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# Sustainable Supply Chain Management

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MODULE 1 Session 2

**Supply chain redesigning and cooperation in a  
sustainable inter-organizational**

Lecture



Curriculum Development  
of Master's Degree Program in  
Industrial Engineering for Thailand Sustainable Smart Industry



Network is a popular subject among social scientists in management and business, in two forms [\[SOURCE\]](#):

- The firsts, who adopt **network** as an *analytic perspective*, stressing the limitations of seeing actors as atomised and preferring instead to emphasize their embeddedness in networks of actors. The business setting, are seen as business markets as unbounded networks of interconnected business relationships. The actors, their relations and their institutional embeddedness should be study. One should not look at them separately, but recognize that there are "recursive influences" between the three levels; all three levels of analysis and their interrelationships should be considered. In relation to learning, this perspective leads to considering learning as a social and targeted process.
- The second (justifies online learning) is the *organizational network*. Four types of network feature in organizational research: (1) intra-organizational networks, in which business units within an organization (in the sense of a legal entity) are organized in a network structure, with relatively high unit autonomy; (2) network organizations characterized by flexibility and adaptability, generated by high degrees of vertical, horizontal and spatial integration through multiple types of socially important relations; (3) groups of legally autonomous organizations with high levels of interdependence and cooperative working, termed 'strategic networks'; (4) more loosely bonded collectives of organizations linked by geographical proximity, similar interests or activities, or participation in the production/delivery of a product or service.





## Definition:

- Can be described as a structure which includes actors (organizations) and relationships between them [[SOURCE](#)]
- The term is defined as a system of loosely bonded groups of organizations connected by geographical proximity, common interests or activities, or participation in a common service delivery with an emphasis on interconnectedness rather than active collaboration for joint action [[SOURCE](#)]
- An inter-organizational network is one form of an external collaborative relationship and collaborations have been defined as “associations of two or more organizations” [[SOURCE](#)]





# INTER-ORGANIZATIONAL NETWORK



Potential benefits of inter-organizational networks [[SOURCE](#)]:

I. Access to and leveraging of resources:

- Stretch, build on or strengthen limited resources
- Access to resources not held within a particular organization

II. Shared risk:

- The ability to distribute or share risks fosters creativity and innovation by reducing risk to any one organization

III. Efficiency:

- More efficient use of resources
- Ability to achieve economies of scale (e.g., purchasing, being more competitive in grant competitions)





# INTER-ORGANIZATIONAL NETWORK



Potential benefits of inter-organizational networks [[SOURCE](#)]:

IV. Service quality, coordination, seamlessness:

- Ability to provide coordinated, higher quality services and a full continuum of care

V. Advocacy:

- Able to exert more pressure due to greater political clout and community reach resulting from greater numbers and diversity of network members

VI. Learning, capacity building:

- Knowledge exchange can enable learning and capacity building at a network level and in the broader community





Potential benefits of inter-organizational networks [[SOURCE](#)]:

VII. Positive deviance:

- Networks can be a forum to think and act beyond the organizational norm, structure or mandate; to work deliberately in deviation from the standard organizational processes, overtly or covertly, to influence change in systems

VIII. Innovation:

- Networks are enabling structures that create opportunities for innovation, which is closely connected to learning





# INTER-ORGANIZATIONAL NETWORK



Potential benefits of inter-organizational networks [[SOURCE](#)]:

## IX. Shared accountability:

- Opportunity to work collaboratively to address, and share responsibility for, a quadruple bottom line (e.g., financial, social, environmental and cultural)
- Developing a sense of accountability to one's network colleagues

## X. Flexibility and responsiveness:

Capacity to be more flexible and responsive in order to deal with unforeseen problems (e.g., disasters)





## ENTERPRISE

dependent  
(capital / market)

independent

## NETWORK

formal network



← network organization

## INTER-ORGANIZATIONAL NETWORK

informal network



← network system







# INTER-ORGANIZATIONAL NETWORK.... in practice



- Digital Car Dossier [[SOURCE](#)]
- Electronic Freight Exchange [[SOURCE](#)]
- Education [[SOURCE](#)]
- New drug development [[SOURCE](#)]



