

# Tuure, Your Lecturer

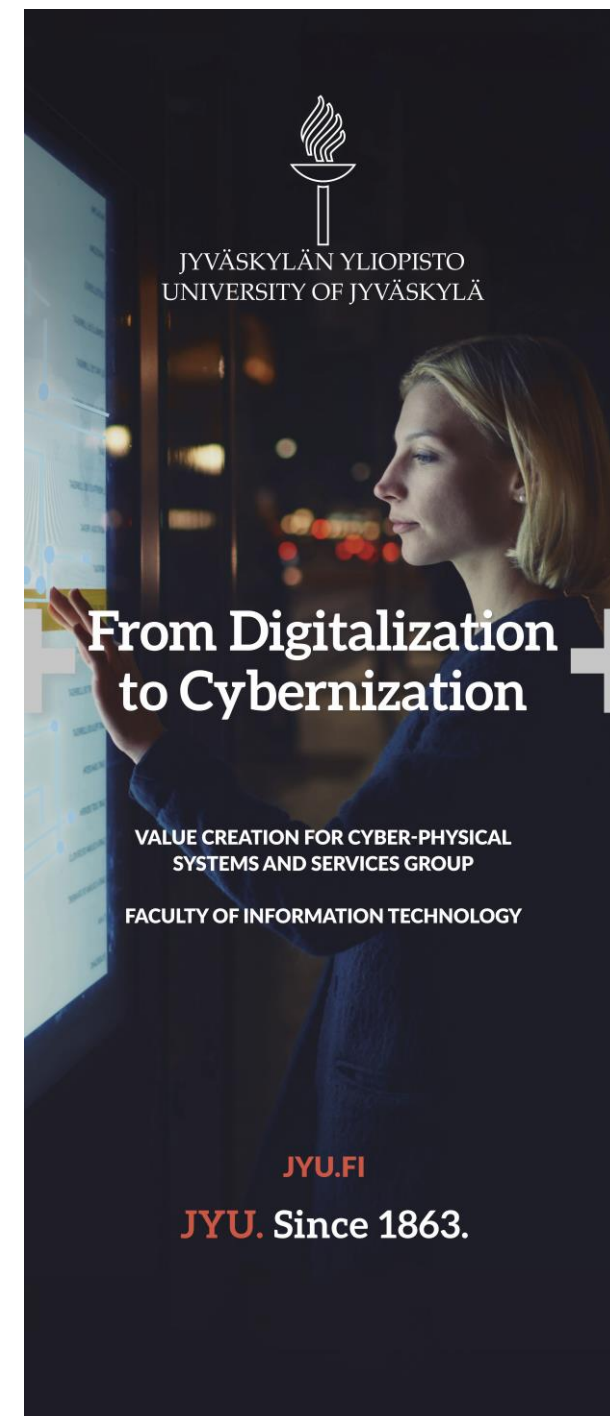


- Professor, Information Systems
  - D.Sc. in Information Systems (HSE)
  - M.Sc. in Marketing (HSE)
- Vice Dean of Research and Graduate Studies
  - Director for INFORTE (PhD)
  - Director for Finnish Hub for Digitalization
- Visiting Professor, The Center for Service Leadership / Arizona State Univ.
- Associate Editor: *Journal of Service Research*, *European J. of Information Systems*, *Journal of the AIS*, *Communications of the AIS*
- Editorial board member *INFORMS Service Science*, *J. of the AIS*, *J. of Strategic Information Systems*
- Track chair ECIS 2021, Program Chair 2022, HICSS mini track on Digital and Cybernized Services, Design Science Research..



# Research & Teaching

- 20+ years of research and teaching on Design of Digital & Cyberized Services for Innovation.
  - Overall some 200+ papers with 12k+ citations; incl. a paper with ca. 9000+ citations.
  - Leader of Value Creation for Cyber-Physical Systems and Services Research Group
  - Taught 70+ courses and supervised 100+ theses and dissertations
- Research co-operation with global and large domestic corporations such as Sanoma, Nokia, Tieto, Digia, Anvia and numerous SMEs.
- Previous positions in Aalto Univ. School of Business, The University of Auckland Business School, Univ. of Oulu.



JYVÄSKYLÄN YLIOPISTO  
UNIVERSITY OF JYVÄSKYLÄ

## From Digitalization to Cybernization

VALUE CREATION FOR CYBER-PHYSICAL  
SYSTEMS AND SERVICES GROUP

FACULTY OF INFORMATION TECHNOLOGY

**JYU.FI**

**JYU.** Since 1863.

# The Other Side



Academic  
sports,  
i.e. arts, wine  
tasting, fine  
dining/cookin  
g..



