

# Open Innovation System Theory Approach

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# Introduction

## *Motivation and Introduction:*

- Open Innovation (OI)[Che03]
- System Theory [von09], Selforganisational Theory [Ash62; Göt06], System Design [Man], Synergetics [Hak04]

## *Aim and goal:*

- Meta-System view on/of *Open Innovation Systems*
- Axiomatisation and Explanation of Open Innovation  
→ further development

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# Open Innovation System Theory Approach

## Open Closed Innovation I

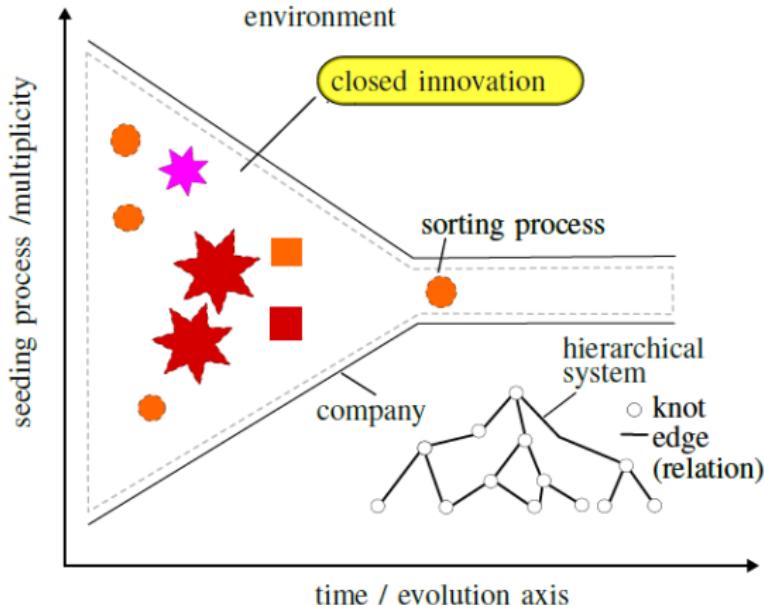


Figure 1: Closed Innovation

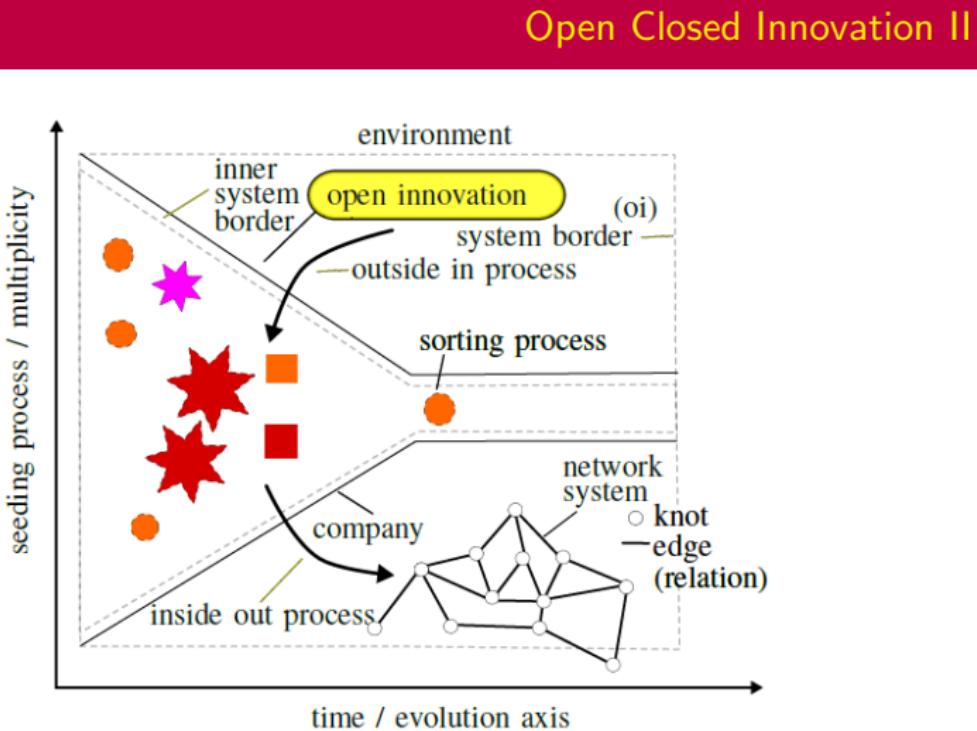


Figure 2: Open Innovation

*Order Relations:***Axiom 1**

$$o(OI) > o(CI),$$

**Axiom 2**

$$o(OI\uparrow) > o(CI\uparrow),$$

**Axiom 3**

$$rt_i(OI) \gg rt_i(CI).$$

## Stability Relations:

### Axiom 4

**The PoS functionality specification must be clearly and explicitly defined (object functionality description).**

### Axiom 5

**The PoS real (physical, chemical, etc.) specification has to be defined clearly (explicitly) (object description).**

### Axiom 6

**PoS functionalities shall be separated, e.g., by modularisation so that the functions can be fulfilled independently and the interactions go towards zero.**

## Axiom 7

**The observation of a PoS system defines the system's state and allows for systematic improvement by means of its data evaluation.**

*One meta-relation:*

## Axiom 8

**Long-living systems are "enslaving", dominating or outperforming short-living systems.**

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<sup>1</sup>see also [Hak04]

## Example of One OI Method I

*Lead User Method:*

Lead User  $L_1$ , Company  $C_1$ , Products or Services (PoS)

*Order Relations:***Axiom-lu 1**

$$o(L_1 \cap C_1) > o(C_1).$$

**Axiom-lu 2**

$$o[(L_1 \cap C_1) \uparrow] > o[(C_1) \uparrow].$$

**Axiom-lu 3**

$$rt_i(L_1 \cap C_1) \gg rt_i(C_1).$$

## Example of One OI Method II

### *Stability Relations:*

#### Axiom-Iu 4

*Regarding the to be sold product,  $L_1$  gives the direction from the market and its functionality.*

#### Axiom-Iu 5

*The company  $C_1$  gives the direction, as this company has the lead in the OI process, especially in the structure generation or production process accompanied by the latest production knowledge process or know-how.*

## Example of One OI Method III

### Axiom-Iu 6

*The modularisation by  $C_1$  of the PoS function (induced by  $L_1$ ) is part of the production and especially then effective concerning the mass production process, and an increased life-cycle because of increased potential stability, especially for error detection and elimination.*

### Axiom-Iu 7

*The aggregation of functions generates a higher value, which is an effect of a mass-produced system with many world applications.*

## Example of One OI Method IV

*One meta-relation:*

### Axiom-Iu 8

*The enhanced PoS quality leads to a, compared to CI, longer lifetime and by this a long-living property of the developed PoS.*

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## Conclusion and Outlook

# Conclusion and Outlook I

## Conclusion:

- Meta-Perspective of Open Innovation (OI)
- 8 Axioms
  - 3 Order/Growth (diverging),
  - 4 Stability (converging), and
  - 1 Synergetic (both)
- Application example to show how to apply new systematic

## Outlook:

- Explain with this method new OI-systems
- Develop new types of OI-methods
- Develop system application apart from OI as it is a generic systemic tool

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# Thank you cordially for your attention!



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PS.: The presentation can also be found at:  
<http://www.dr-heiden.com/Vortraege.htm>



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