

# Transforming the organization of value creation and business models in the digitalisation of agriculture

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Digital Transformation of the Agricultural  
Value Chain - Opportunities, Challenges  
and the Role of Science

2 – 3 December 2020, Berlin (Germany)

# Introduction

- **Cátedra (Chair) COEXPHAL-UAL in Agriculture, Cooperative Studies and Sustainable Development** acts as a bridge between academia and agricultural sector. COEXPHAL is an association of producer organisations-80 coops-15000 farmers. Leverages research to resolve sector challenges in co-creation process.
- **University of Almería, Spain.** Full service university with specialisation in agriculture. Ranked in agriculture and related technologies.



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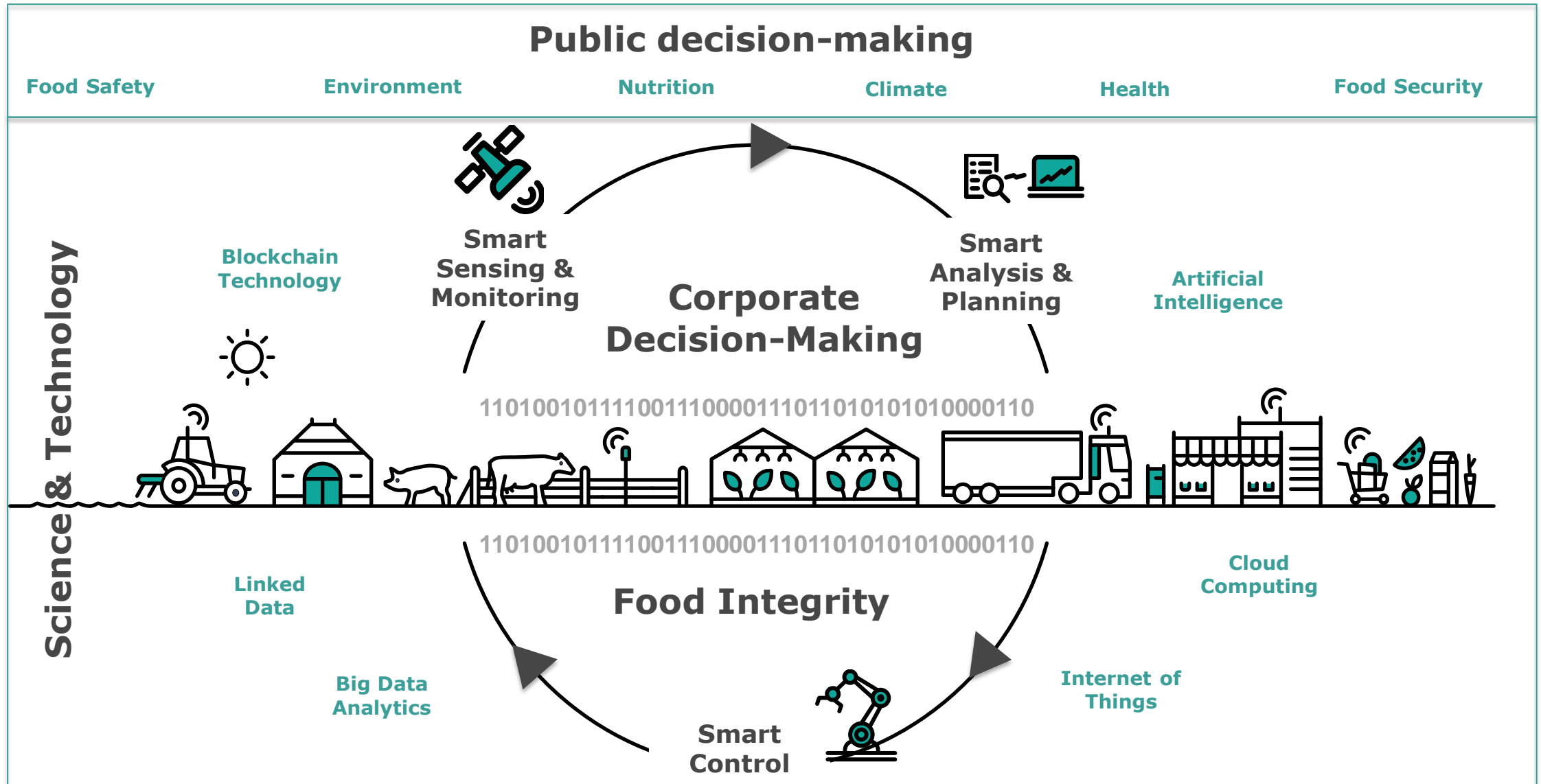
# Current Related Research Projects of Cátedra COEXPHAL

