



13th Edition of the International  
Conference on the Quality of Education  
and Training (CIMQUSEF)  
***Innovative Universities for Smart Cities***

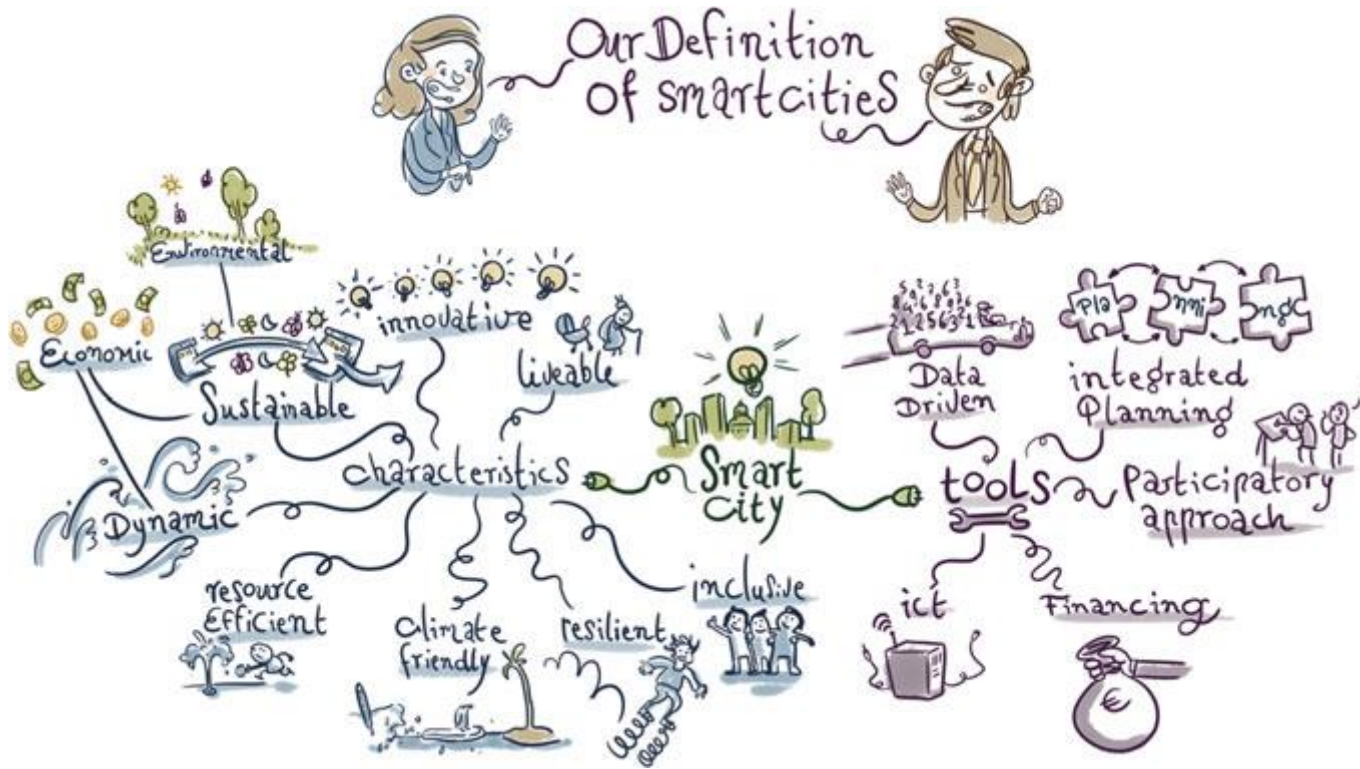


