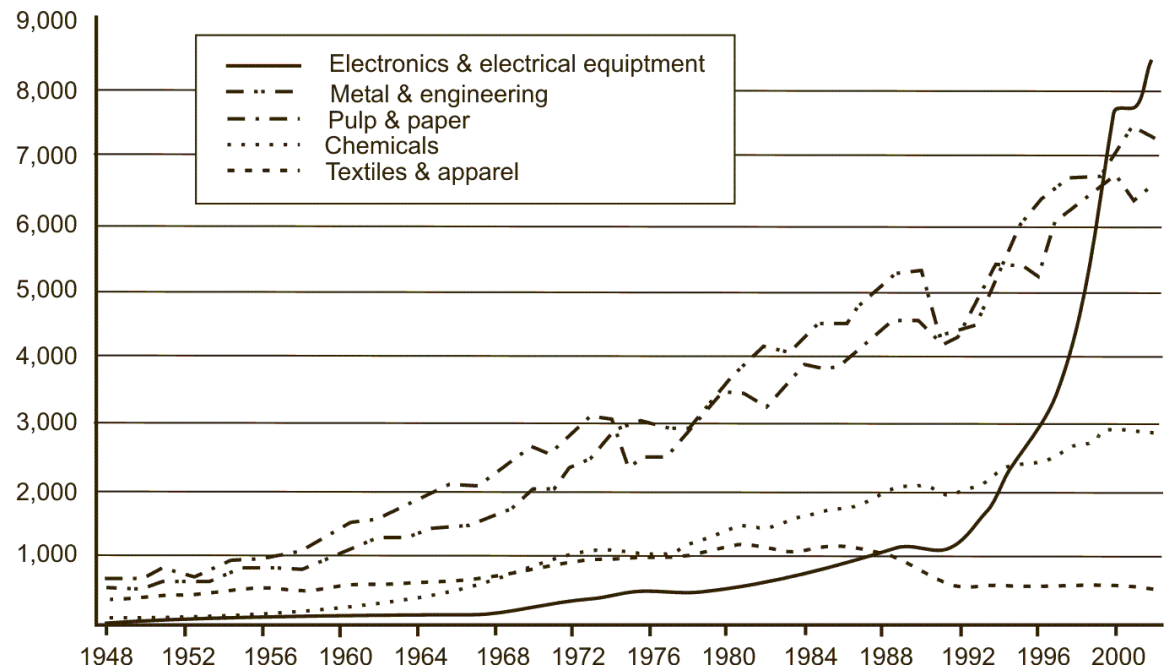


Nokia-led ICT Industry in Finland

In its heyday (2000), Nokia:

- held a 40% share of the world's mobile phone market
- appr. 4% of Finnish GDP
- 1/3 of R&D expenditure
- appr. 50% of business R&D
- 20% of exports

Finnish manufacturing production volume by industry (€ billions in 2000 prices) (Rouvinen et. al. 2003)



How it all came about

ICT's success in the 90's was made possible by...

- evolution of specialized skills
- a result of the mix of technical solutions chosen by the many competing telecom operators (variety) and
- Finnish telecommunications engineers became leading experts in interface technology
- institutions supporting all this

Late 1800's

(Blomström et al., 2002)

The Telephony Decree of the Finnish Senate (1886)

- **WHAT:** Numerous private operator licenses granted to circumvent Russian telegraph regulations
- **WHY:** To create an obstacle to Russian efforts to nationalise the Finnish telephone system.

RESULT

- Finland became one of the few European countries where private operators competed with the state in local operations -> strong local capabilities
- Finnish telecommunications equipment markets were open to foreign suppliers - small multioperator market
- Finland became very early a test market for the latest technology

1920's

Radio technology 'lurked in the shadows'
in many Finnish firms well before it had
commercial applications

(Ylä-Anttila 2003)

1960's / 1970's

(Rouvinen & Ylä-Anttila, 2003)

- A call for tenders by the Finnish army for a battlefield radio spurred companies to capitalize their earlier accumulated expertise (1963)
 - Ultimately the army did not have the resources to purchase the system
 - the prototypes served as the forerunners of commercial handsets

- The Auto Radio Puhelin (ARP, Car Radio Telephone) network was introduced in 1971
 - Finland's first mobile telephone network



