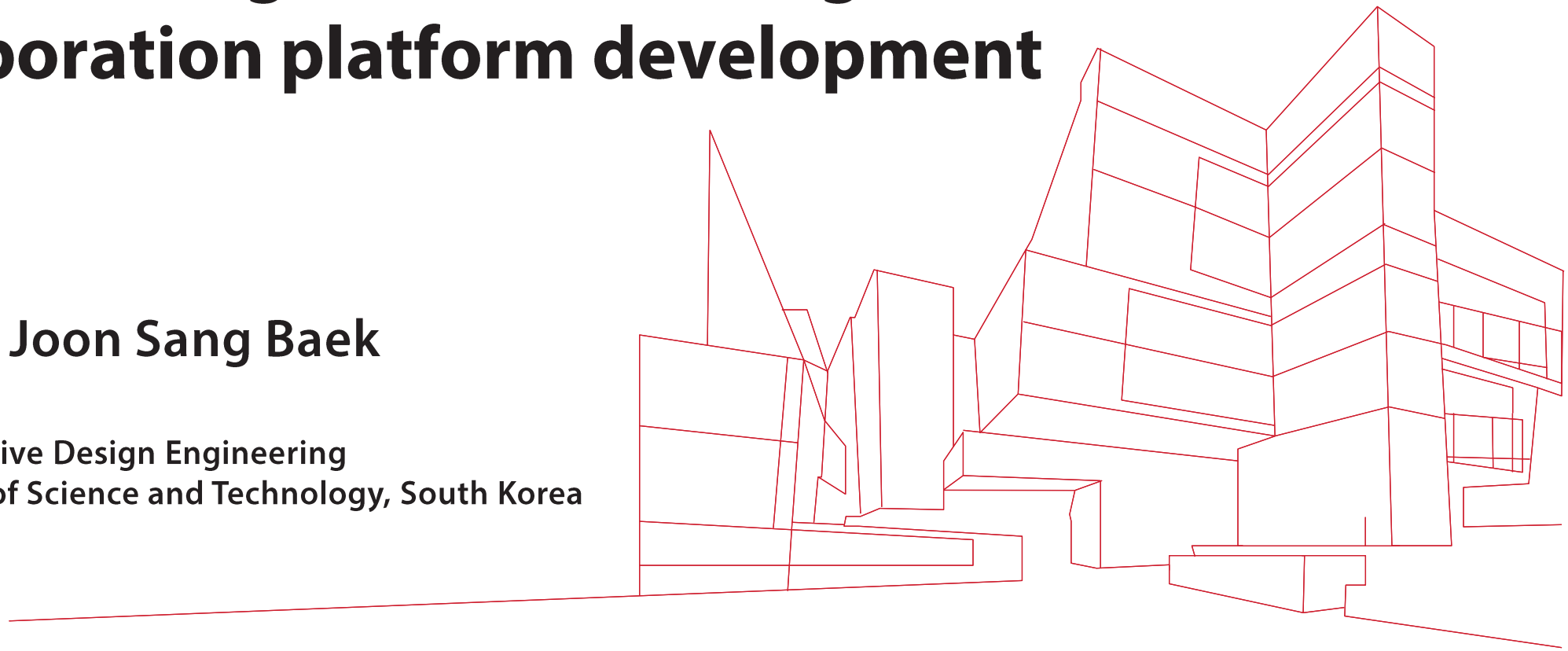
Ulsan, South Korea

Nature-inspired organizational design framework for open collaboration platform development



Sojung Kim and Joon Sang Baek

Graduate School of Creative Design Engineering
Ulsan National Institute of Science and Technology, South Korea

Introduction

What is Open collaboration?

- Open collaboration is a generalized concept embracing open innovation, crowdsourcing and other similar phenomena (Levine and Prietula, 2013)

- Open collaboration: a collective production of an artifact through a technologically mediated collaboration platform that presents a low barrier to entry and exit and supports the emergence of persistent but malleable social structures (Forte & Lampe, 2013)