Photography (taking) and  
Arts & music (enjoying)



Hiking, Travelling



# Digital Service Foundations

Tuure Tuunanen



# **Importance of Services to economies and The Concept of a Service**

# Service Sector is driving the economies globally



## **Finland**

agriculture: 2.9%  
industry: 26.9%  
services: 70.2%

## **European Union**

agriculture: 1.6%  
industry: 24.4%  
services: 71.3%

## **France**

agriculture: 1.7%  
industry: 19.3%  
services: 79%

## **Norway**

agriculture: 1.7%  
industry: 38.9%  
services: 59.4%

## **United States**

agriculture: 1.6%  
industry: 20.8%  
services: 77.6%

## **Germany**

agriculture: 0.7%  
industry: 30.2%  
services: 69.1%

## **United Kingdom**

agriculture: 0.6%  
industry: 19.7%  
services: 79.6%

## **South Africa**

agriculture: 2.4%  
industry: 30.3%  
services: 67.4%

## **Russia**

agriculture: 4.4%  
industry: 35.8%  
services: 59.7%

## **Japan**

agriculture: 1.2%  
industry: 26.6%  
services: 72.2%

## **New Zealand**

agriculture: 4.1%  
industry: 26.8%  
services: 69%

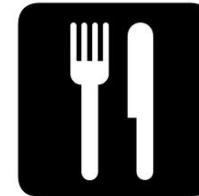
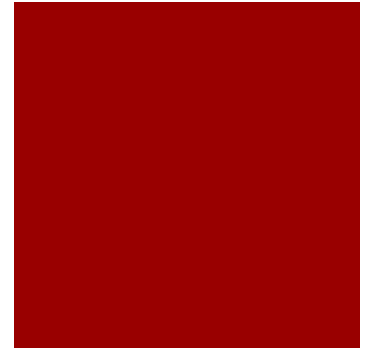
Source: CIA World Fact Book

<https://www.cia.gov/library/publications/the-world-factbook/fields/2012.html>



# Service

- What is a service?



# Service Definitions

- Services are "the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity of the entity itself." [[Vargo and Lusch, 2004](#)]
- A service is a change in the condition of a person, or a good belonging to some economic entity, brought about as a result of some other economic entity, with the approval of the first person or economic entity. [[Hill, 1977](#)]
- A service is a provider-client interaction that creates and captures value. [[IfM and IBM, 2008](#)]
- A service is a time-perishable, intangible experience performed for a customer acting in the role of a co producer. [[Fitzsimmons and Fitzsimmons, 2006](#)]
- A service is any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything. [[Kotler and Keller, 2006](#)]



# Service Features and Descriptions



- **Intangibility**

- Lacking the palpable or tactile quality of goods

- **Heterogeneity**

- The relative inability to standardise the output of services in comparison to goods

- **Inseparability of production & consumption**

- The simultaneous nature of service production and consumption as compared to the sequential nature of production, purchase, and consumption that characterises the physical products

- **Perishability**

- The relative inability to inventory services as compared to goods

(Zeithaml et al., 1985)

# Service Characteristics



by Grönroos (2007)

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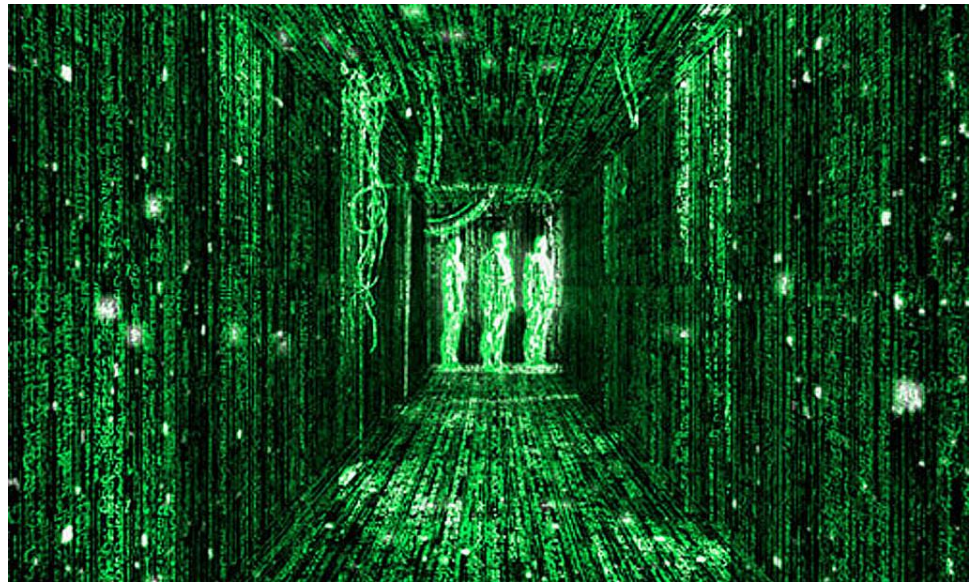


# Digital Frontiers for Service Innovation



- Service systems are configurations of people, technologies, organizations, and information that create and deliver value to all stakeholders in the system
  - Cyber-physical Systems
  - Cognitive Systems
  - Smart Service Systems

# Welcome to Cyberization of Society!



Or to the Matrix

- **Cyberization** through application of cyber physical systems to develop and design services and products.