In Tampere

- Professorship in computer sciences in 1965 (University of Tampere)
 - The first in the Nordic Countries
 - Professor and students established Softplan (later merged with Nokia)
- Professor of electronics, digital signal processing in 1977 (Tampere University of Technology)

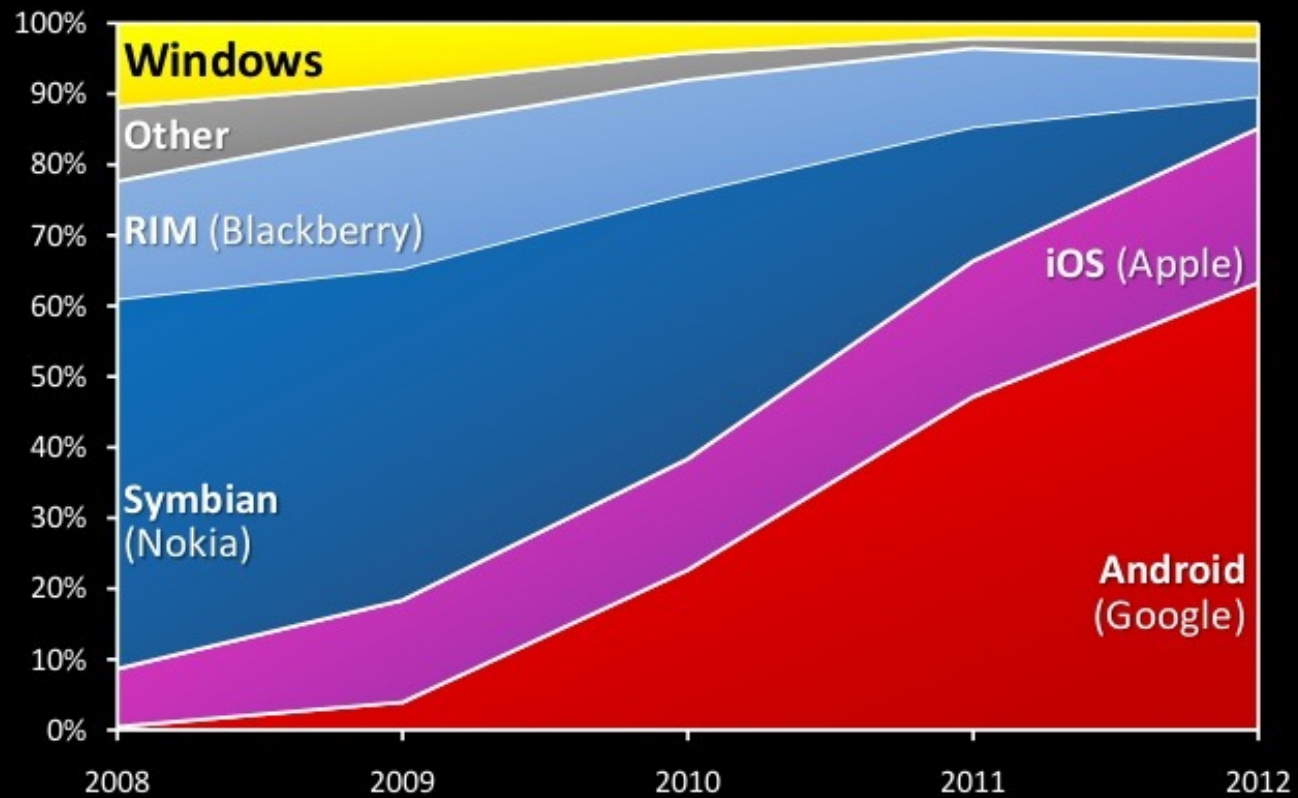


1970's / 1980's

- Telecommunications standardisation in the Nordic and European contexts
 - Finland was an early adopter of NMT in the 1970s (Nordic Mobile Telephone)
 - NMT was open to third country suppliers as well later GSM (Groupe Spécial Mobile).
- Nokia and Ericsson were among the first to adopt GSM, which eventually became almost universally accepted



Market Shares of Smartphone OSs



Data: Gartner

Petri Rouvinen, Etlä

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Nokia to Eliminate 3,500 Mo

**The Telegraph**
calcutta, india

| Sunday, February 13, 2011 |

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Nokia admits failure, inks Microsoft deal

KEVIN J. 'BRIEN



Nokia Chief Executive Stephen Elop (left) with Microsoft CEO Steve Ballmer in London. (AFP)

London, Feb. 12: Nokia, the struggling world leader in mobile phones, said yesterday that it would discard its own mobile phone operating system and begin using software made by Microsoft, in an alliance to shore up the halting efforts in smartphones of two market leaders.