# For a systemic approach to model dynamics of universities

Marek Frankowicz

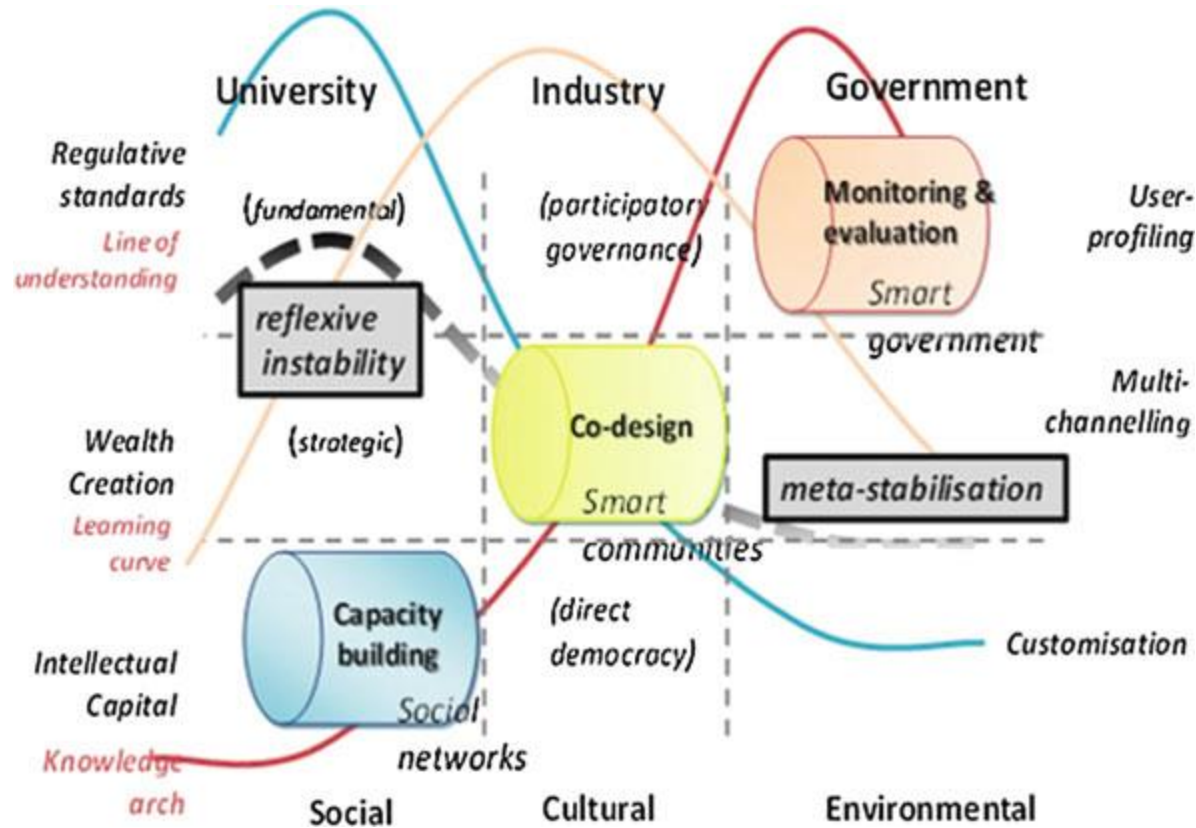
Jagiellonian University in Krakow, Poland,  
& State Higher Vocational School in Tarnow, Poland,