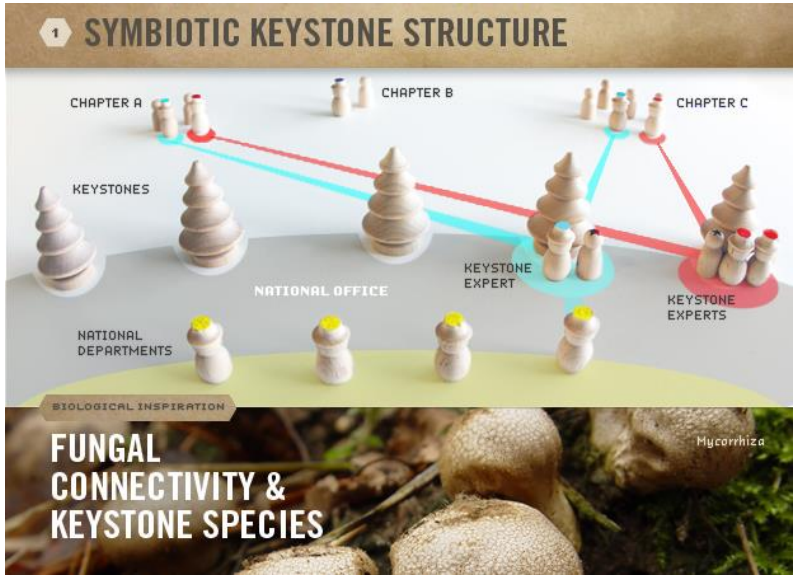
- Autonomous actors
  - ▶ New ways to allocate resources, tasks and decision-making power are required (Baldwin, 2012)

- A desirable organizational design for open collaboration requires certain environmental conditions for collaborative and communication activities

Introduction

IDEO

Trees = Branch office
Fungi = National office



Walker (2010)

Capital One

Simple rules of social insects

4 basic guidelines for employees
- Keep the company's goals in mind
- Spend the money like it's your own
- Be flexible
- Have empathy for others in the company

Better performance
Low employee turnover rate

Bonabeauand Meyer (2001)

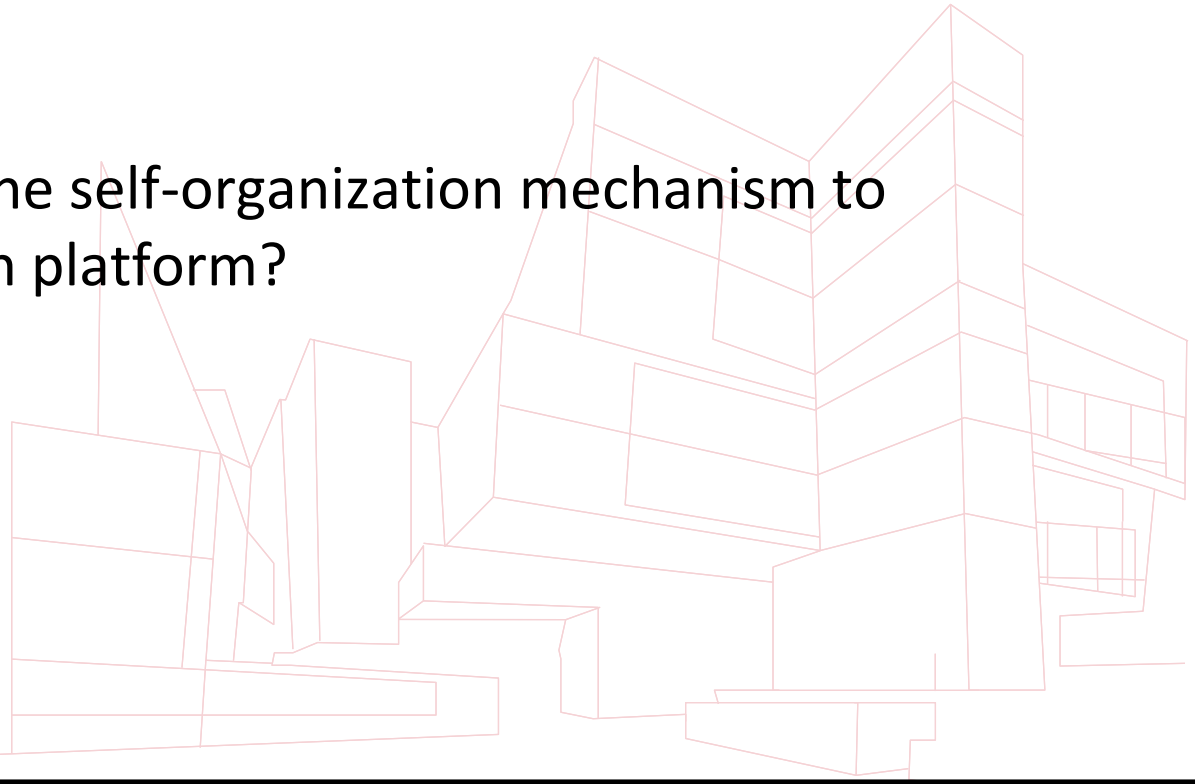
Introduction

“Self-organization of social insects”

Research Questions

(1) How do we apply the mechanism of self-organization to organizational design for an open collaboration platform?

(2) How can designers contribute to applying the self-organization mechanism to organizational design for an open collaboration platform?