The announcement by Stephen Elop, the former Microsoft executive hired by Nokia in September as the company's first non-Finnish chief executive, was an admission of failure by Nokia, which had helped define the mobile phone age in its infancy.

The alliance is also a gamble, perhaps a last-ditch effort for both Nokia and Microsoft to gain a lasting foothold in the booming market for sophisticated smartphones, where Apple's iPhone and Google's Android software are leading the way in technology innovation.

"Nokia is at a critical juncture, where significant change is necessary and inevitable in our journey forward," Elop, a Canadian who led Microsoft's business software division before moving to Nokia, said in a statement.

2010's

2015

Microsoft wrote off \$7.6 billion from Nokia deal, announced 7,800 job cuts

- That's more than the \$7.2 billion Microsoft paid for Nokia's phone business year earlier

Technology | Thu Jul 16, 2015 8:19am EDT

Related: TECH

Lines go silent in Finnish town of Salo as Microsoft shuts Nokia phone unit

HELSINKI | BY ANNA ERCANBRACK



A Microsoft employee walks at its Finnish headquarters in Espoo, Finland July 8, 2015.
REUTERS/MIKKO STIG/LEHTIKUVA



REUTERS/Christian Hartmann - RTS7C

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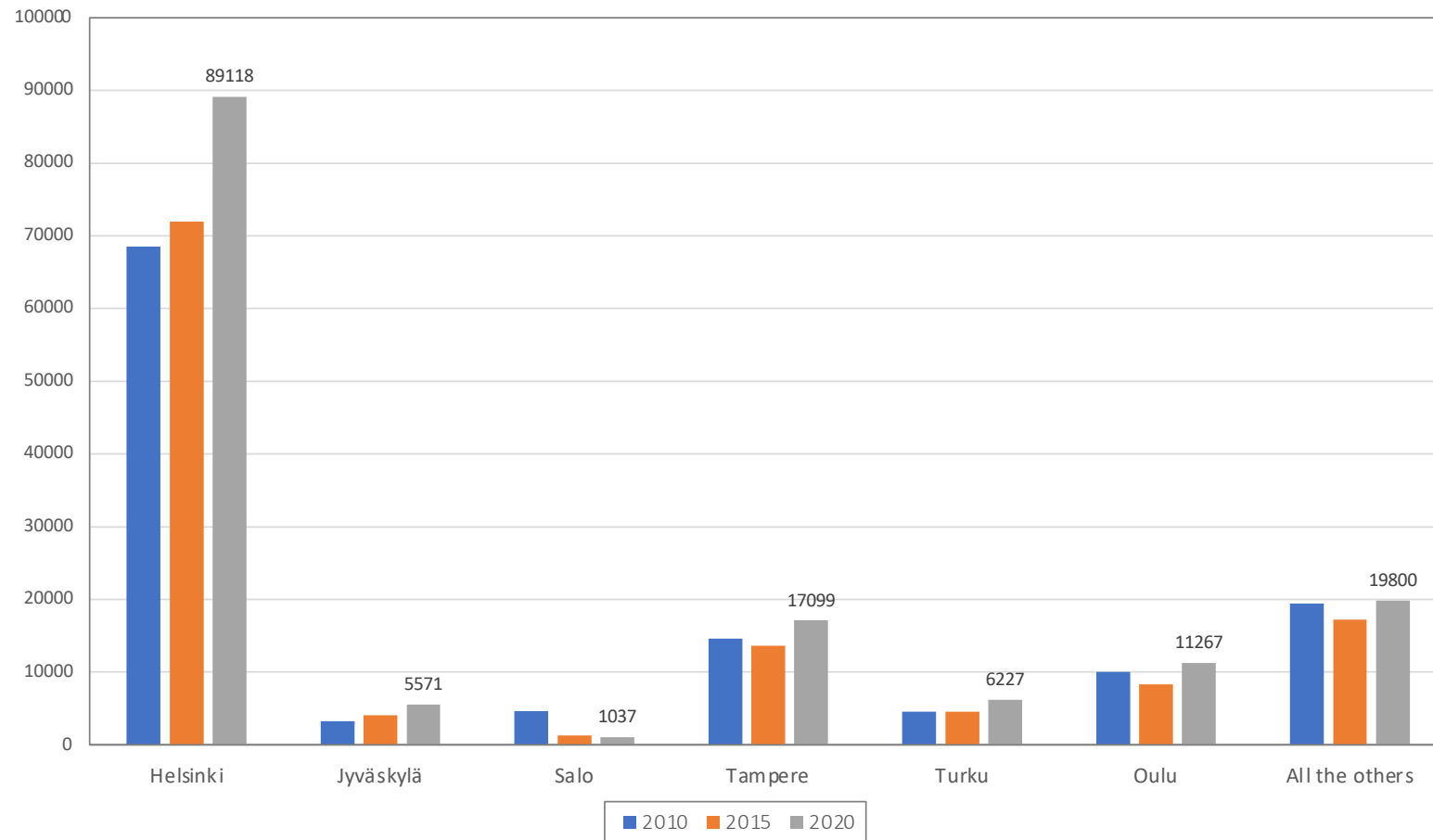
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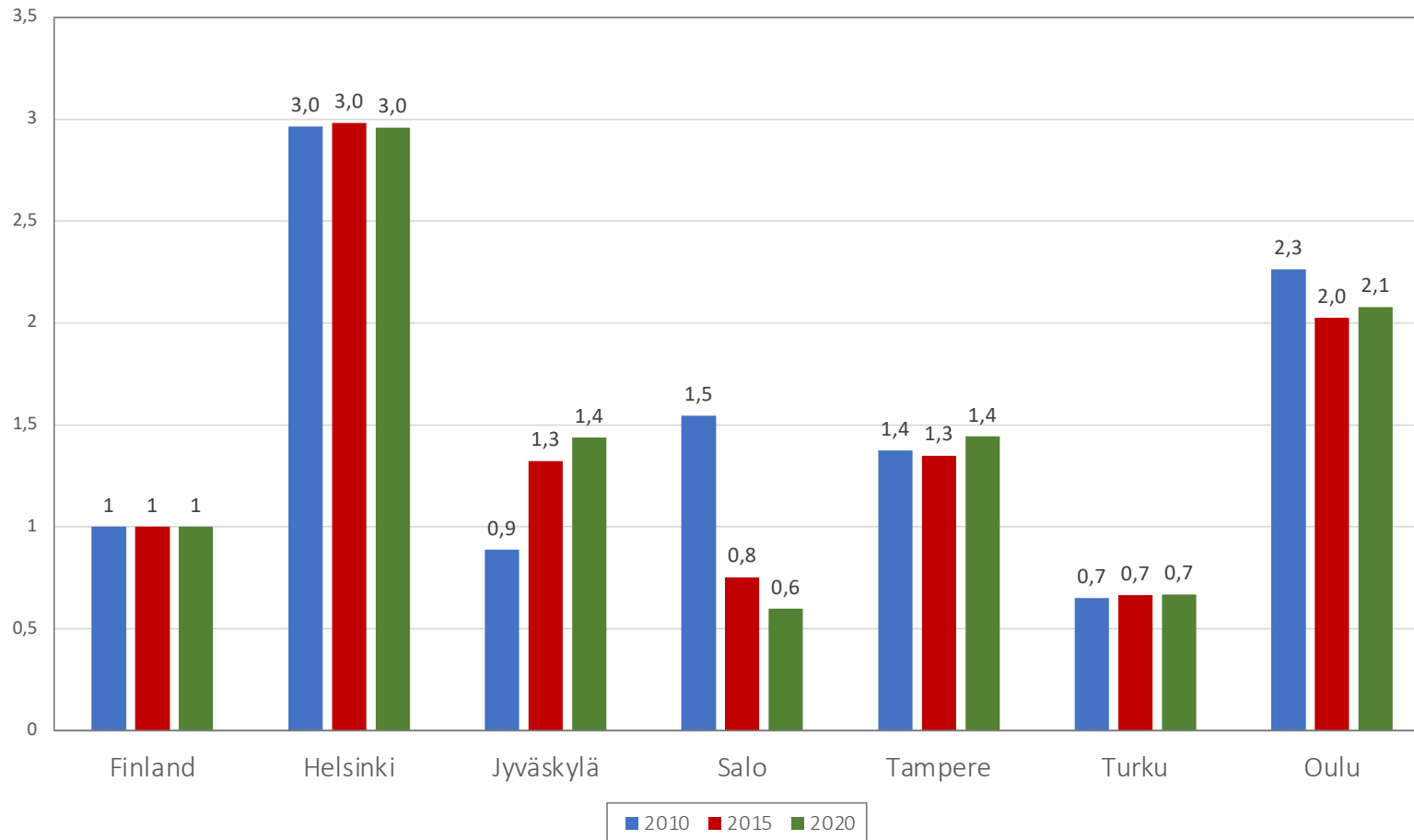
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The most ICT specialised sub-regions in Finland, employment