# Smart City definitions



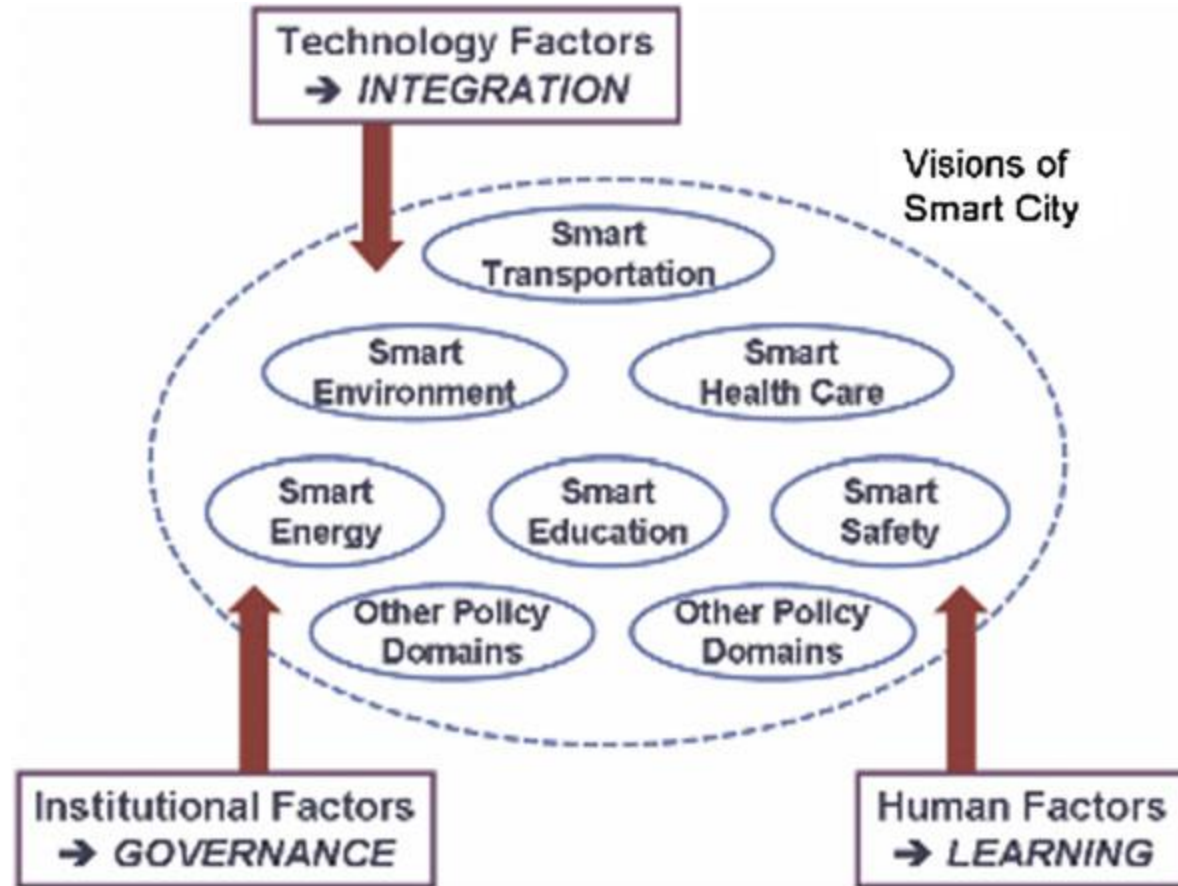
*R.P. Dameri, Smart City Implementation, Springer 2017*