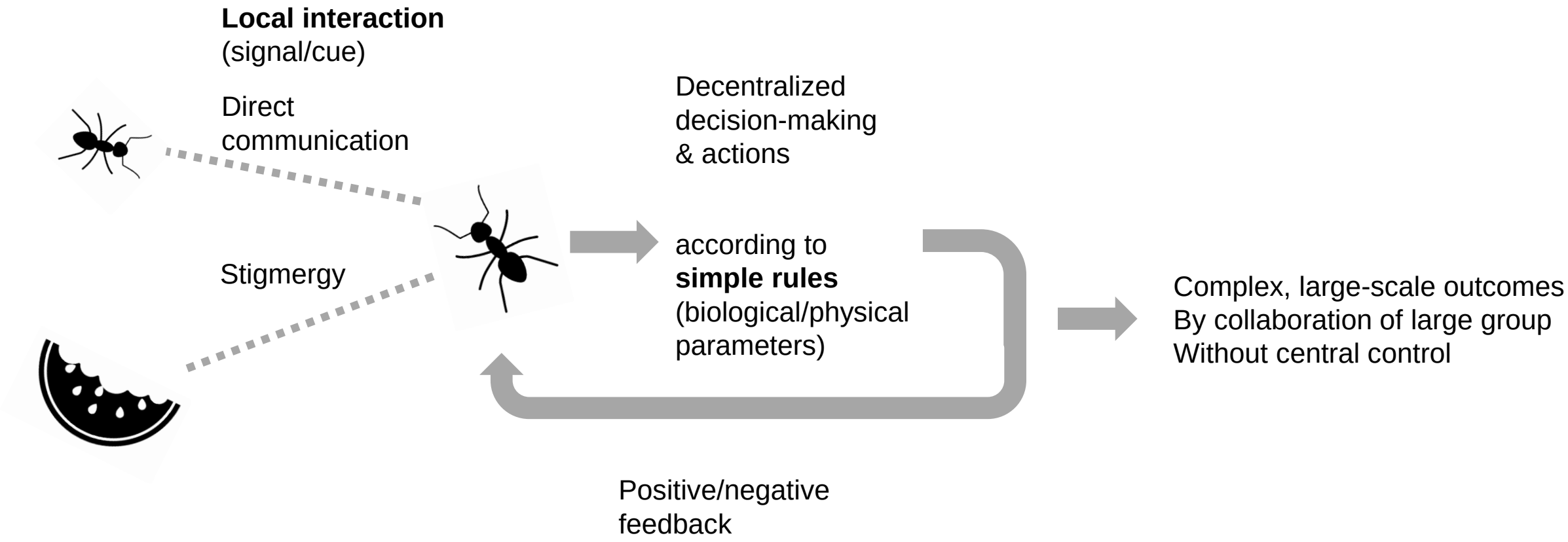
Research Methods

Literature review → Design method development → Platform development → Verification