The most ICT specialised sub-regions in Finland (Location Quotients)



$$LQ = \frac{e_i/e}{E_i/E}$$

Where:

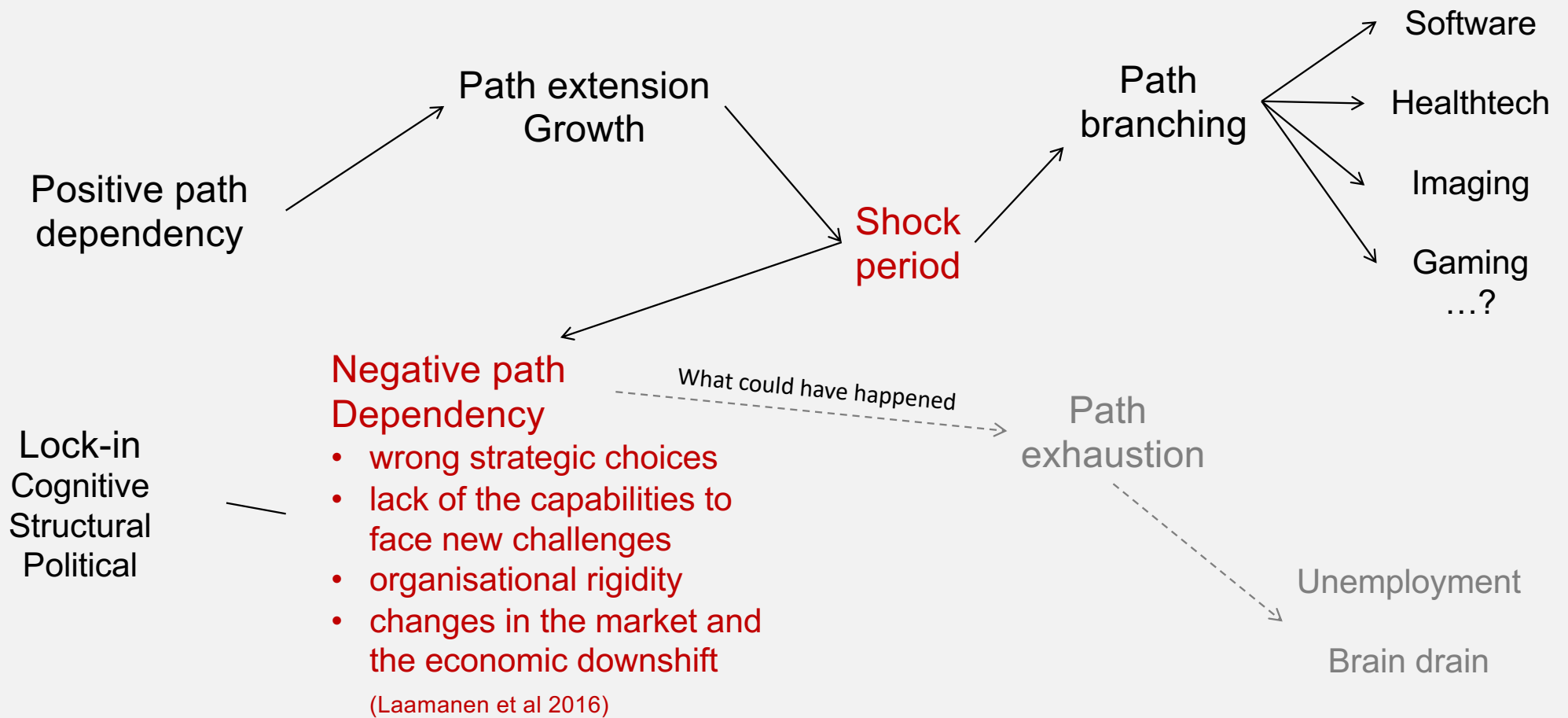
e_i = Local employment in industry i

e = Total local employment

E_i = Reference area employment in industry i

E = Total reference area employment

It is assumed that the base year is identical in all of the above variables.