# Triple Helix in Smart City



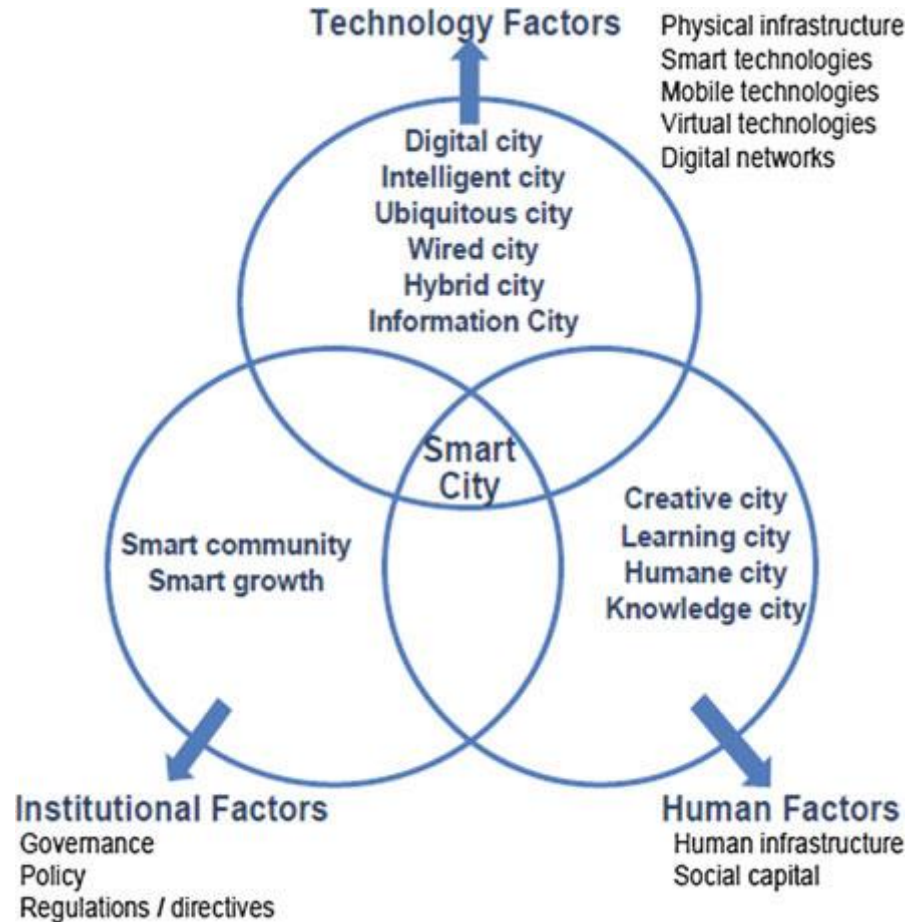
*M. Deakin & L. Leydesdorff, Journal of Urban Technology 18, 53-63 (2011)*

# Smart City Model



*T. Nam & T.A. Pardo, In Proceedings of the 12th Annual International Digital Government Research Conference, ACM (2011) (pp. 282-291)*

# Smart City Core Components



*T. Nam & T.A. Pardo, In Proceedings of the 12th Annual International Digital Government Research Conference, ACM (2011) (pp. 282-291)*

# Smart City visions

- Universities and research centres: innovative place to implement their pilots and experimental solutions
- Companies: force Municipalities to prioritize their own technical solutions, without paying attention to the real needs of citizens
- Municipalities: trying to transform cities in smart cities, but often are not capable nor to define strategic planning for the smart city implementation, nor to manage the change program