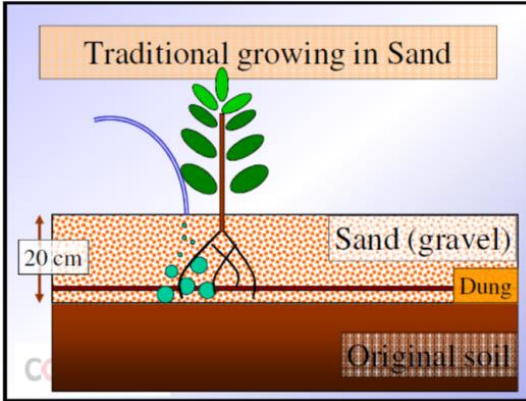
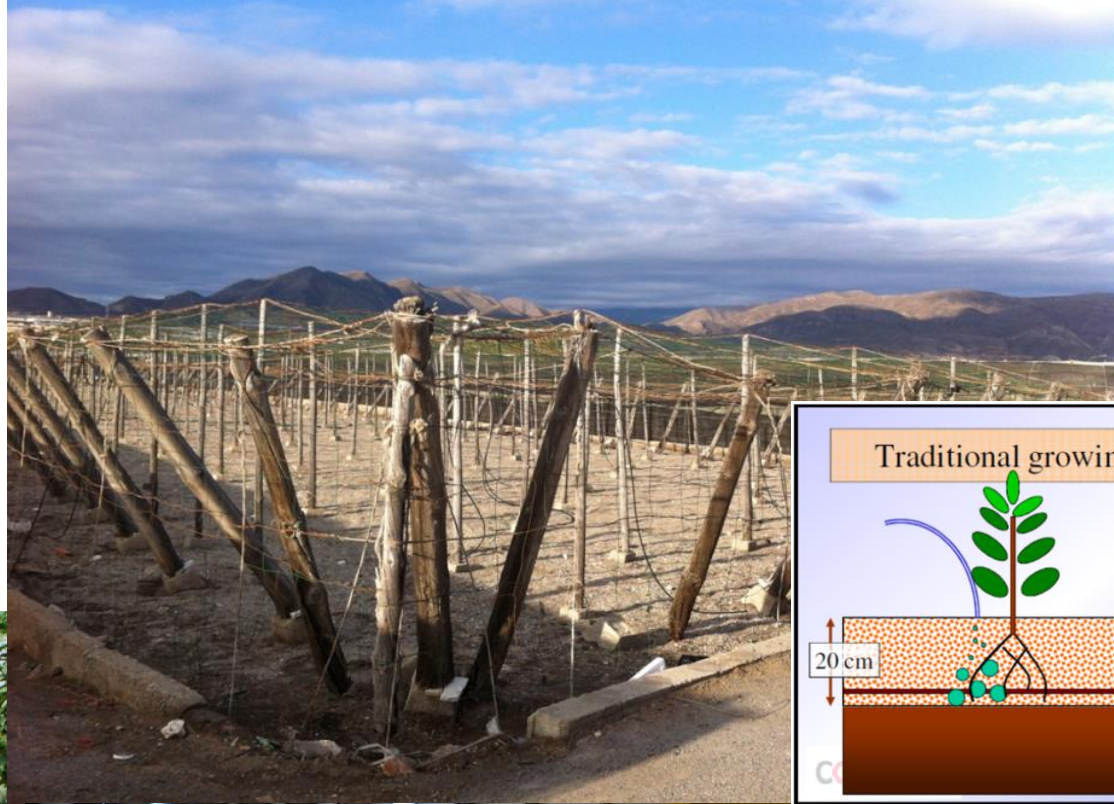
- IoF2020 Internet of Food and Farm
- SmartAgriHubs (Digital Innovation Hubs - EU Network)
- NEFERTITI (peer to peer/networks of knowledge)
- FairShare (digital tools for farm advisors)
- “**CO**-creating sustainable and competitive **FR**uits and **vE**getable**S**’ value c**H**ains in Europe”  
**role of digitisation**



**CO-FRESH**

# The Digital Transformation of Agri-Food





Cajamar (man with water, greenhouse structure, man with beehive); Francisco Bonilla for COEXPHAL (greenhouse interior, packing plant, insects); C.Giagnocavo (old exterior greenhouse);