An interim summary

Point of departure: Since the 1990s, scholars and policymakers have been interested in the potential of regions to mobilise place-based dynamics to chart their own development paths (Coe et al. 2020)

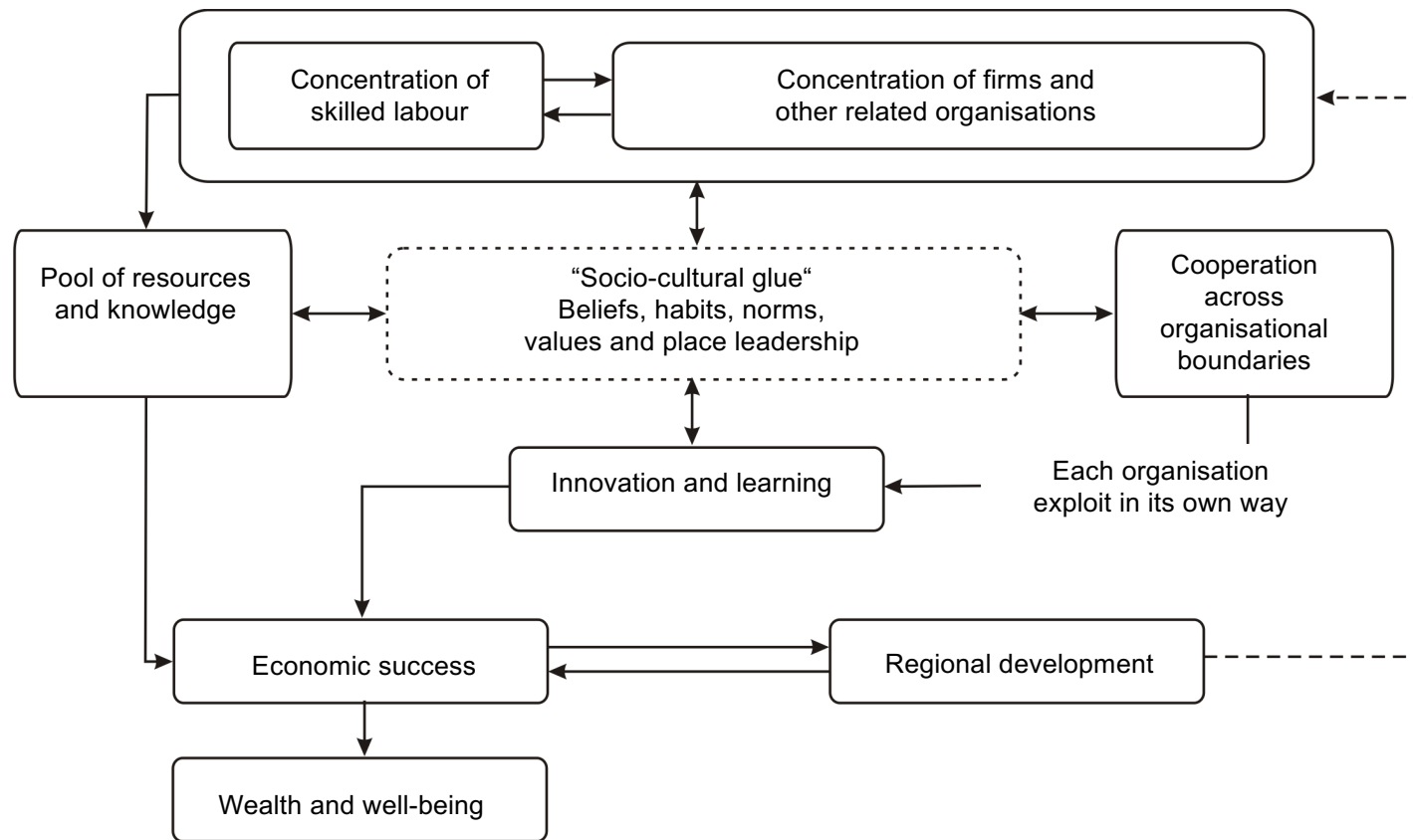
- Not forgetting the wider structural context; external forces
- Demanding approach – source of growth and uneven development patterns



What do we know?