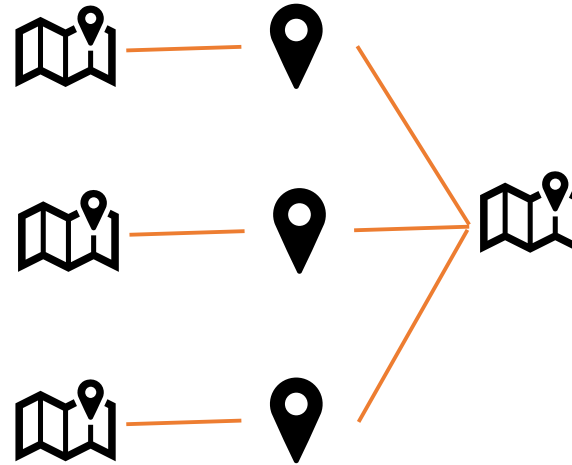
# SUPPLY CHAIN NETWORK



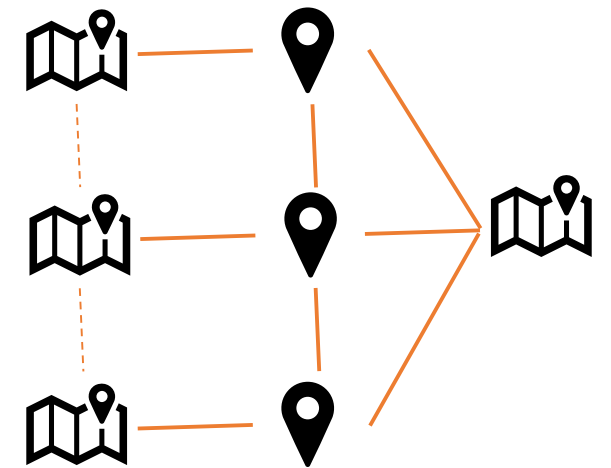
supply chain and networks - structural system



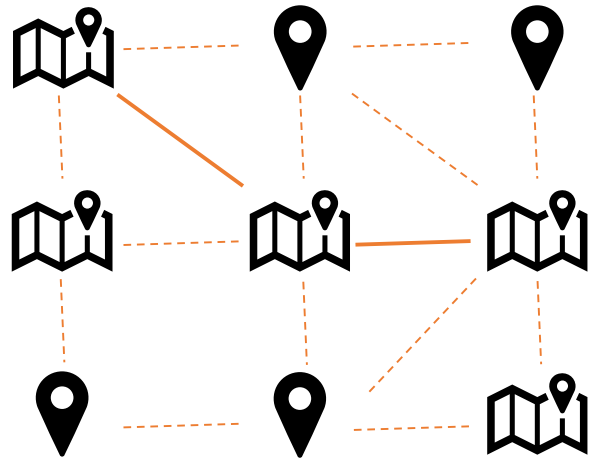
simple supply chain



network supply chain



supply network



embedded supply chain





# SUPPLY CHAIN NETWORK – practical solutions



- Going It Alone or in a Network [[SOURCE](#)]
- Supply Chain Example: for apple juice production [[SOURCE](#)]
- SCNet - access to markets [[SOURCE](#)]





# SUPPLY CHAIN NETWORK DESIGN – practical solutions



- Publix - grocery store chain [[SOURCE](#)]
- Case examples [[SOURCE](#)]
- Wine industry [[SOURCE](#)]
- Green supply chain [[SOURCE](#)]
- Industrial clusters [[SOURCE](#)]