*R.P. Dameri, Smart City Implementation, Springer 2017*

# Smart City visions



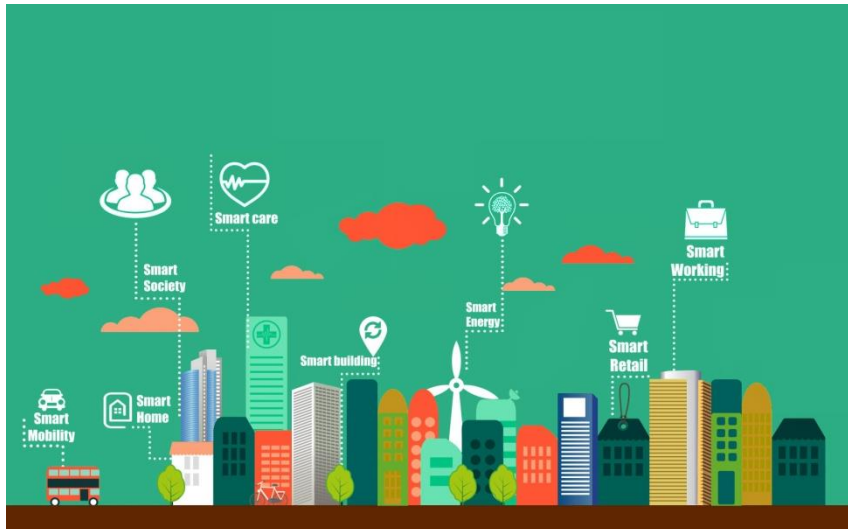
Russian fable: Swan, Pike and Crawfish

# University



Tradition

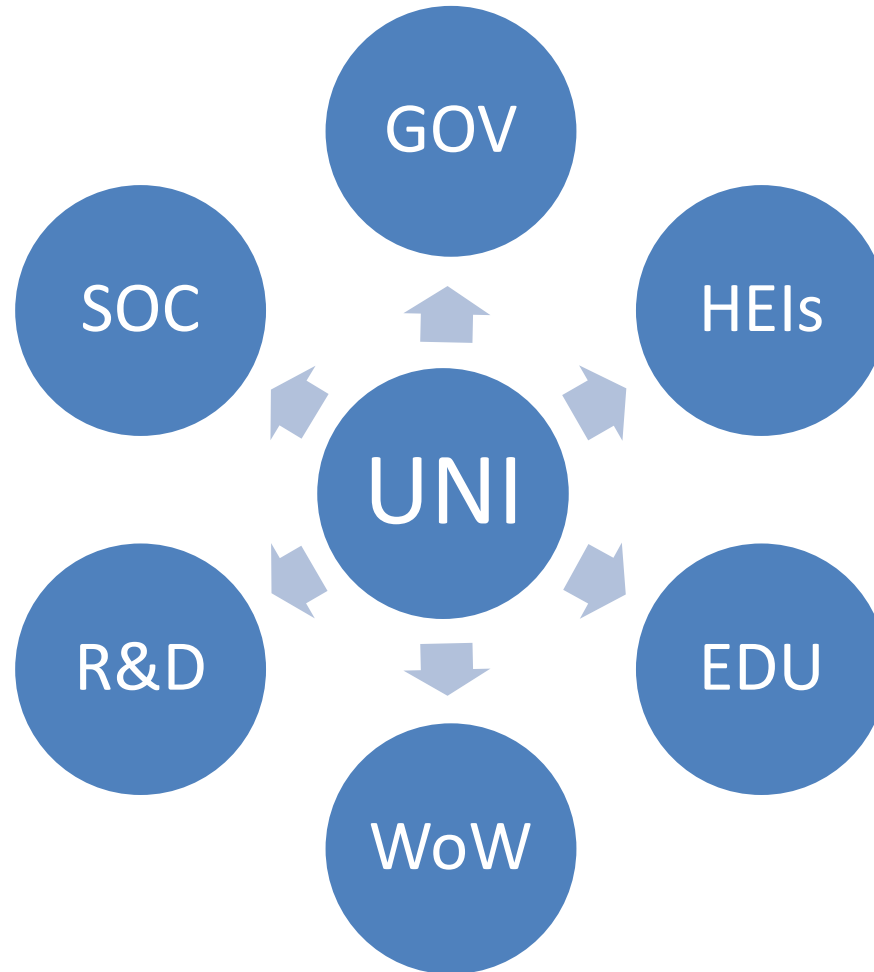
Innovation



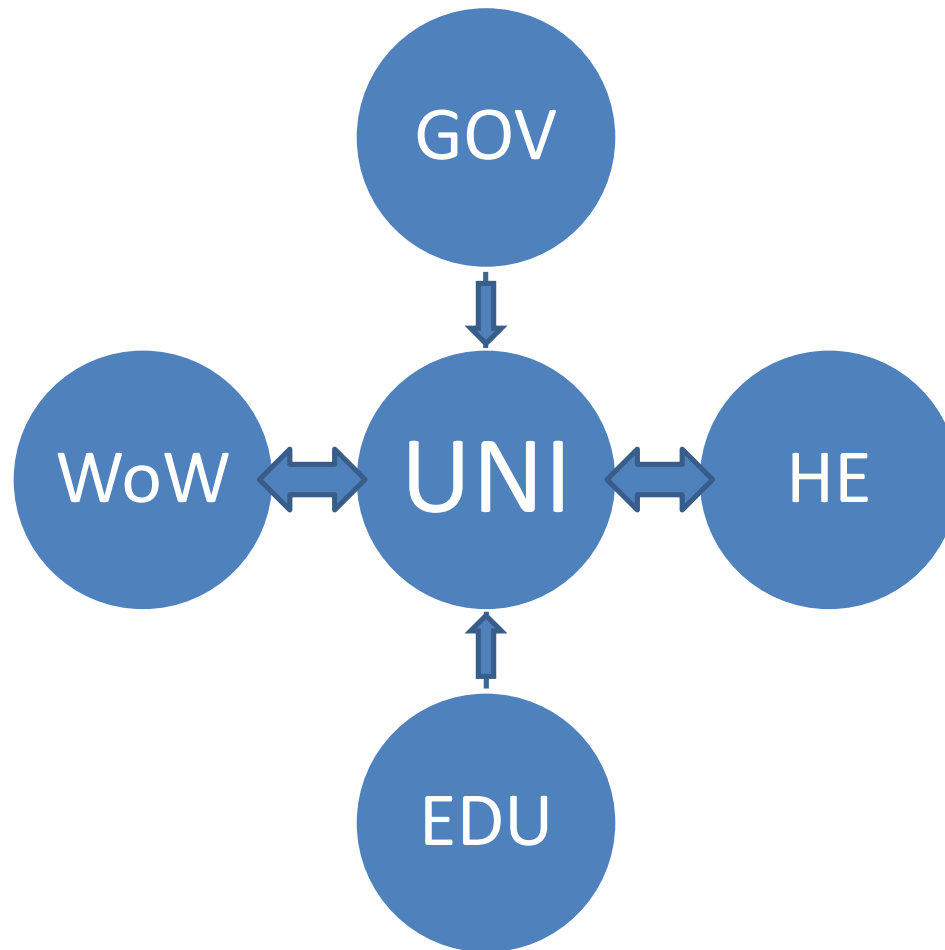


- CAS are dynamic systems able to **adapt in and evolve with a changing environment**.
- **Change** needs to be seen in terms of **co-evolution** with all other related systems, rather than as adaptation to a separate and distinct environment.
- CAS is a viable method for modeling complex physical and social systems to understand their behavior.