A closely related set of questions and answers explaining regional trajectories of development and decline

Dominant thinking (1990->) in simplification



Five types of clusters

Flexible production hub-and-spoke clusters

- A single large firm, or a group of firms, buys components from an extensive range of local suppliers to make products for markets external to the cluster.
- Require close relationships between customers, suppliers, and logistics operators -> create a strong incentive for co-location
- E.g. industrial districts in Italy, Toyota plants in Toyota City, company towns in Germany, Boeing in Seattle

Production satellite clusters

- Firms co-locate to access the same labour market conditions or financial incentives within specific territories.
- E.g. Penang in Malaysia, call centres in South Asia, business process outsourcing in Philippines

(Coe et al. 2020)

Five types of clusters

Business service clusters

- Financial services, advertising, law, and accountancy concentrate usually in the central districts of leading or 'global' cities
- E.g. New York, London, Tokyo, capital cities

State-anchored clusters

- Has developed due to the location decisions of government facilities, such as universities, defence industry research establishments, prisons, or government offices.
- Government research investment (Colorado Springs, United States; Taejon, South Korea; M4 Corridor, United Kingdom; and Singapore's Biopolis) and universities (Madison, Wisconsin, United States; Oxford/Cambridge, United Kingdom; and Beijing, China)

(Coe et al. 2020)