# Automated Cars are Here. So is other stuff too..



Minority report by Steven Spielberg



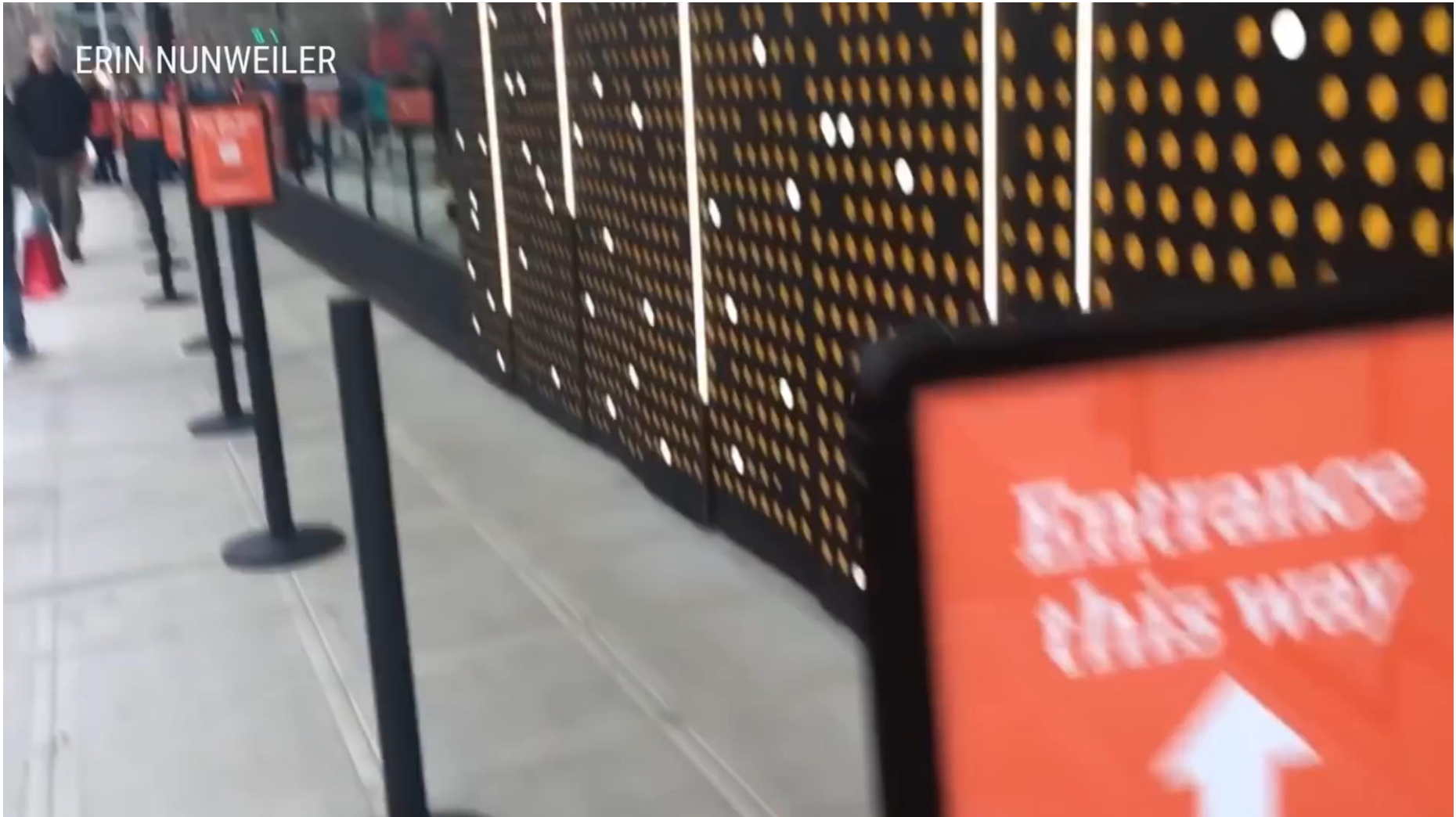


- The physical environment is increasingly becoming saturated with different entities capable of interaction with other entities or with people (Conti et al., 2012).
- Cyber-physical systems (CPSs) describes the new generation of systems, which integrate the computational and physical capabilities and expand the capabilities of physical world entities through computation, communication and control (Baheti & Gill, 2011).