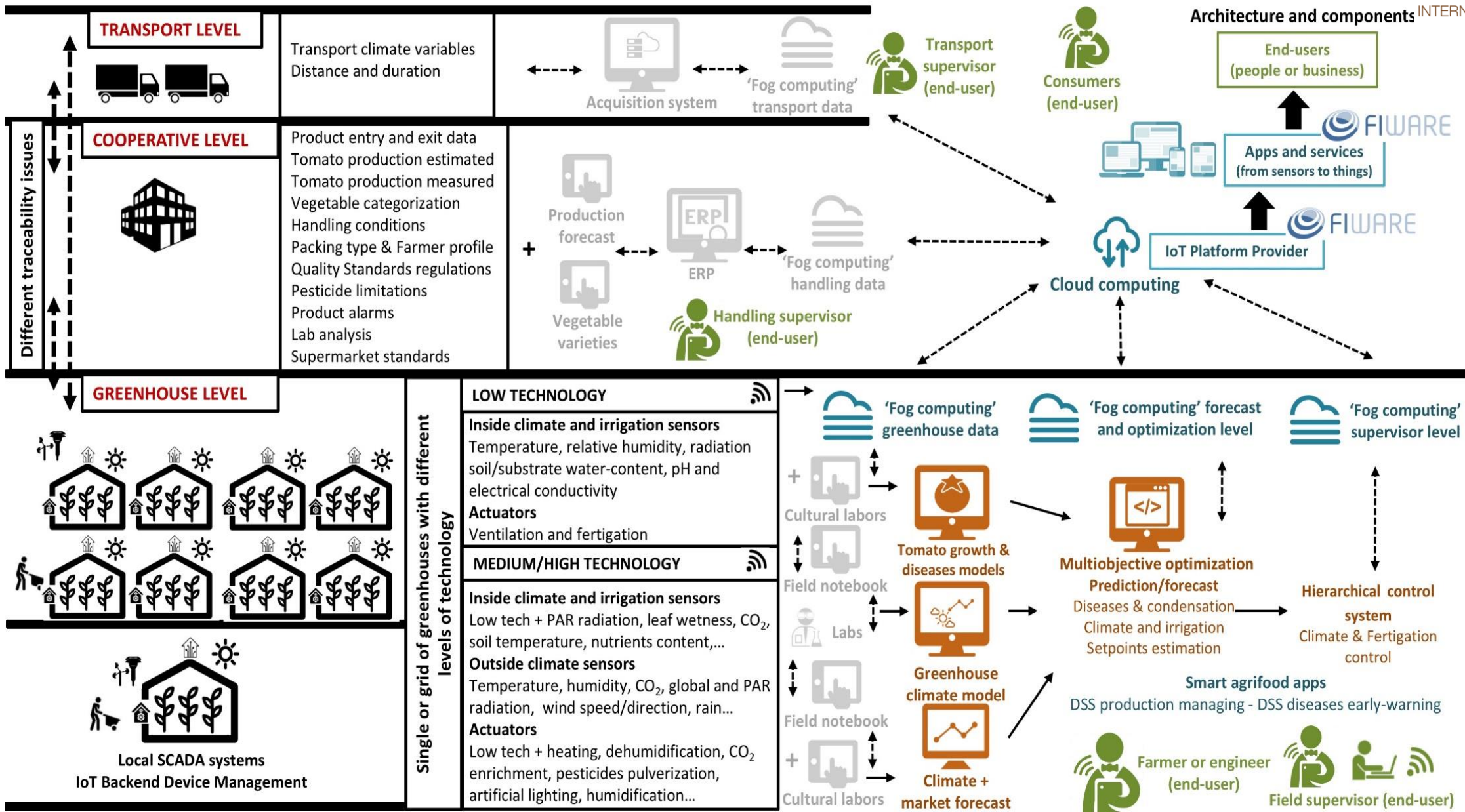




ALMERÍA  
SMART  
AGRI  
HUB

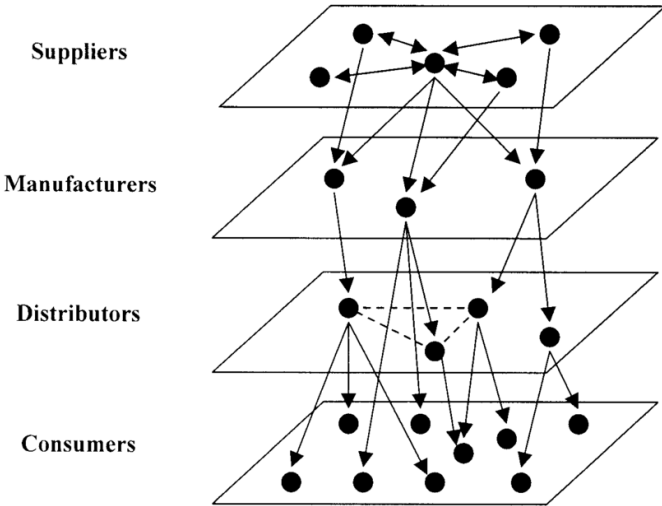
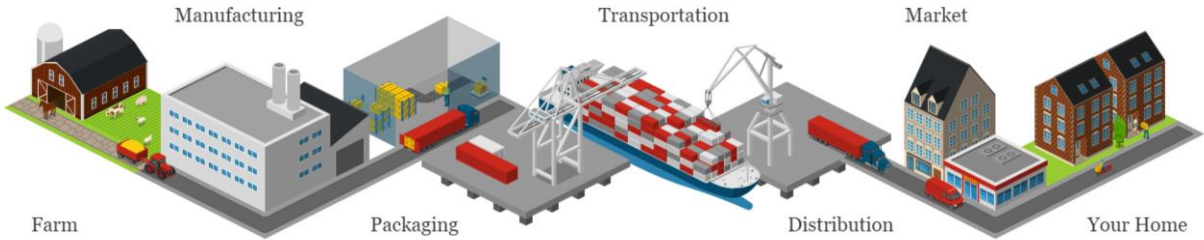
# “Value Chain and quality innovation by mid-tech horticulture greenhouses”