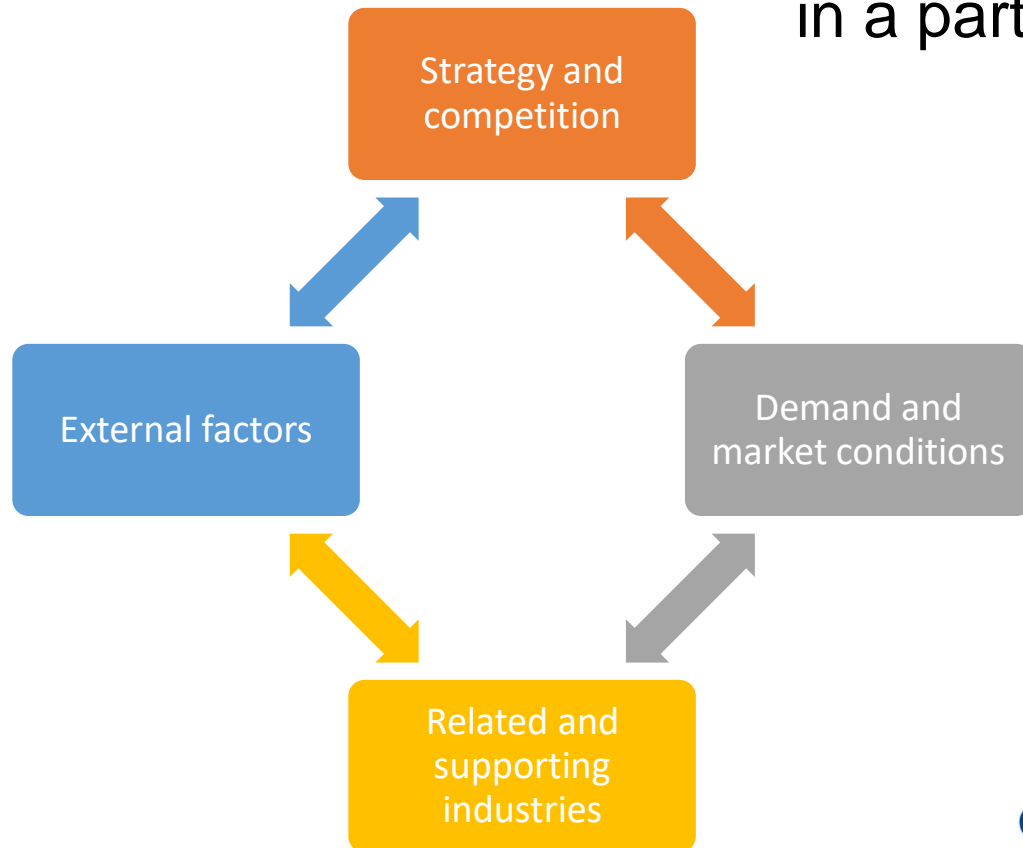
# SUPPLY CHAIN NETWORK – CLUSTER SUPPLY CHAINS



Cluster supply chain (SCS) is essentially an order-based production alliance system, which is subject to the naturally existed short lifecycle, especially in the trend of ever-flourished product varieties and frequently changed customer demands. Therefore, to effectively and efficiently configure and reconfigure a CSC has become a key stage for the CSC operation. Supply chain configuration (SCC) is a complex decision process aiming to optimize certain performance indicators of the supply chain through making decisions such as selecting suitable suppliers for each stage, assigning values to characteristics parameters of each stage and setting operation policies for governing the interrelationships among these stages [\[SOURCE\]](#)



“a geographic concentration of interconnected companies and institutions  
in a particular field” [[SOURCE](#)]