# Amazon GO!



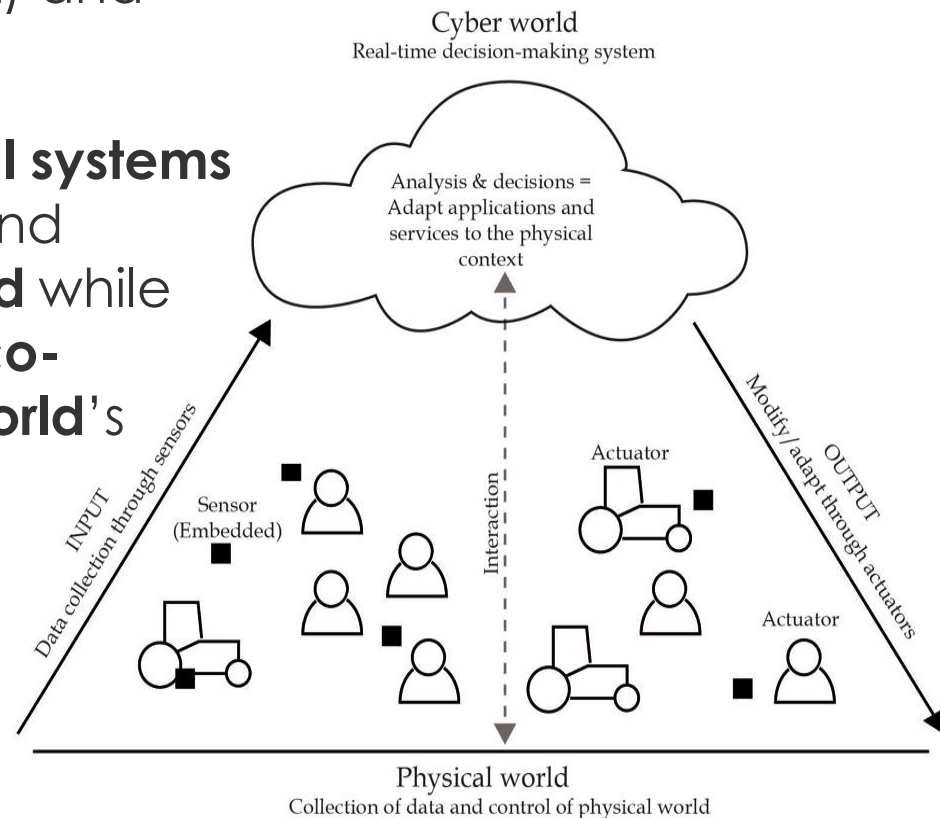
ERIN NUNWEILER



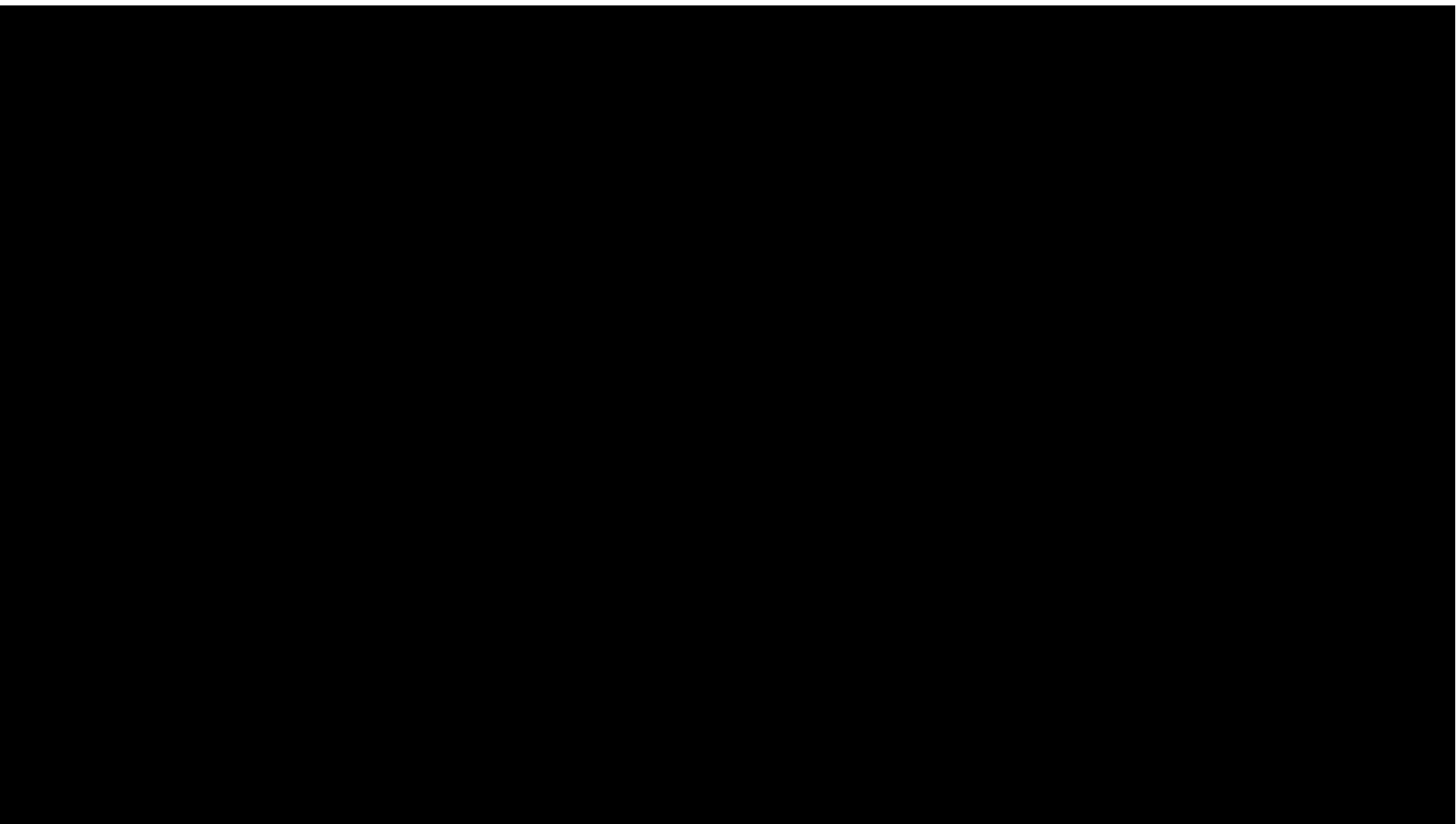
# Cyber-physical systems

- Definitions of Conti et al. (2012) and Broy et al. (2012):

CPSs are **open socio-technical systems** that are able to understand and **interact with the physical world** while supporting continuous **value co-creation