M. Berenguel, J. Sanchez, F. Rodriguez, C. Giagnocavo UAL

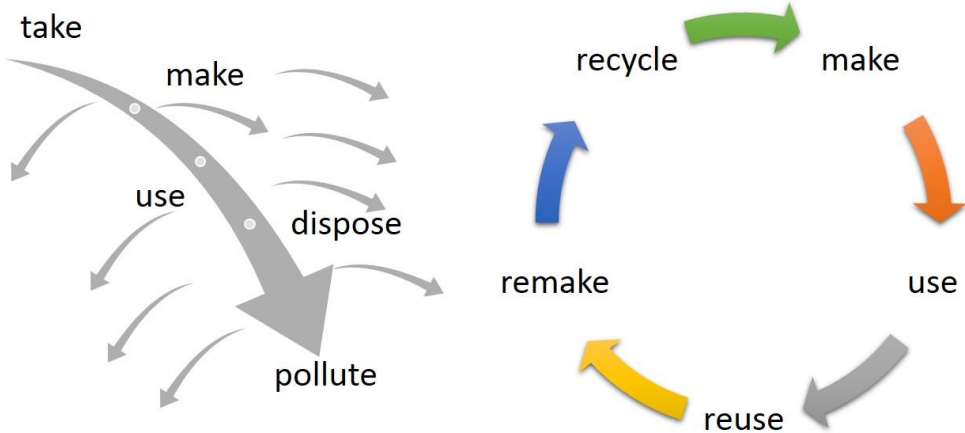


# Supply chains/netchains/ value chains? Chains at all?

## The Food Production Chain

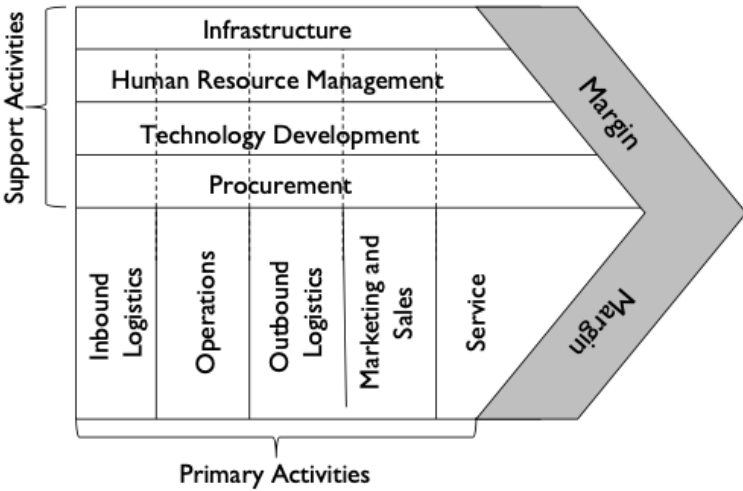


Lazzarini, et al, 2001

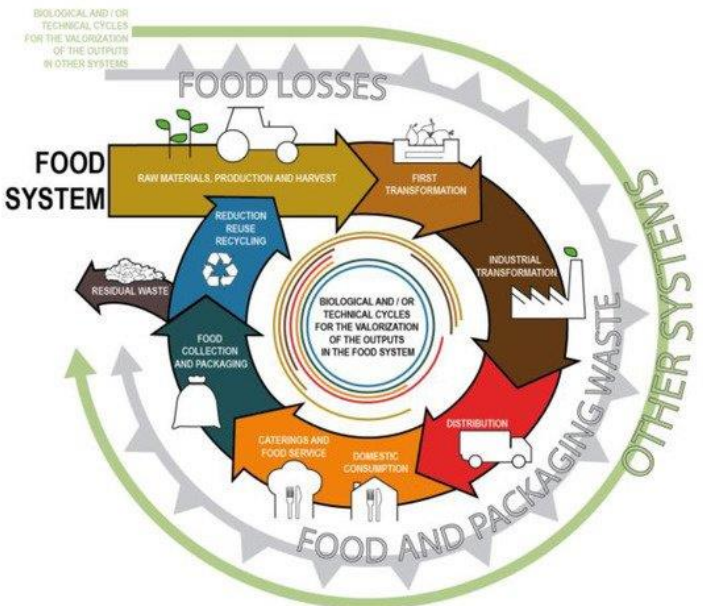


CC 3.0 Catherine Weetman 2016

## Michael Porter Value Chain Analysis



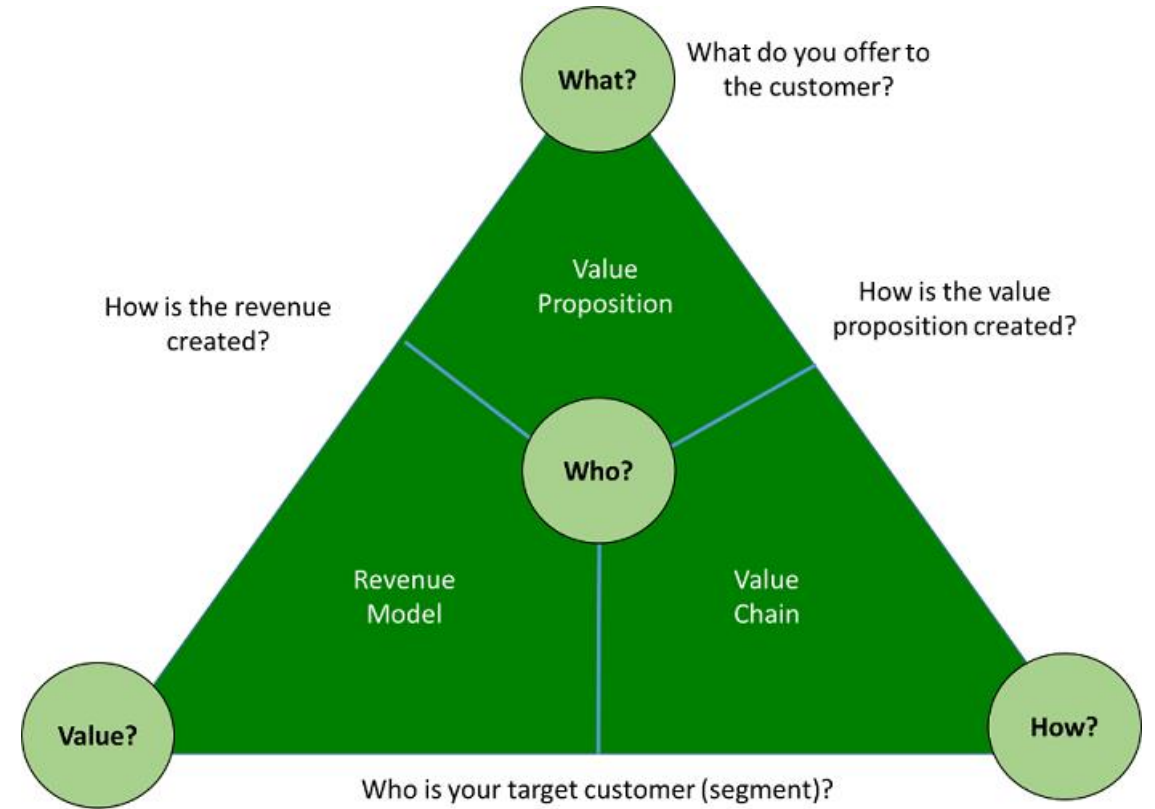
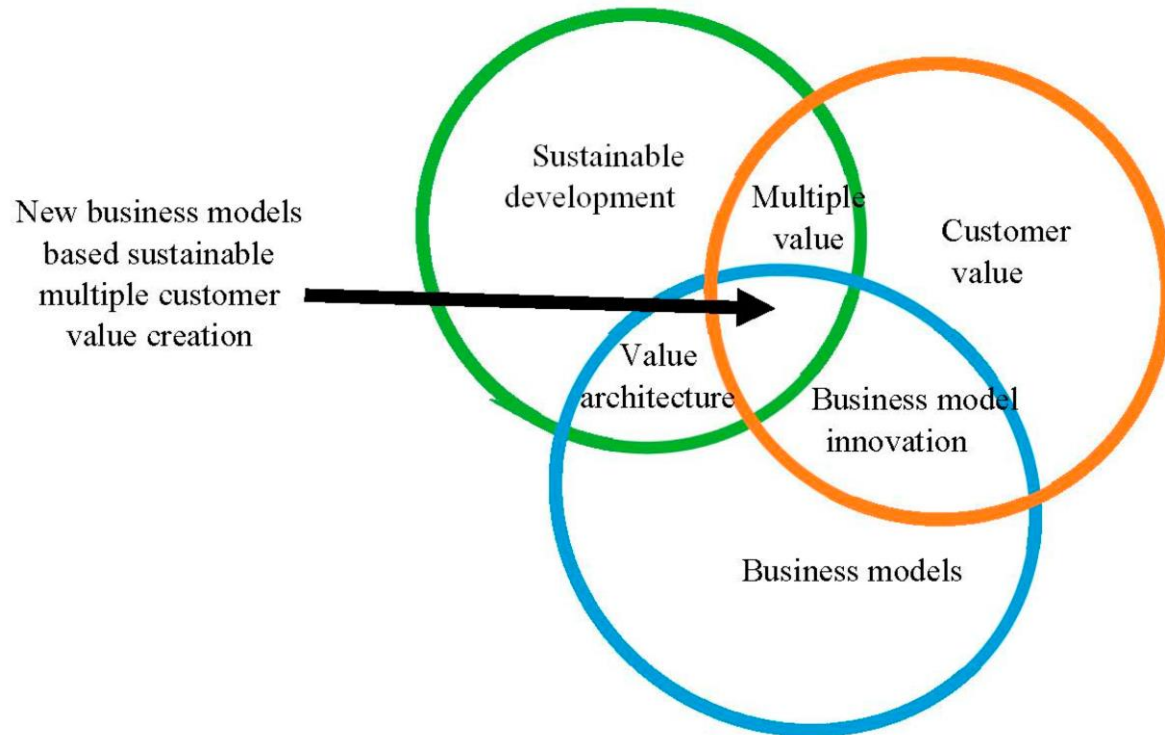
Michael E. Porter "Competitive Strategy: Techniques for Analyzing Industries and Competitors" 1980