# University as a CAS



# Vertical vs. Horizontal Forces





# BuildPHE



## Strategic Partnership Project

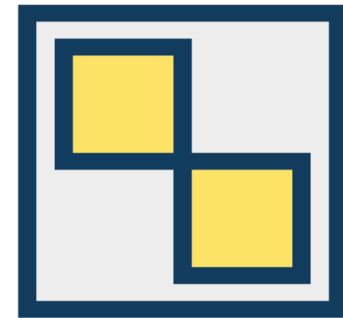
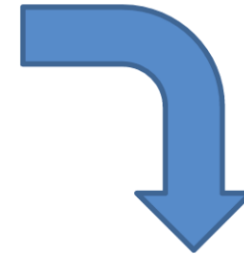
### 2015-1-PL01-KA203-0017072

## BUILDING PROFESSIONAL HIGHER EDUCATION CAPACITY IN EUROPE

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# 12 criteria (HAPHE, PHExcel)

- **Teaching and Learning**

- Methods of curriculum development
- Learning outcomes
- Content for teaching and learning
- Learning methodology
- Learning environment
- Programme team

- **Policy and Strategy**

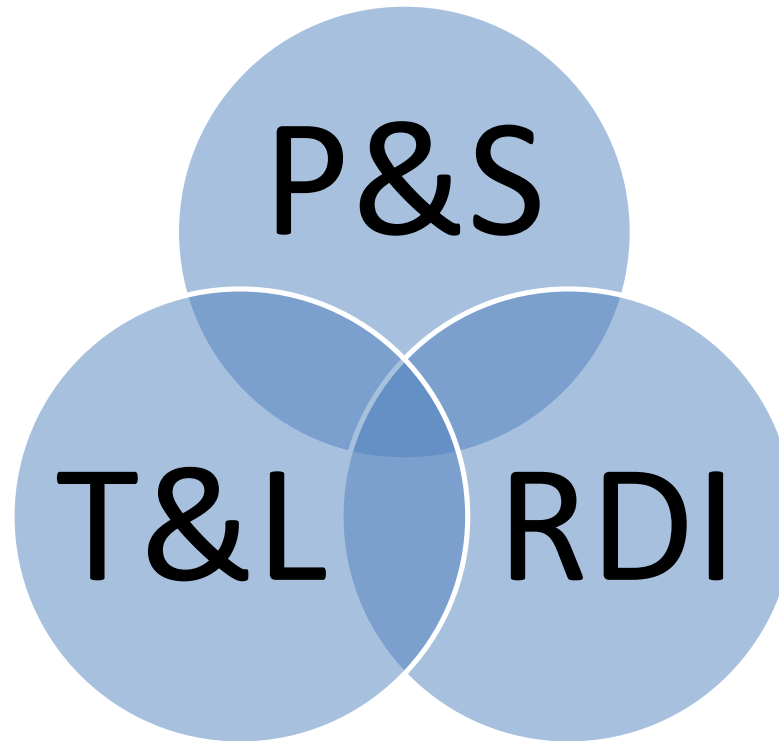
- P&S Integration
- Objectives & outcomes
- Regional integration