through the cyber world's** adapting capabilities.



# Vision of Finland in Year 2027: **Cyber Physical Services for All**





# **Goods and Service Dominant Logics**

# Goods Dominant Logic



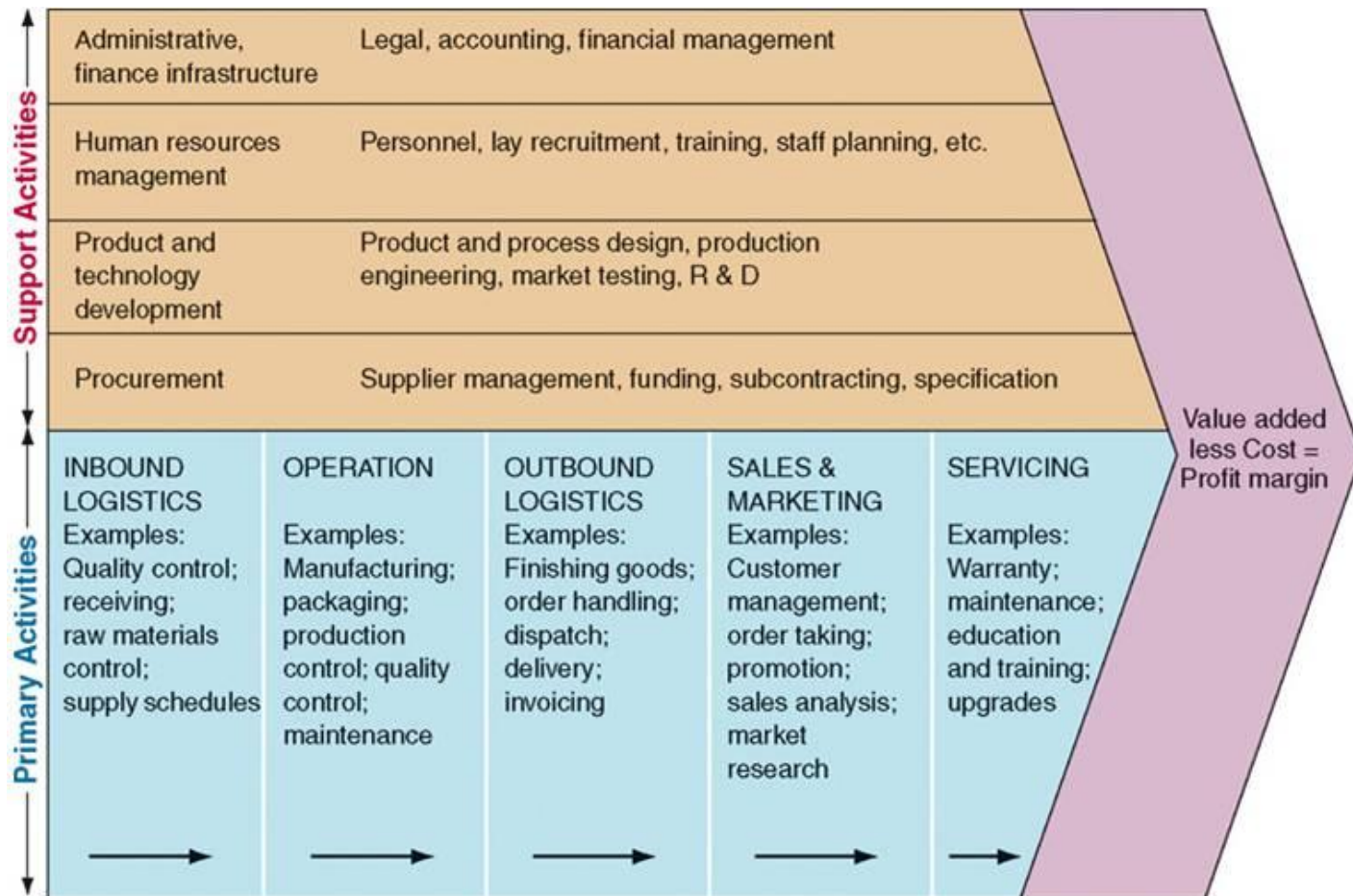
- Focuses on production of goods, usually products (tangible)
- Value is created during the production of the goods