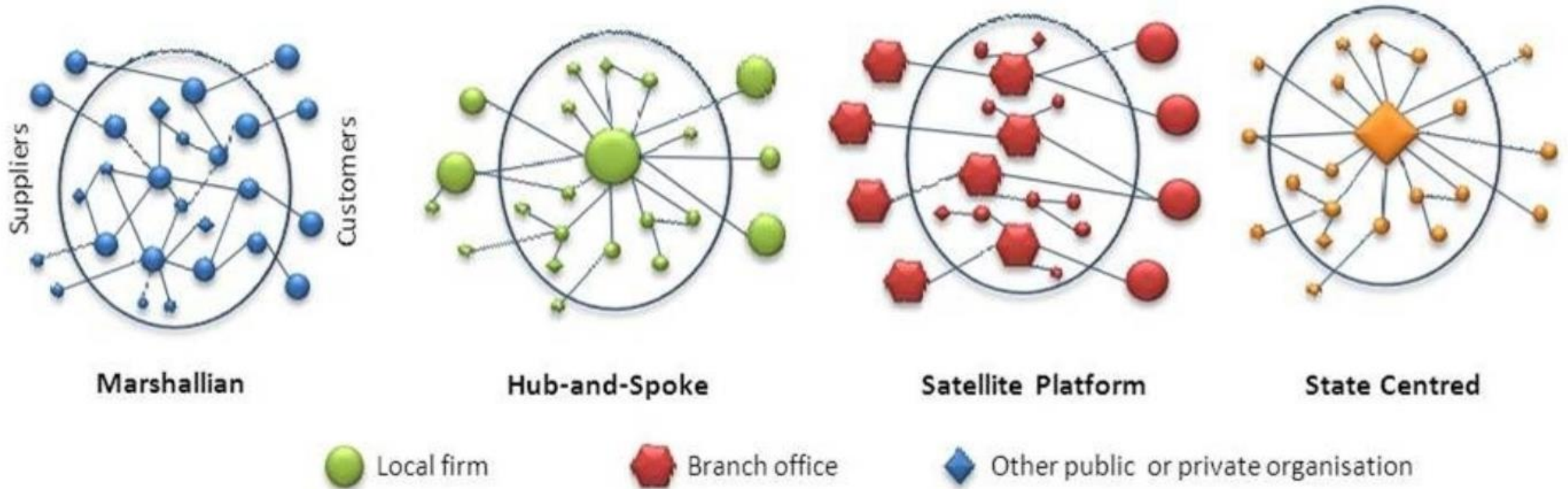


Porter's Diamond

# SUPPLY CHAIN NETWORK – CLUSTER



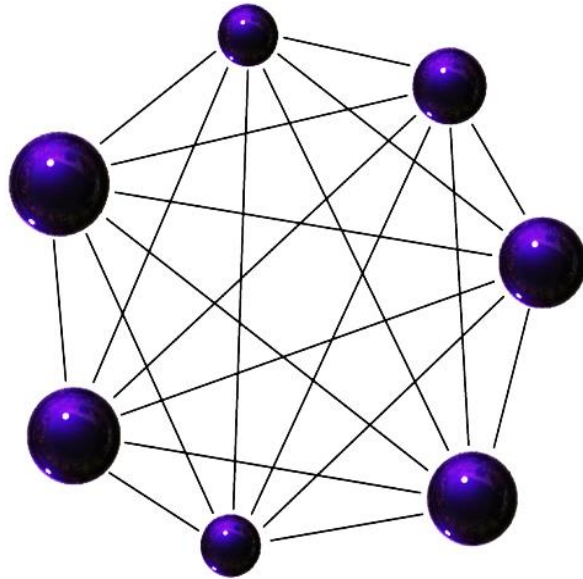
Categorization of technology clusters [\[SOURCE\]](#)