Fassio & Tecco Systems 2019, 7(3), 43; <https://doi.org/10.3390/systems7030043>



# Value?



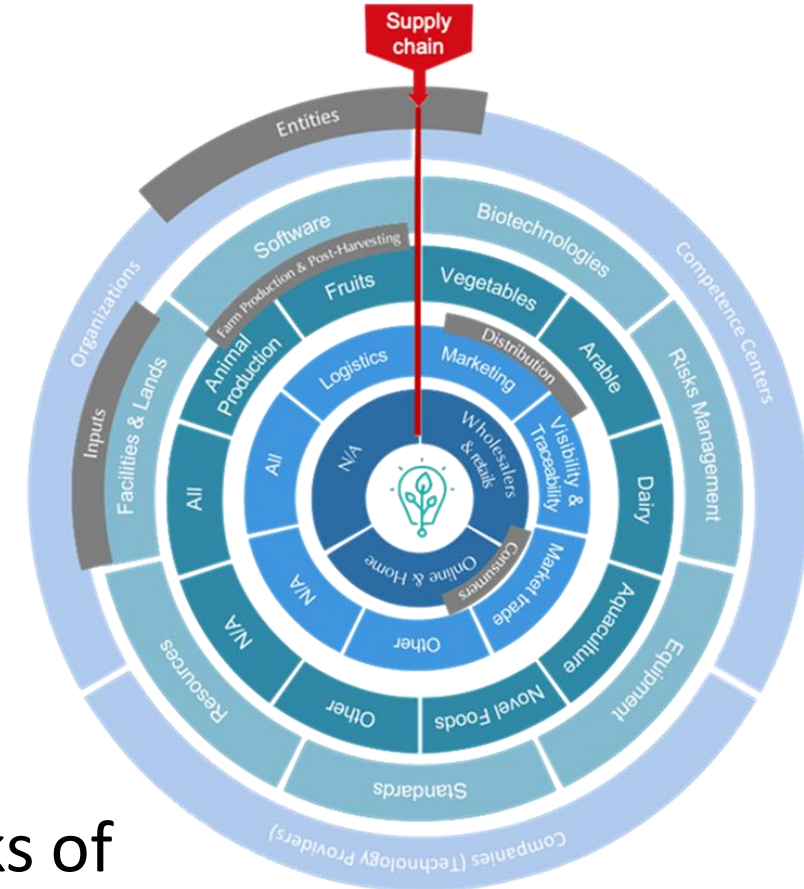
# Value chains and networks compete

SmartAgriHubs: Potential applications of digital technologies (agri/non-agri) in agriculture.

Importance of integration of data in business model/value chain.

**However... different supply and value chains/networks of relationships/knowledge flows and management will compete**

**Competition is not just between products, services, and technologies. It depends on strength of “ecosystem” not just on individual firms.**



Eco system



Technology



Business

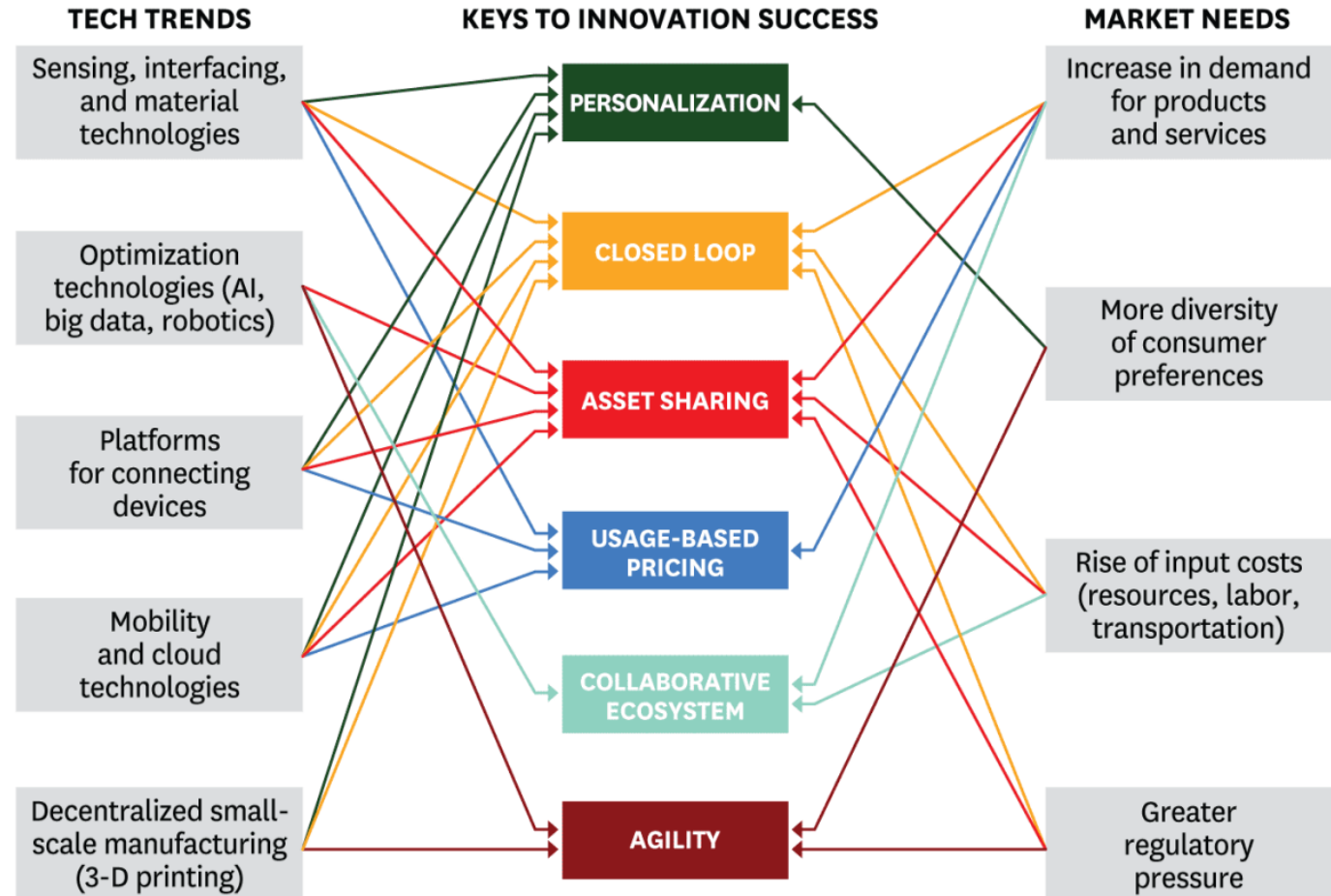
# Some business models: **Linking Technology and the Market**



- Pay per use/performance/output
- Subscription model
- Asset sharing model
- Door opener model
- Data & knowledge monetization
- Model as a service

Others: Platforms, Collaborative, Commons, and Cooperative, Social Enterprise, etc. BM