Organization design for open collaboration + Self-organization

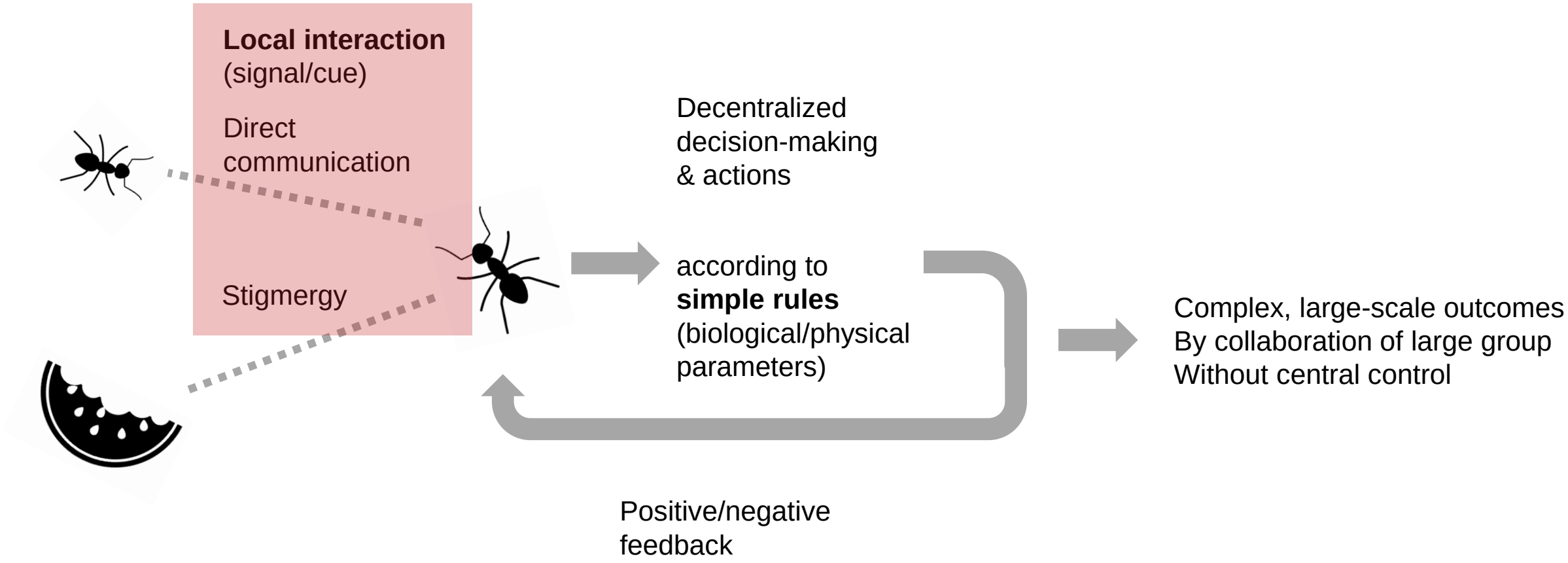
Framework

Mechanism of Self-organization



Camazine (2003)

Mechanism of Self-organization



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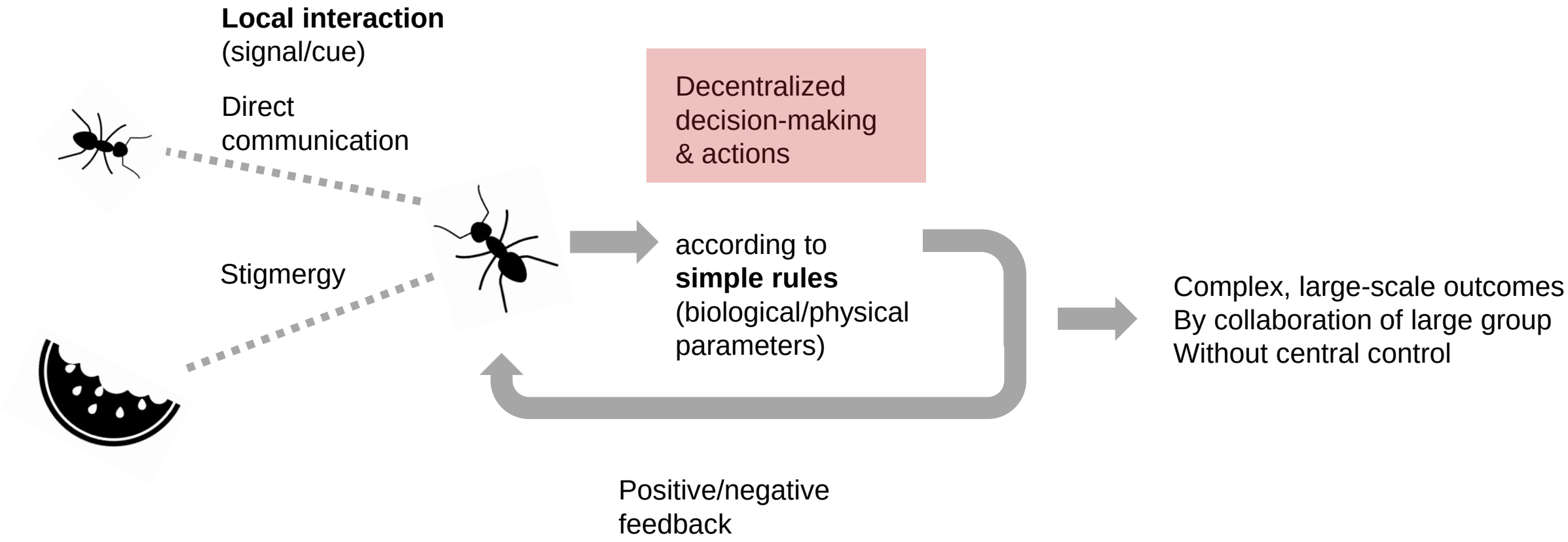
Mechanism of Self-organization