 Porter's VALUE CHAIN

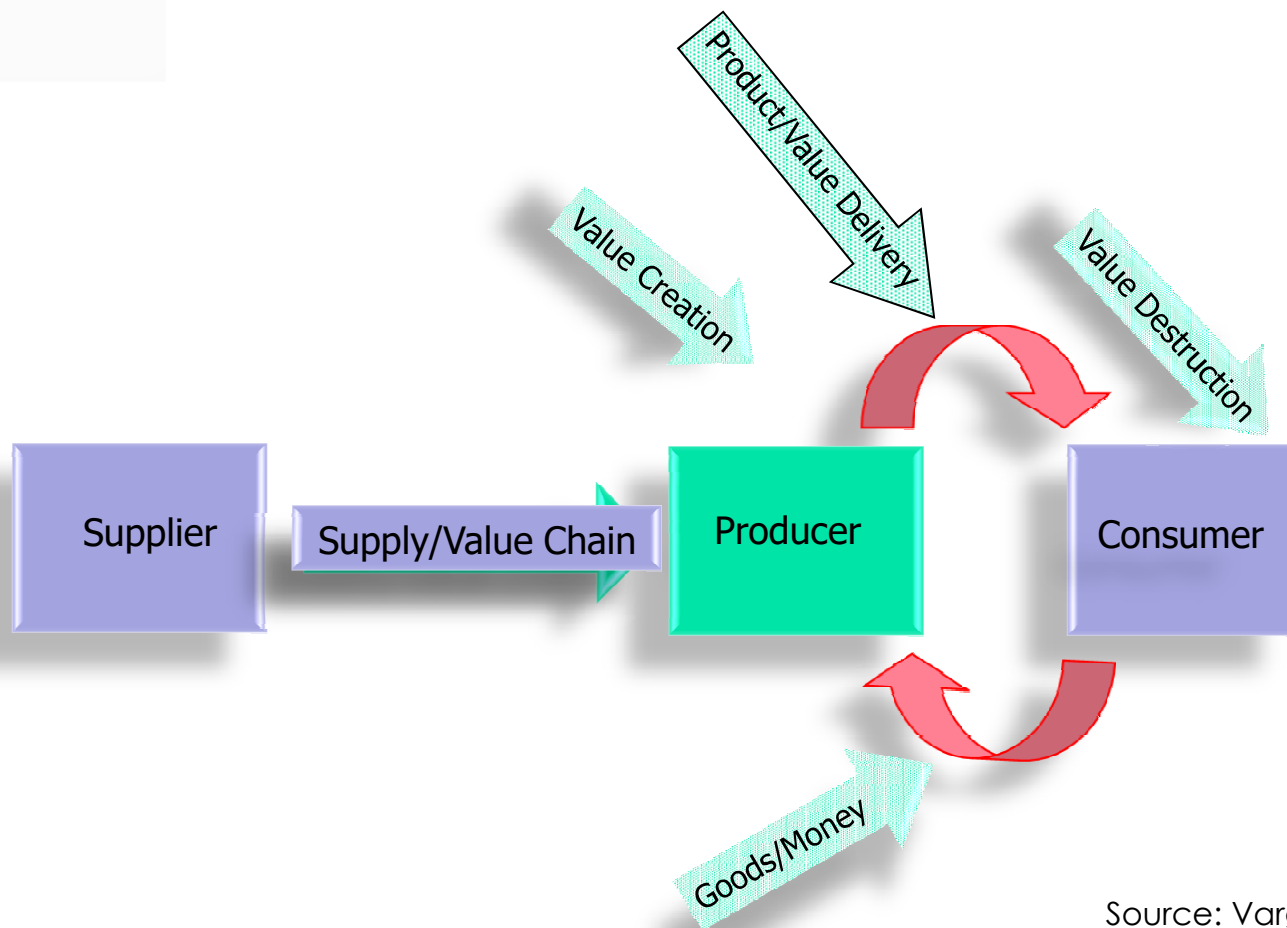
- Goal is to maximize profit through efficient production and distribution of goods