- **Research, Development and Innovation**

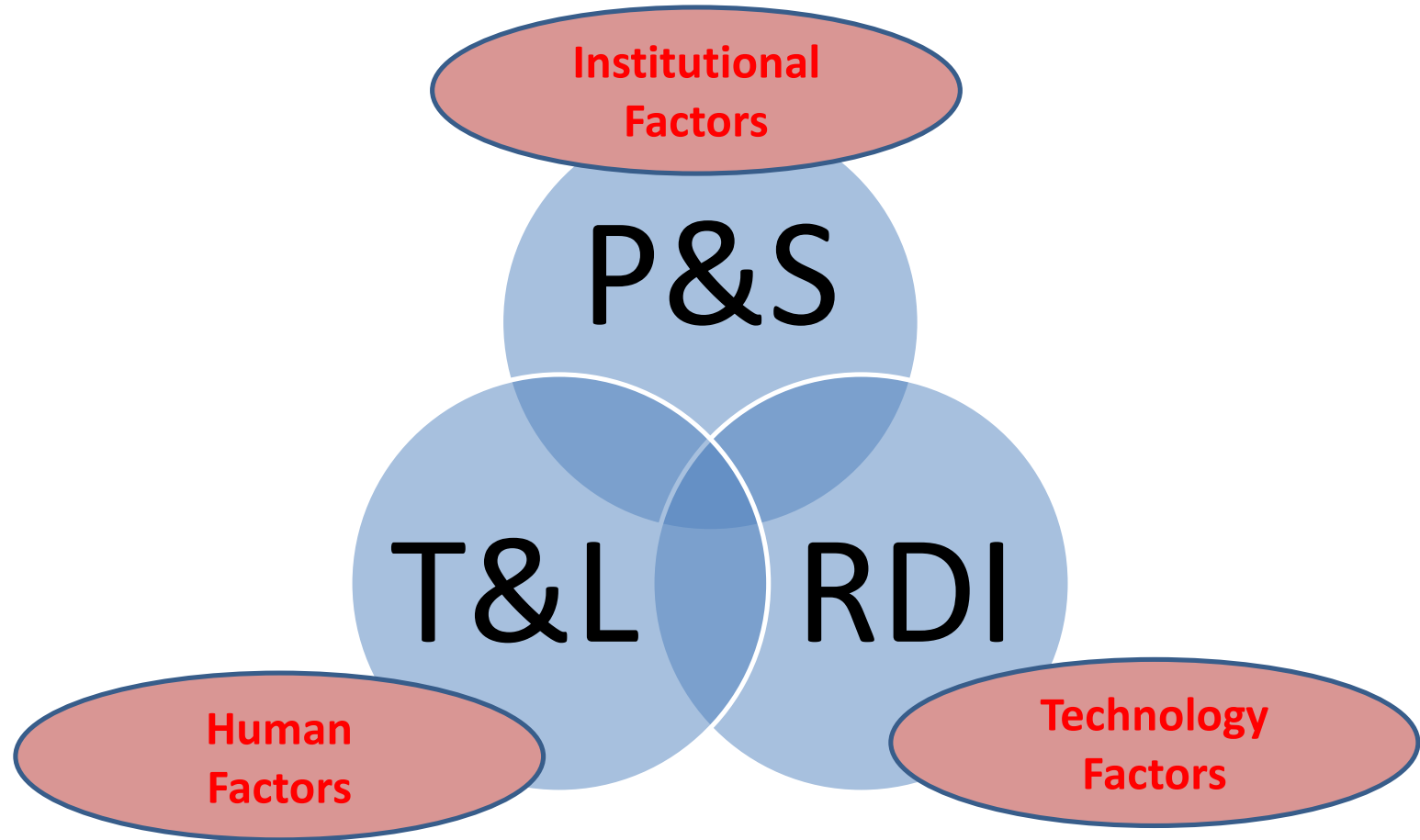
- RDI Agenda
- RDI Process
- RDI Outputs & Outcomes