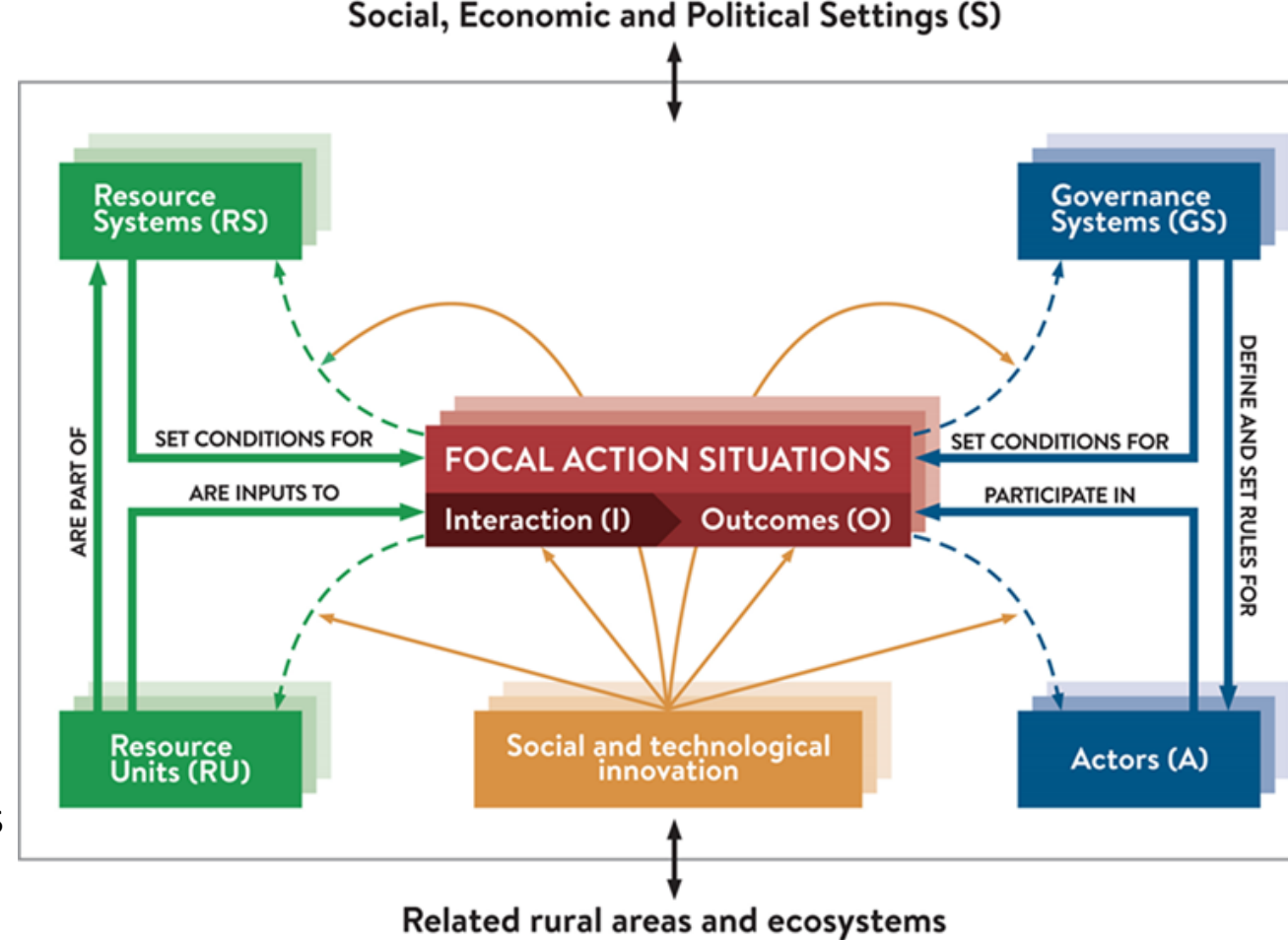
The six features that characterize successful innovation all link a recognized technology trend and a recognized market need. Trends were identified by an analysis of regularly published industry reports from think tanks and consulting companies such as the McKinsey Global Institute, PwC, and the Economist Intelligence Unit.



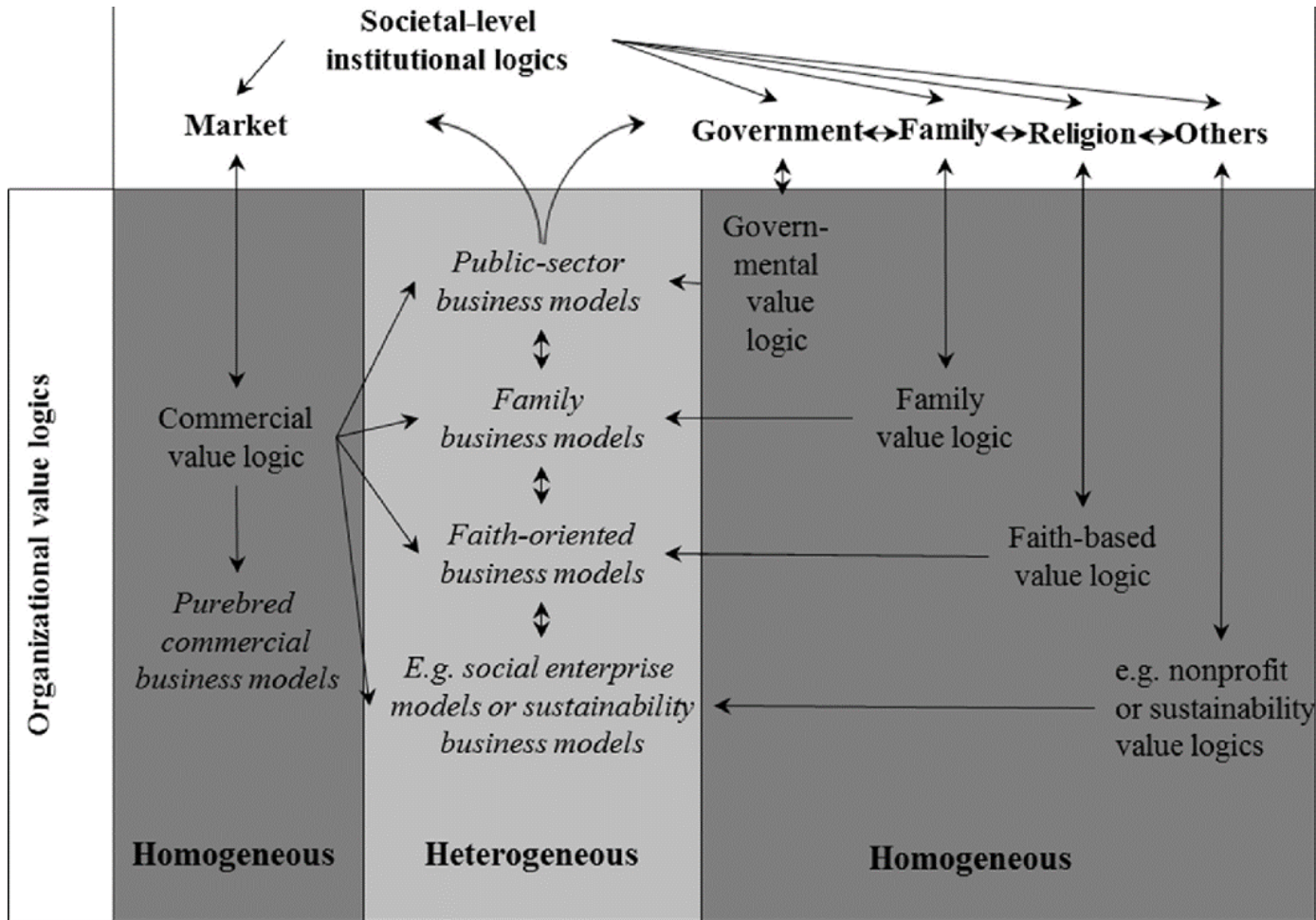
SOURCE STELIOS KAVADIAS, KOSTAS LADAS, AND CHRISTOPH LOCH FROM "THE TRANSFORMATIVE BUSINESS MODEL," OCTOBER 2016