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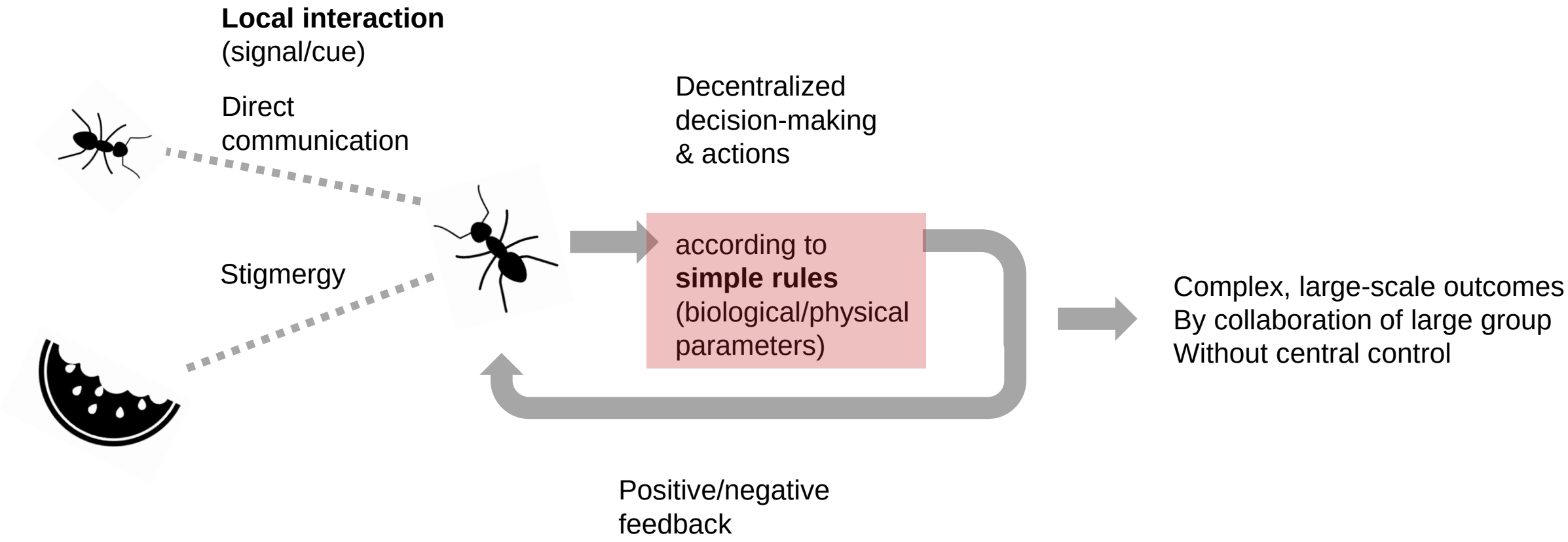

Camazine (2003)