# Porter's Good Value Chain



# G-D Logic: Value Production and Consumption



Source: Vargo & Lusch (2011)

# Service Dominant Logic



- **Service-Dominant (S-D) Logic** is a mindset for a unified understanding of the purpose and nature of organizations, markets and society.
- The foundational proposition of S-D logic is that organizations, markets, and society are fundamentally concerned with exchange of service—the applications of competences (knowledge and skills) for the benefit of a party.
- *Service is exchanged for service; **all firms are service firms***; all markets are centered on the exchange of service, and all economies and societies are service based.

# Service Dominant Logic..



- S-D logic embraces concepts of the value-in-use and co-creation of value rather than the *value-in-exchange* and *embedded-value* concepts of G-D logic.
- Instead of firms being informed to *market* to customers, they are instructed to market with customers, as well as other value-creation partners in the firm's value network.

# G-D logic vs. S-D Logic

From G-D Logic	S-D Logic
Operand resources	Operant Resources
Resource acquisition	Resourcing: Creating and integrating resources and removing obstacles
Goods and Services	Servicing and experiencing
Price	Value proposing
Promotion	Dialog
Supply chain	Value-creation network
Maximizing behavior	Learning via exchange
"Marketing to"	Collaborative marketing ("Marketing with")

# Operand Resources



- Operand resources are those that are acted upon; **they are static and usually inert.**
  - They require other, more dynamic resources to make them useful.
  - Most natural resources are operand resources.
- Even customer has been considered as an operand resource: Think customer segmentation!
- Value-chain thinking is based on this: value is added in each phase



# Operant Resources



- Operant resources are often **intangible**, such as knowledge and/or skills
- In S-D logic, value creation occurs when a potential resource is turned into a specific benefit, an activity known as resourcing.
- S-D logic recognizes that many potential resources, and especially potential operand resources, are neutral (or perhaps even a resistance) until humans learn what to do with them.

# Servicing and Experiencing

- S-D logic focuses on the interaction between the firm and the customer, not in the transfer of ownership of output (as in G-D logic),
- In servicing the needs of the customer, as experienced by the customer in the unique context of his or her own life and purpose of seeking a market exchange.

**A service is an experience...**



Please rate your experience

☒ *Outstanding*

☐ Excellent

☐ Very good

☐ Good

☐ Average

☐ Poor



# Service Encounters are the Touch-Points of a Service



- Traditionally face – to – face service encounters happened between the service representative and the customer (Bitner et al. 1990).
- Each encounter is an opportunity for a firm to either satisfy or dissatisfy those who consume the service right at the point of contact. (Bitner et al., 2000).
- encounters become increasingly important in all kinds of industries where technology is adopted as a way to fulfil or enhance service delivery (Bitner et al., 2000).

# Value Proposing



- G-D logic sees that value is created by the firm
- S-D logic, however, views the customer not as a buyer of valuable output created by the firm, but as an integrator of inputs provided by the firm with its other resources to create value
- S-D logic recognizes that a firm cannot create value
- Firms are platforms for value co-creation by and together with customers!