# How we govern exchange of value also matters: e.g.: Ostrom's set of rules for Common Pool Resources

1. Define clear group boundaries.
  2. Match rules governing use of common goods to local needs and conditions.
  3. Ensure that those affected by the rules can participate in modifying the rules.
  4. Make sure the rule-making rights of community members are respected by outside authorities.
  5. Develop a system, carried out by community members, for monitoring members' behavior.
  6. Use graduated sanctions for rule violators
  7. Provide accessible, low-cost means for dispute resolution.
  8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system
- (Agri-data, digital solutions, infrastructure as a common pool resource?)**



# Organisational Value Logics



The business model has been conceived as a commercial logic of value proposition, creation, exchange/deliver and capture.

-But:

-what value is offered, and to whom in the value proposition?

-valuation method matters: what is valued, how, and by/for whom?

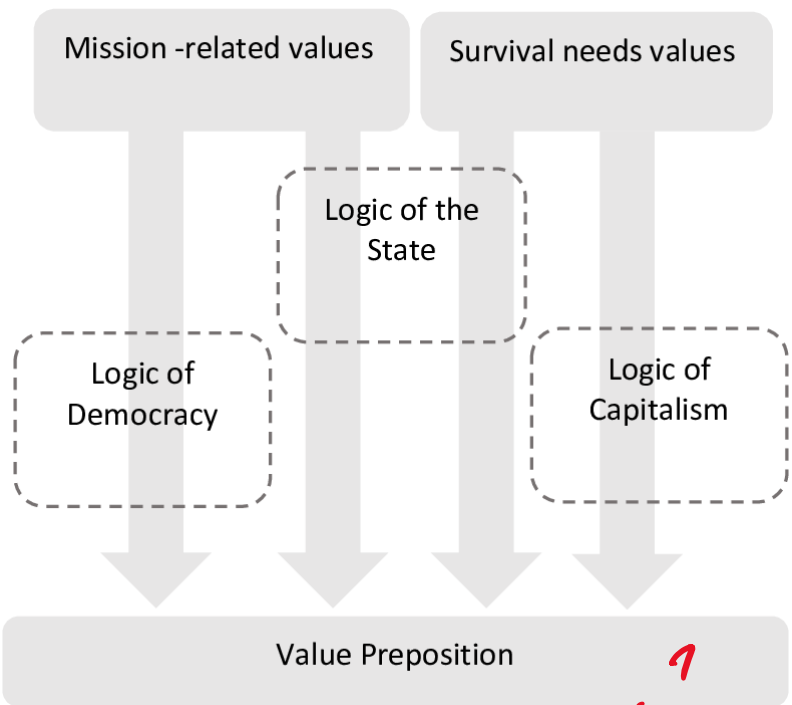
**-the business model is embedded in organizations and systems.**