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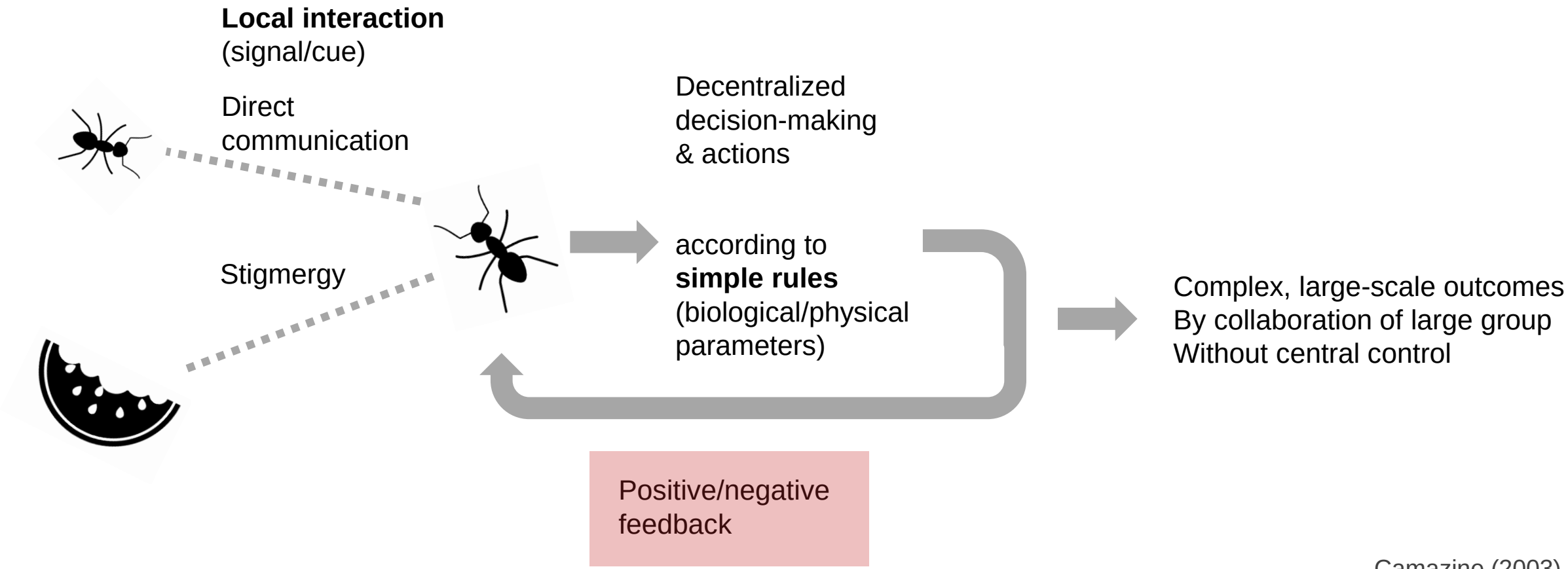
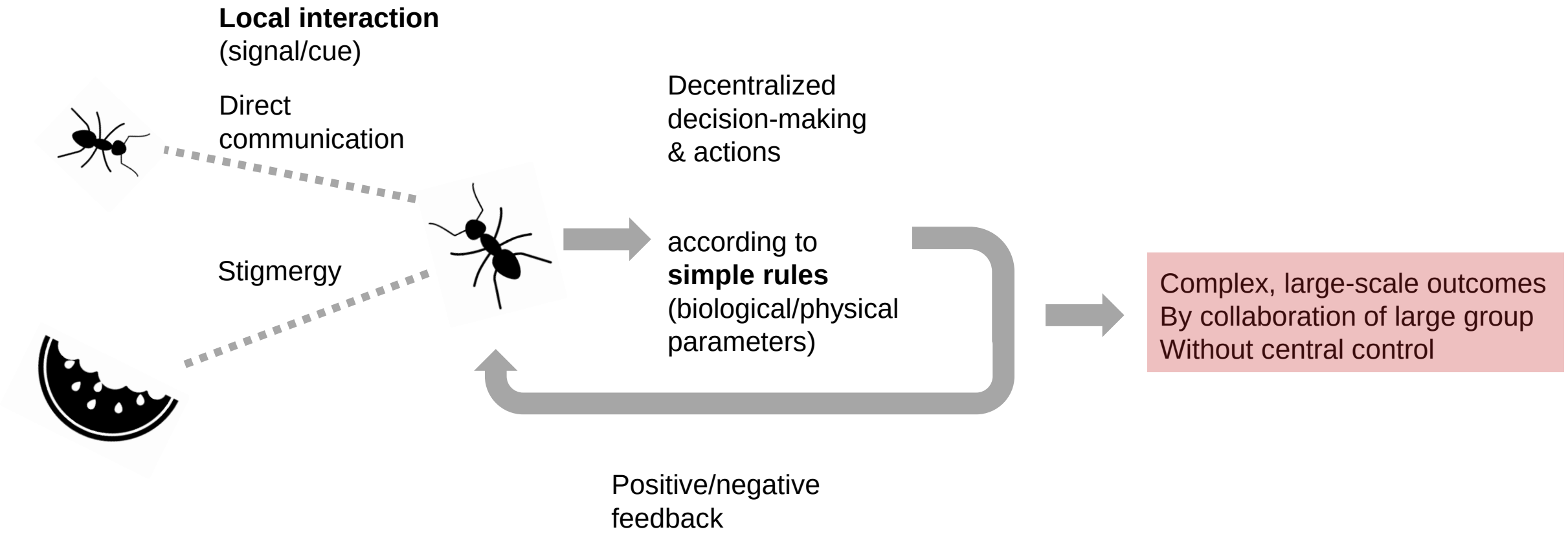


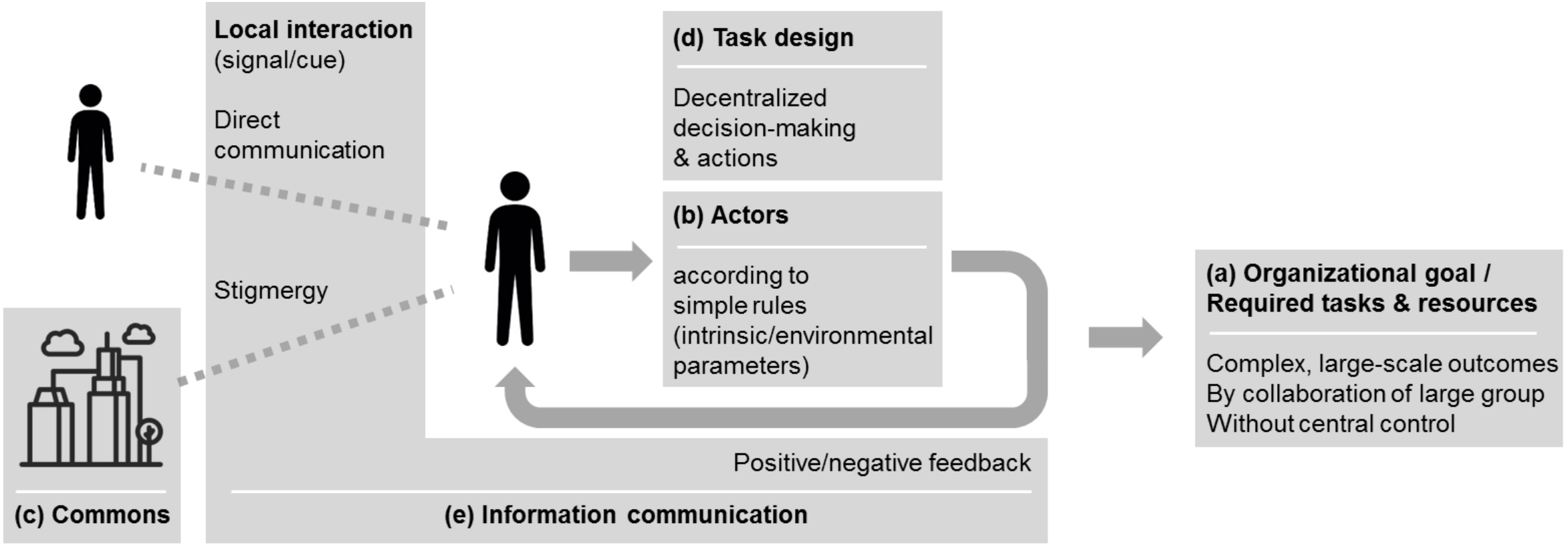
Camazine (2003)