Five types of clusters

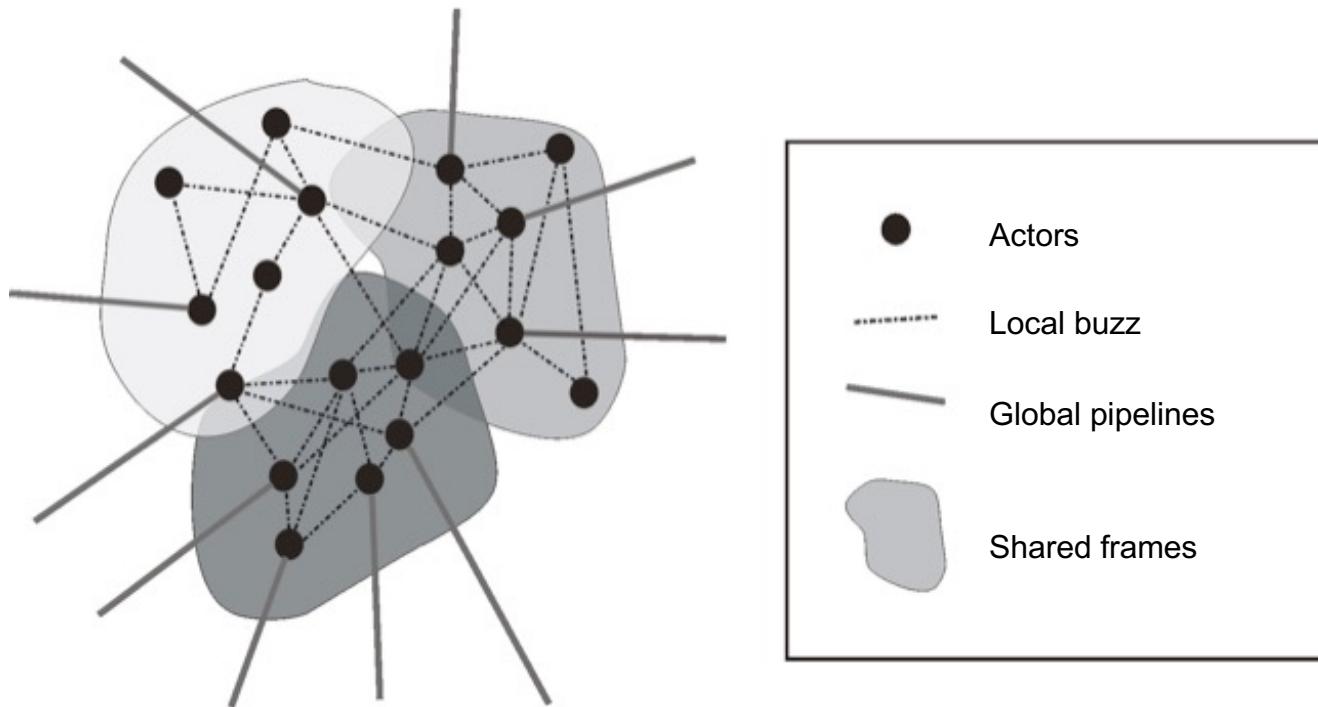
Consumption clusters

- Often in central urban areas – in a wide variety of consumer service activities including retailers, bars and restaurants, and cultural and leisure facilities.
- E.g. the theatre districts of the London's West End and New York's Broadway, many retail and entertainment districts of Tokyo (e.g. Shibuya, Akihabara) and Shanghai (e.g. Xin Tian Di) – experience economy in Tampere
- In reality, of course, the typology of a five types of clusters is a simplification. Some places are constituted by clusters that are hybrid forms merging the characteristics of two or more of these types.

(Coe et al. 2020)

Local buzz and global pipelines

(Bathelt et al. 2004)



Point I – regional development is path dependent

- Stable trust-based linkages between regional core firms and other actors
 - Reduce transaction costs but do not boost innovation
 - Long-term R&D becomes an end in itself
- Source of ideas too narrow
 - Quality of marketing and distribution too local / national
 - Localized / national personal connections rather than constantly evolving open networks

‘History matters’ in determining regional trajectories - **path dependence** describes how future paths are always and unavoidably influenced by past ones
(e.g. Martin & Sunley, 2006)

Point II: Path creation is possible

How can regions escape the 'straitjacket' of path dependence and lock-in and renew or alter their development trajectory (Coe et al. 2020)

1. New capabilities, technologies and forms of knowledge can be created within the region and drive growth in an inside-out manner - endogenously.
2. A region may be able to 'capture' new technologies from elsewhere and using them to drive growth (absorbing)
3. A region may likewise be able to transfer key knowledge, technologies and capabilities from declining industries and using them to launch new growth sectors (diversification, branching).
4. A region may continually be able to reinvent and adapt its core industries to sustain growth (upgrading)

(Coe et al. 2020)

Point III: Resilience

How can regions withstand challenging economic conditions or specific economic shocks? (Martin and Sunley 2015).

- A region may **bounce back** to its pre-shock path
- A region may **absorb** a particular shock without being completely derailed from its initial path
- A region may possess the ability to **anticipate** shocks or to adjust their trajectories to new post-shock conditions.
- Many local sources of resilience, relating to industrial structure, financial conditions, labour market factors, leadership, policymaking and governance considerations.

[Resilience will be discussed more in depth in hal.kajo.312]

Varieties of capitalism (a simplification, should be seen as relative)

Different capacities for innovation; income and employment directed differently

For example
USA and
the UK

Criteria	Liberal market economy	Coordinated market economy
Mechanism	Competitive market arrangements	Non-market relations
Equilibrium	Demand-supply and hierarchy	Strategic interaction among firms and other actors
Inter-firm relations	Competitive	Collaborative
Mode of production	Direct product competition	Differentiated, niche production
Legal system	Complete and formal contracting	Incomplete and informal contracting - trust
Institutions' function	Competitiveness Freer movement of inputs	Monitoring, directing Sanctioning of defectors
Wage bargain	Firm level (when hiring)	Industry level (industrial action)
Unionization rate	Low	High
Income distribution	Unequal (high Gini)	Equal (low Gini)
Innovation	Radical	Incremental
Comparative advantages	High-tech and service	Manufacturing
Policies	Deregulation, anti-trust, tax-break	Encourages information sharing and collaboration of firms, public sector and universities

For example
the Nordics

...and

Developmental state

- East Asian experiences central to the emergence of the model (Yeung 2016)
- Deliberate state interventions via active industrial policy and selective financial support enabled domestic firms, 'national champions', to overcome their latecomer disadvantages and to achieve economies of scale in domestic and international competition (Amsden 1989; Wade 1990)
- Interventionist policy instruments included trade and foreign exchange controls; selective allocation of credit, export, and tax incentives; public enterprises; and other subsidies (Coe et al 2020)
- Many innovative policy instruments to provide organized help to private entrepreneurs.
- Japan and, later, South Korea, Taiwan, and Singapore, Middle East



Authoritarian state

- A highly centralized political system with an increasingly open economic system.
- Strict regulation of private firms and industries
- In Central and Eastern Europe and in East and Southeast Asia

In sum

- The four types of state allows us approach the very varied institutional configurations
- Political ideologies influence how countries but also their urban and regional development is framed