**Homogeneous and heterogeneous organizational value logics are shaped by a variety of institutional logics.**

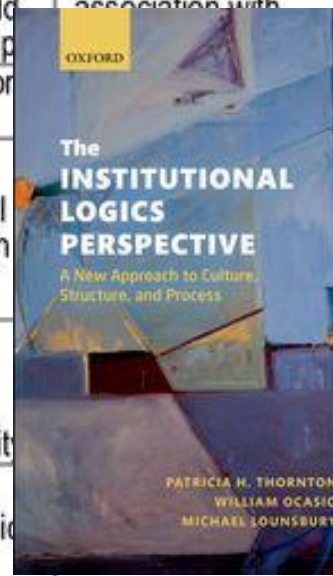
# Different institutional logics

*Contract?*

*Community?*

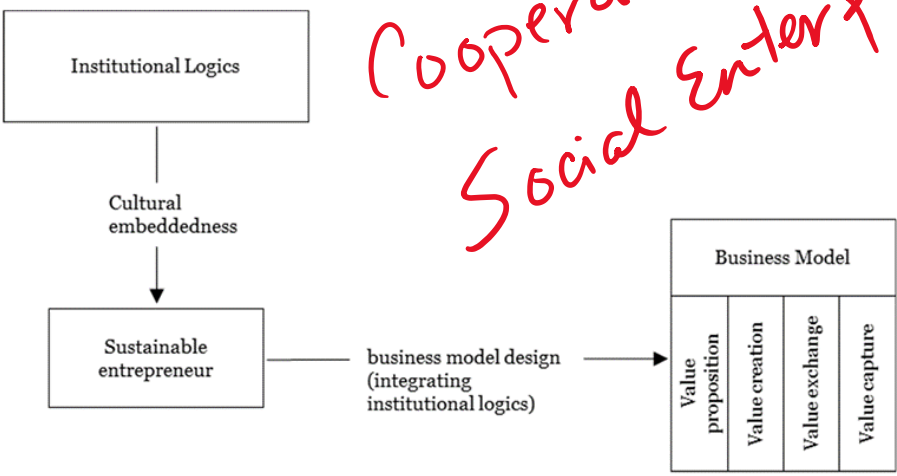


Feature	Market	Corporations	Professions	State	Families	Religions
<b>Economic system</b>	Investor Capitalism	Managerial capitalism	Personal capitalism	Collective welfare capitalism	Personal capitalism	Western capitalism
<b>Effect of symbolic analogy</b>	Market as transaction	Hierarchy as a corporation	Professions as a relational network	State as a redistribution mechanism	Family as firm	Temple as bank
<b>Sources of identity</b>	Faceless	Bureaucratic roles / quantity production	Personal reputation / quality of innovation	Political ideology of social class	Family reputation / parent-child relationship	Occupational and vocational association with
<b>Sources of legitimacy</b>	Share price	Market position of the firm	Specialization staff	Democratic Participation	Unconditional loyalty	
<b>Sources of authority</b>	Shareholder activism	Board of directors / management	Professional associations	Bureaucratic domination / political parties	Patriarchal domination	
<b>Base of strategies: increase of...</b>	Efficiency of transactions	Size and diversification of the firm	Reputation / quality of craft	Collective good	Honor, family solidarity and security	
<b>Informal mechanisms of control</b>	Analysis of the industrial segment	Organizational culture	Professional celebrity	Backstage of politicking	Family policies	
<b>Formal mechanisms of control</b>	Imposition of regulation	Authority of board and management	Internal / external supervision	Enforcement of legislation	Rules of inheritance and succession	Rationalization of usury / taboos standard
<b>Organizational form</b>	Market	M-Form	Network organization	Legal Bureaucracy	Family Partnership	Religious congregation
<b>Investment logic</b>	Capital committed to capital market	Capital committed to corporation	Capital committed to the bond of relationship	Capital committed to public policy	Capital committed to home	Capital committed to salvation



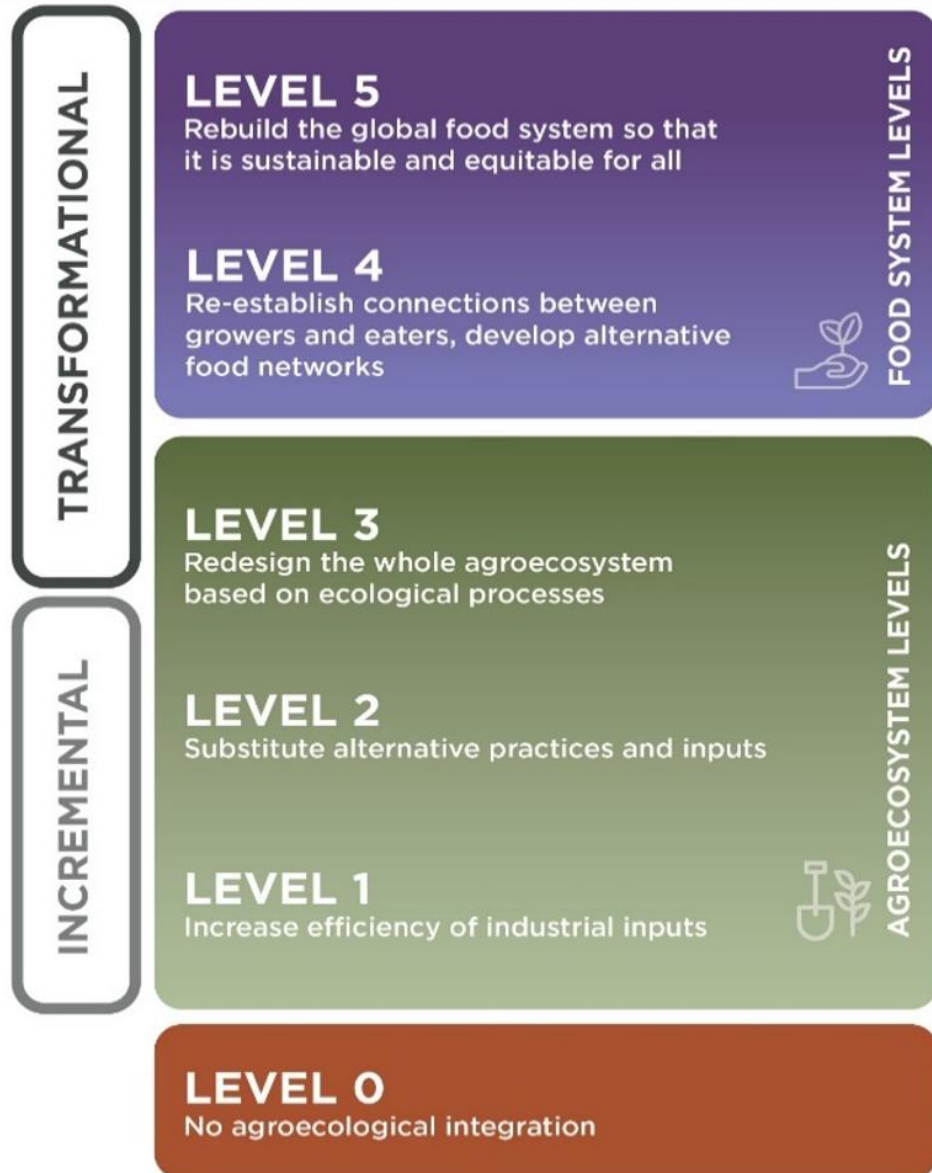
*Cooperatives? Social Enterprise?*

*Environmental?*



# Transformative Values and Business models (FAO)

## 5 LEVELS OF FOOD SYSTEM CHANGE AND 10+ ELEMENTS OF AGROECOLOGY



**Where are we in digitalization of agriculture?  
What is/should be role of digitalization?**

# Conflicts in (un)shared understanding of Value (definition, creation, capture of value, and even concept of growth) concerning digitalisation

- Increasing appearance of literature on “conflict as positive driver for transformative change” in sustainable agriculture
- “discourse analysis recently attracted the attention of socio-technical transitions scholars” [who are] “concerned with the transition/transformation of contemporary production and consumption systems towards a more sustainable mode of operation...” (Leipold, Feindt, Winkel & Keller, 2019)
- “emphasizing individual and collective agency and the interconnectedness of developments across scales and communities”



# The future?

60% - 80% of equity trades are done by algorithms. High speed trading “makes markets.” 1 percent of farms control over 70 percent of the world’s total farmland.

Yet certain institutional logics persist and inform policy as if digitalization impacts had never occurred.

Contested institutional logics regarding the impact of digitalization on the sustainable organization of value and sustainable business models will have to be resolved -- resulting in social/env/econ innovation.

Business models and institutional logics that most equitably deal with digital transformation should be utilised, not bent into submission to fit other dominant institutional logics

Policy should not put burden and risk of resolving incompatible logics concerning digitalisation on farmers (e.g. Environment v. Market)



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# THANK YOU



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