Mechanism of Self-organization



Camazine (2003)

An Organizational Design Framework for Open Collaboration



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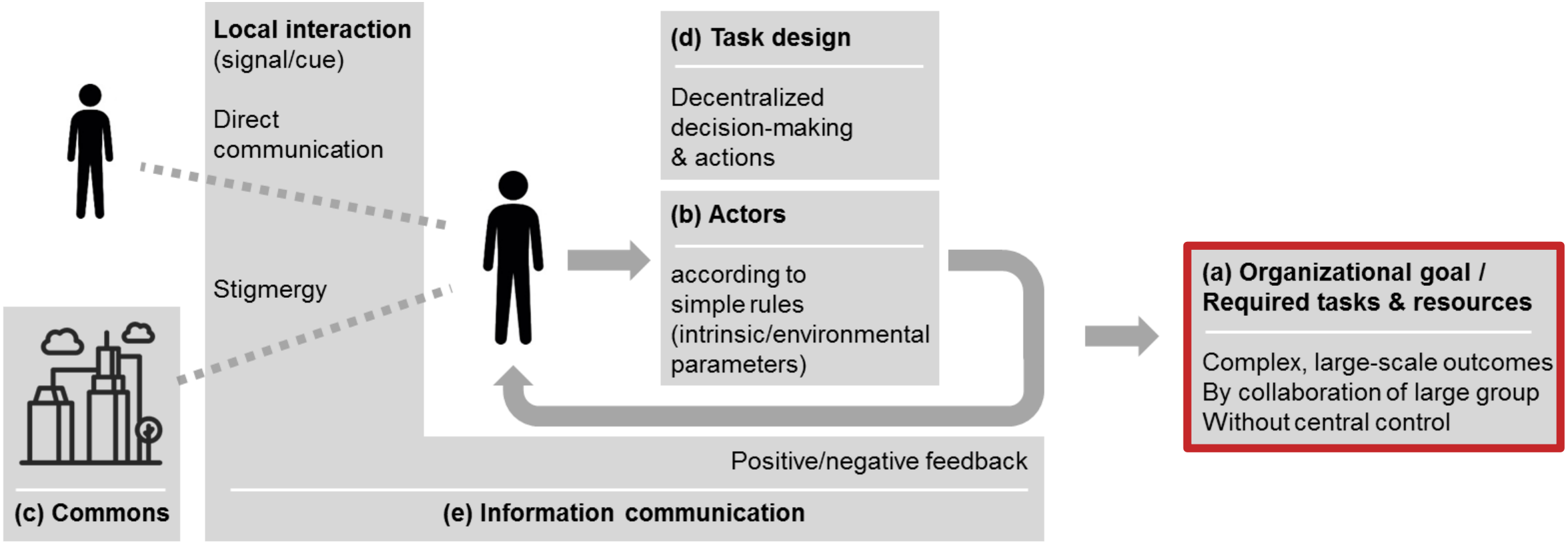