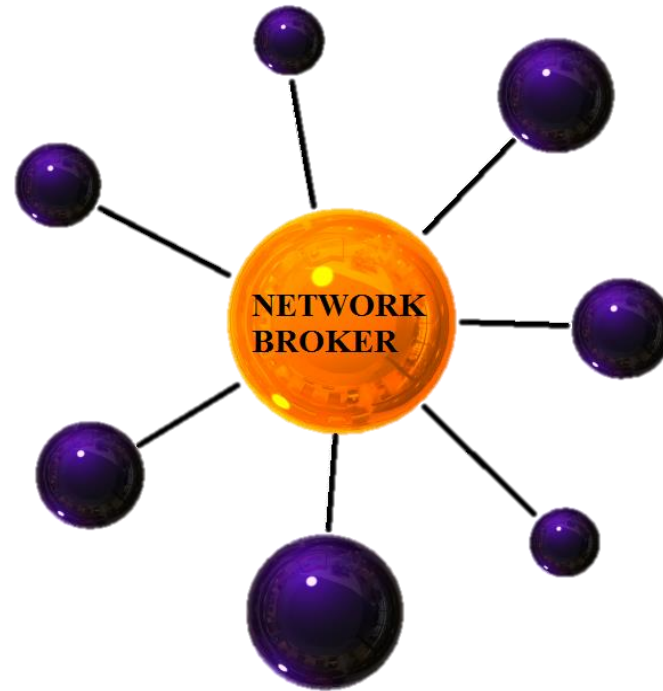
# SUPPLY CHAIN NETWORK – CLUSTER



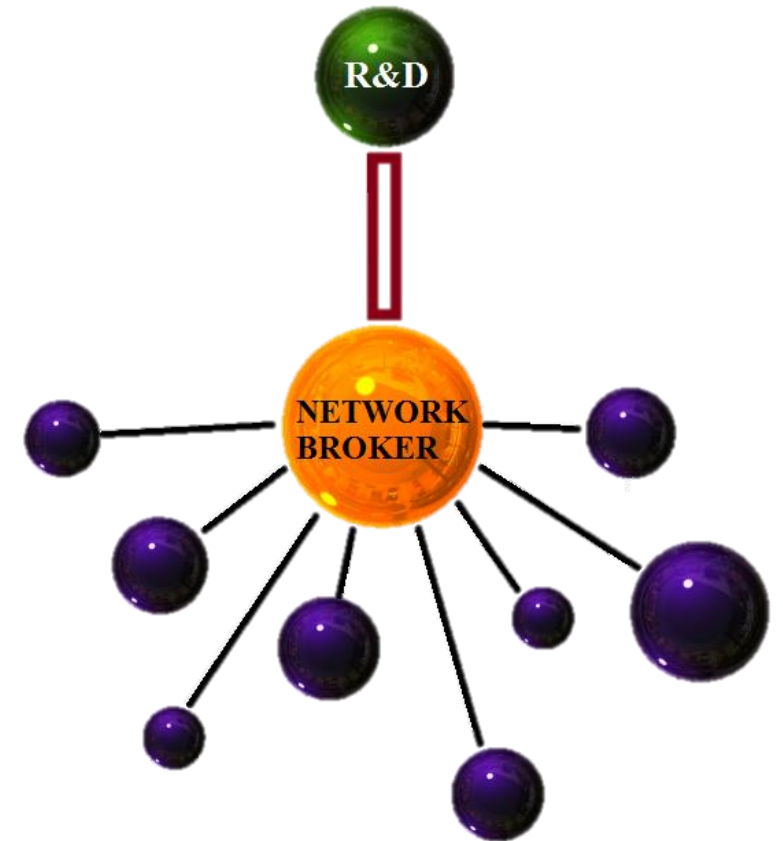
Cluster based on Danish model



Cluster based on Italian model