# PHE

## Synergy of P&S, T&L and RDI



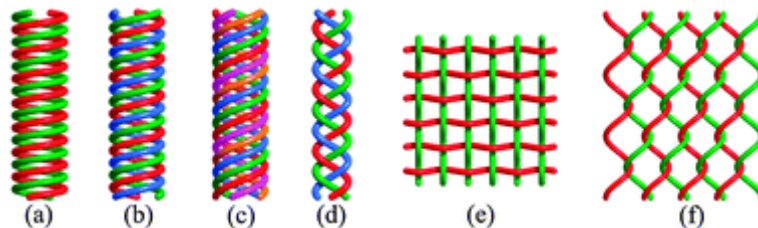
# PHE & Smart City: Synergy & Adaptation





# N-tuple Helices: From Three to Infinity

- Triple Helix:  
University + Industry + Government
- Quadruple Helix  
...+ Public/Civil Society
- Quintuple Helix  
...+ Ecology/Natural Environment



# SUSDEV Project



## Wider Objective

Enhancement of the role of Higher Education Institutions in ensuring sustainable development of industry and society, support of national "green policies" in Partner Countries and promotion of "green culture" by means of Lifelong Learning

## Specific Project Objectives

- Development of modules to foster green skills for different target groups and qualifications levels
- Enhancement of access of target groups to open education resources, promotion of LLL
- Enhancement of green culture and continuing education through training of teaching staff, external stakeholders and public administration

## Expected Outputs and Outcomes:

- Analysis of "green policies and practices" in European Union and in Partner Countries
- Green Open Education Resources (OER) Repository and Network
- Green Training Centers (GTC) in Partner Countries
- Green Training Modules (GTM) for Ecology, Food Sector and Land Management

## Project's characteristic features

- Green skills will be promoted among different types of learners through lifelong learning channels and using new IT possibilities, starting from results of previous projects concerning curriculum development and sectoral qualifications frameworks for three complementary subject areas conditioning better quality of life (ecology, food sciences and land management).
- Fostering green skills improves quality of courses and positively influences qualifications framework descriptors. We have thus "the flywheel effect": educators gain momentum from a model for continuous improvement.

## Project's characteristic features

- A systemic approach based on "complex adaptive systems" methodology will be used. It will give theoretical framework for designing, testing and putting into motion "self-organization" mechanisms within the consortium and support feedback mechanisms between the project and its environment.

## Project's characteristic features

- Project's activities and outcomes will have anticipatory character, preparing target groups for future challenges and demands.
- Although various “green agendas” are present in public space, at the level of both education providers and labour market agents the awareness of the importance of sustainable development and of future needs for green skills and green jobs is still not too visible.
- Raising this consciousness shall lead to increased self-reflection on the responsibility for the future of our society.

## Some Topics for Analysis:

**„Quintuple Helix” for Green Skills – synergy at local level („smart city” concept and practice)**

- Three domains (food, ecology, land management)
- Seven countries {PT, IE, AT, PL, SE} & RU & KZ
- Sixteen cities

**-Similarities and Differences**  
**-Common Denominators?**

Thank you very much  
for your attention!

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