# What Next?

# What YOU should do next?

- Further study co-destructive behavior and service process elements/components that influence the perceived drawbacks of value co-destruction with cyber physical service users
- Study and theorize cyber physical service users' value co-creation process – **think of co-creation and co-destruction together!**
- Study dynamic & interactive mechanisms for value creation for cyber physical services provided by, e.g., personal health devices like the Oura Ring



*Think Outside the Box  
of Technology Adoption!*



# Continuous Cyber-Physical Service Innovation Research Programme 2020-23



LSR 100  
1919 - 2019

- In collaboration with:



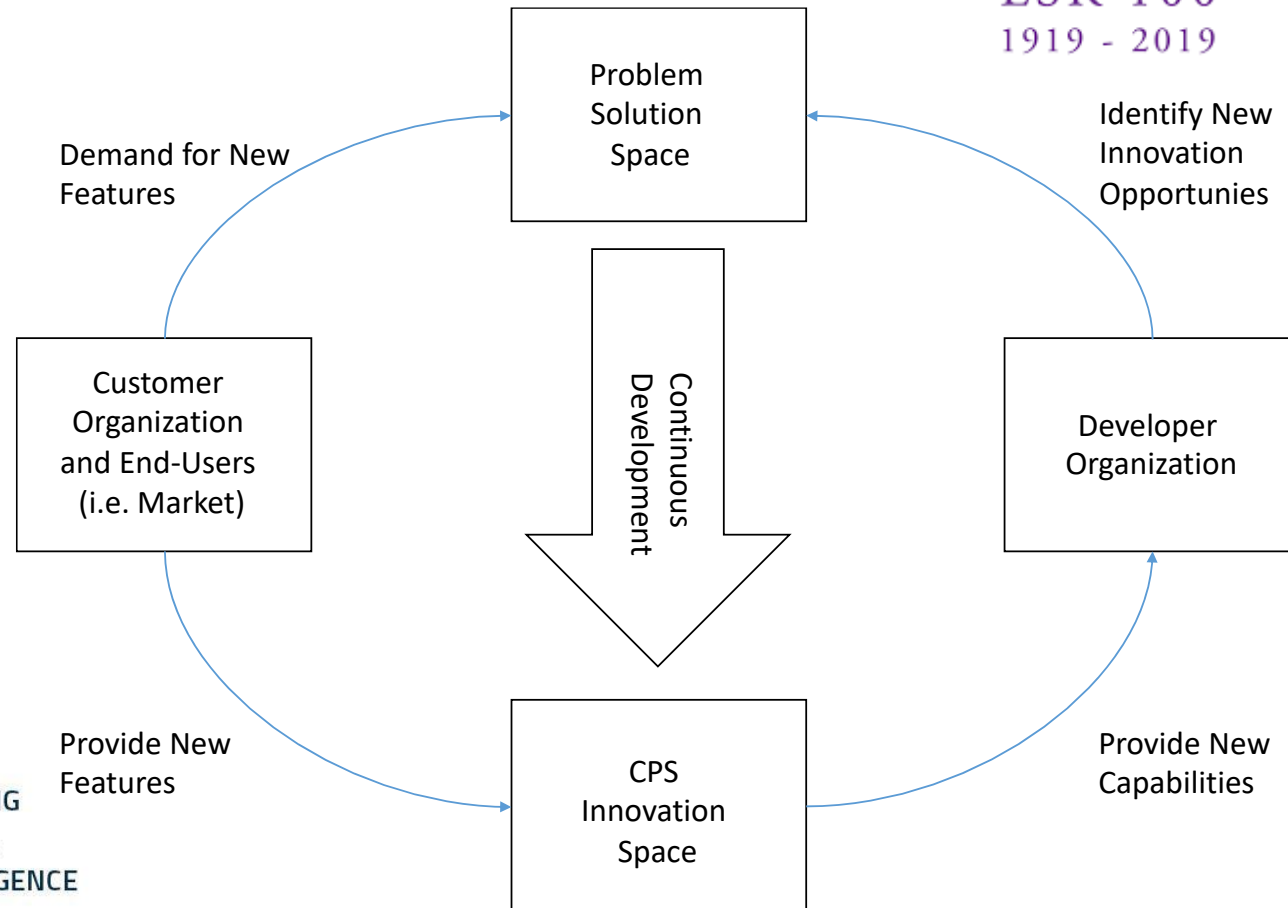
Center for Services Leadership



HOUSE OF INNOVATION



@ WEATHERHEAD SCHOOL OF MANAGEMENT



# Thank you!

- Questions/Comments?
- Email: [tuure.tuunanen@jyu.fi](mailto:tuure.tuunanen@jyu.fi)
- <http://tuure.tuunanen.fi>,  
[jyu.fi/cpss](http://jyu.fi/cpss), [jyu.fi/fhdi](http://jyu.fi/fhdi)
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