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Cluster based on Dutch model



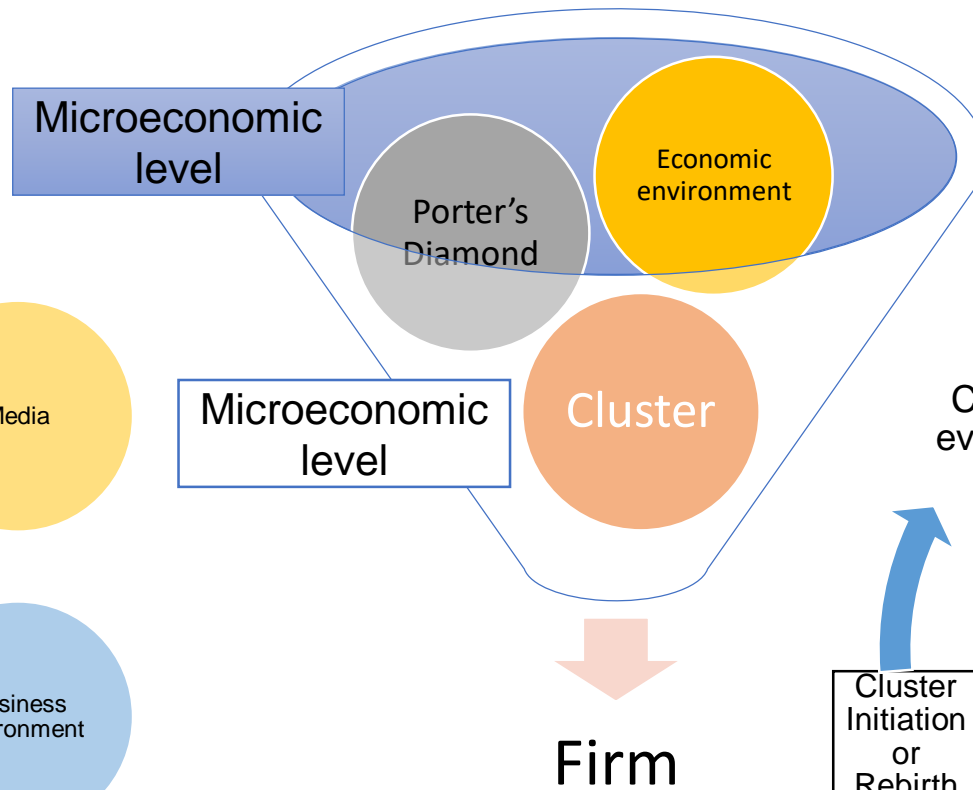
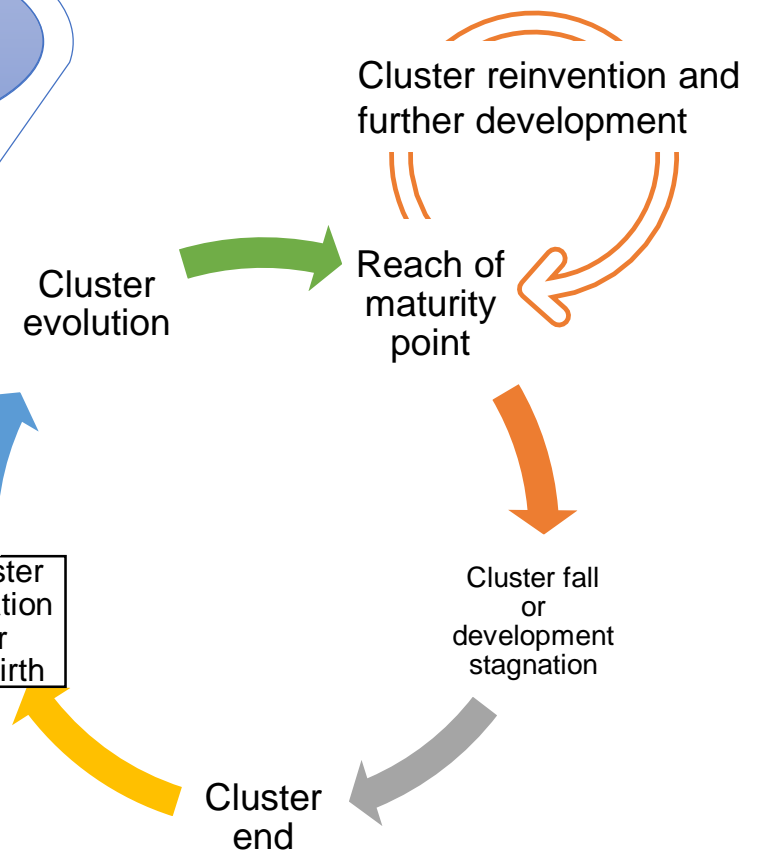
# SUPPLY CHAIN NETWORK – CLUSTER



## Cluster factors model



## Cluster lifecycle

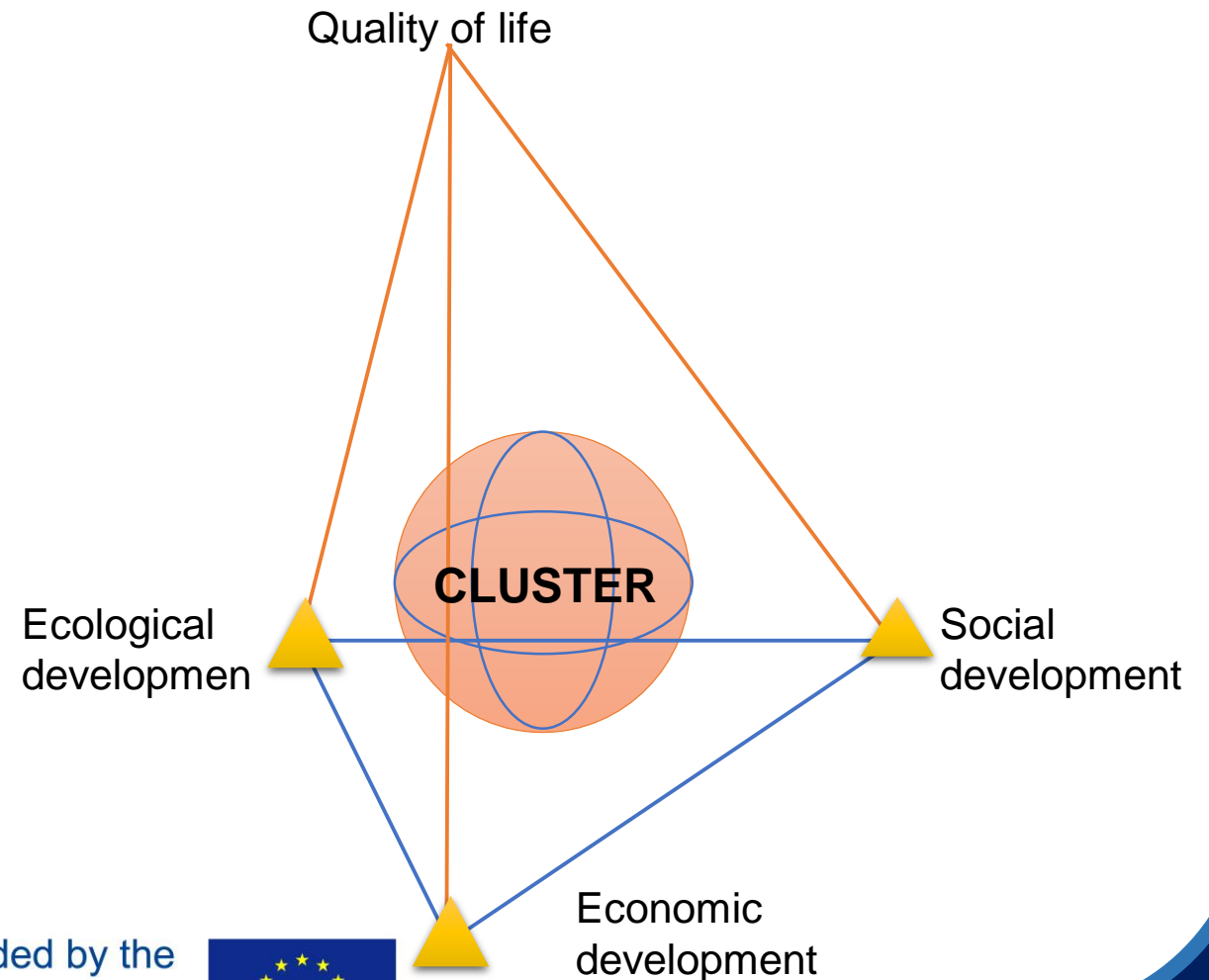


## Funnel model of cluster determinants



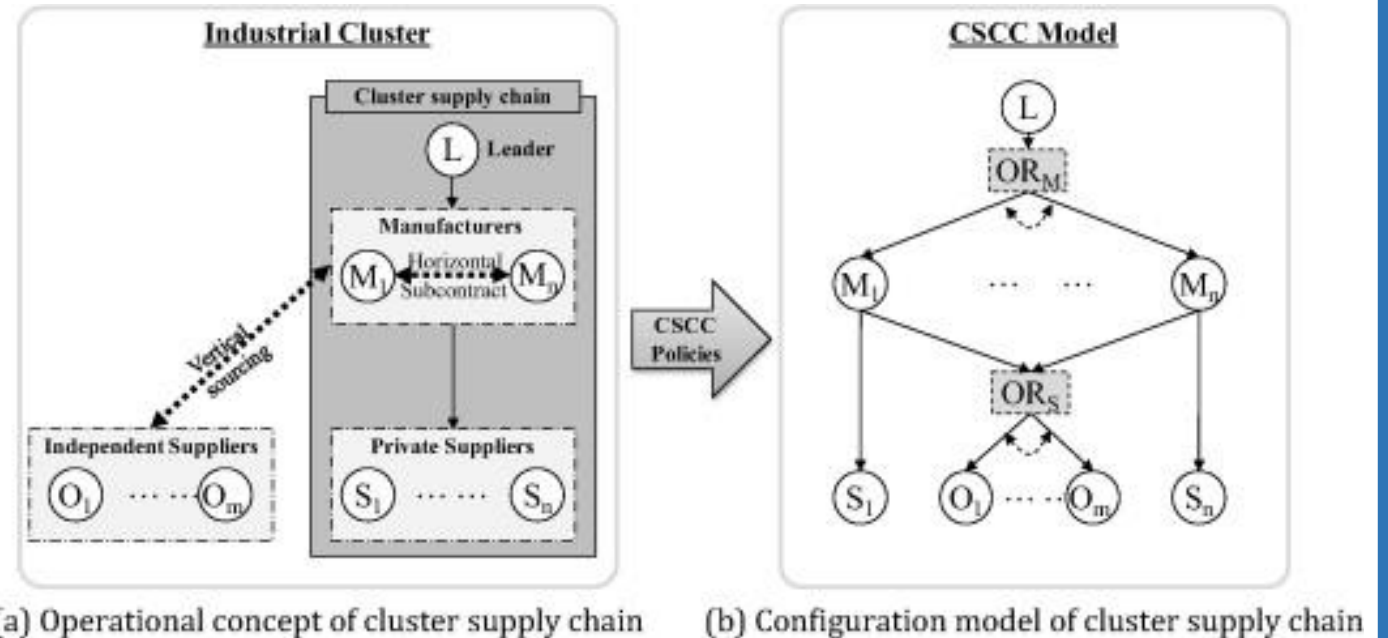
## Role of Clusters in Sustainable Development

Regardless of the type of cluster's activity (business) technological innovations play an important role in implementing the concept of sustainable development. Application of technologies conserving the environment can be bigger in both traditional and modern clusters, thanks to higher effectiveness of production factors and better understanding of needs there



Three types of enterprises normally existed in an industrial cluster [[SOURCE](#)]:

- namely product manufacturers (M)
- manufacturers' private suppliers which have long-term stable relationships (S)
- other independent suppliers dispersed in the cluster (O)





# SUPPLY CHAIN NETWORK – CLUSTER SUPPLY CHAINS



A geographical concentration of local processes, activities and/or services that can be put together to add value to one or more global supply chains.

It mainly focuses on three concepts [[SOURCE](#)]:

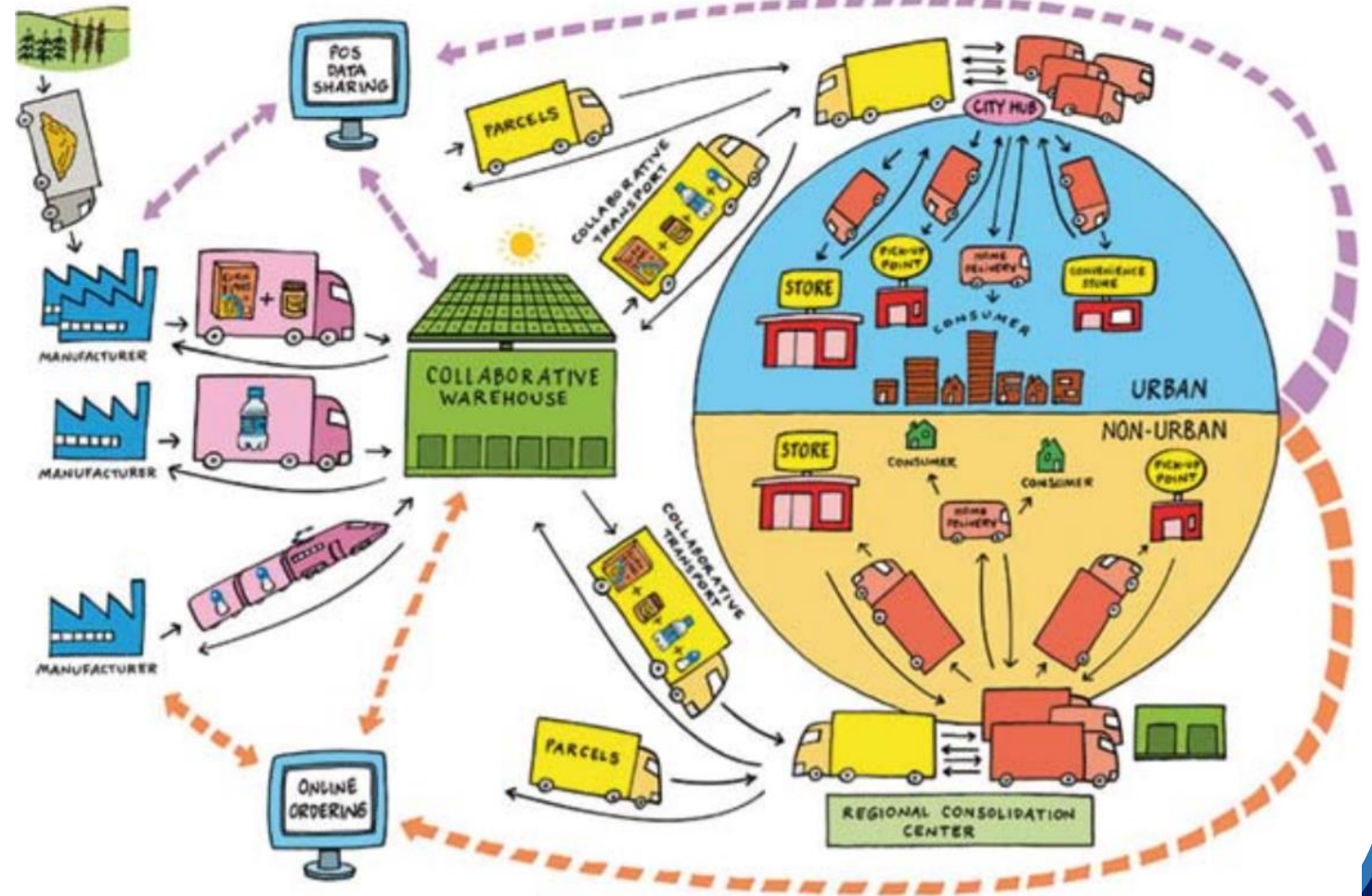
- Global-Local integration of flows
- Global-Local collaboration network
- Focus on the differentiated competitive advantages



# SUPPLY CHAIN NETWORK – CLUSTER SUPPLY CHAINS



## Supply Chain Clustering Hub



# SUPPLY CHAIN NETWORK – CLUSTER publications



- Using collaborative management in industrial clusters – case study of Italian energy cluster [[SOURCE](#)]
- Cluster supply chain management: A study of the UK upstream oil and gas Industry [[SOURCE](#)]
- Clusters and supply chain management: challenges and obstacles [[SOURCE](#)]
- National economic development on the example of analysis of network systems in Poland [[SOURCE](#)]
- The importance of logistics in creating entrepreneurial network structures [[SOURCE](#)]
- Managing the logistic supply chain in creating clusters [[SOURCE](#)]
- Future supply chain – cluster supply chain [[SOURCE](#)]