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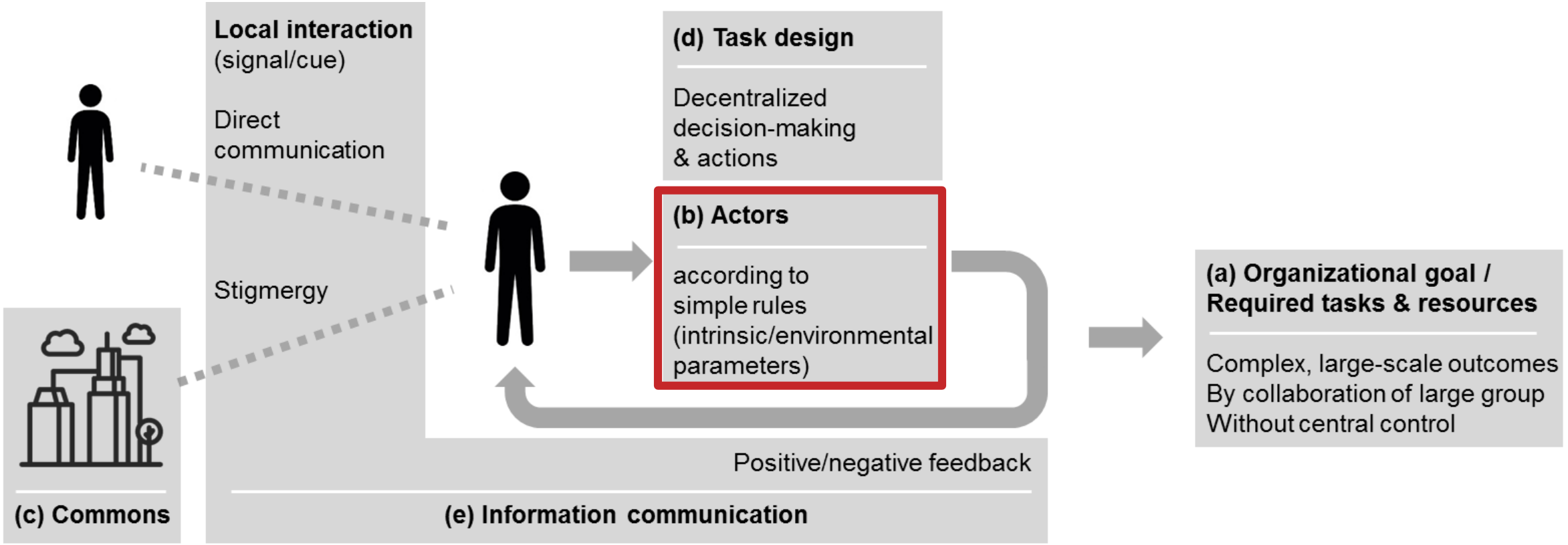

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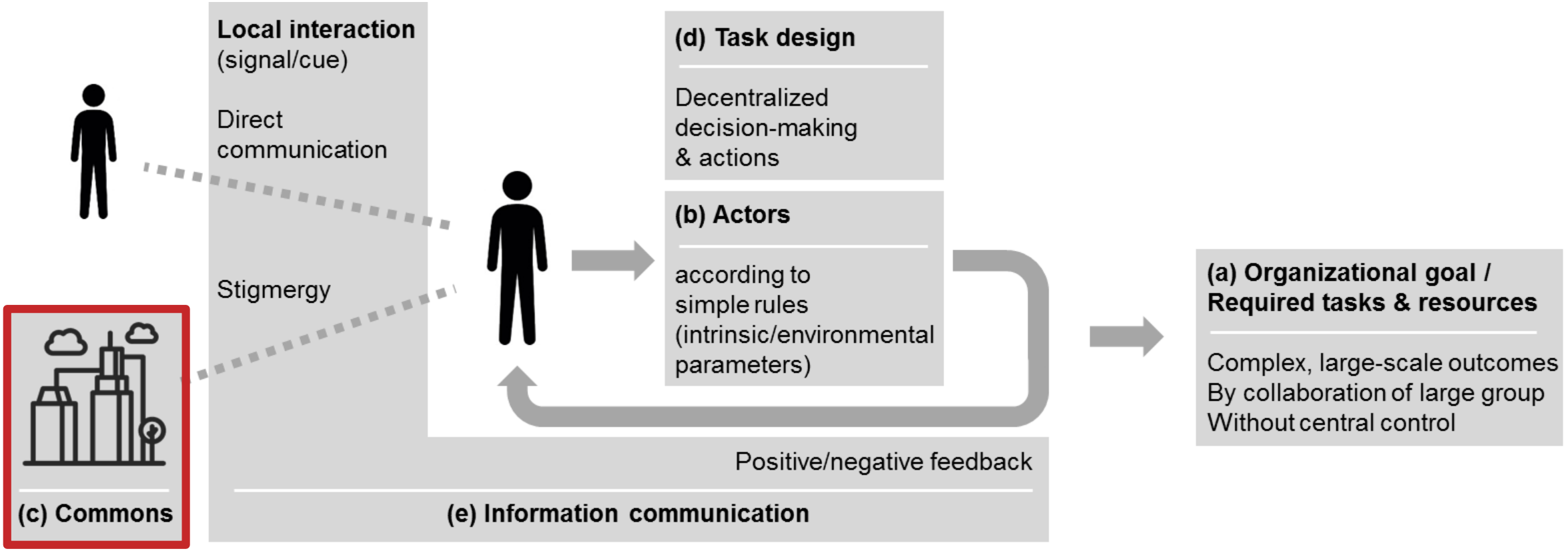

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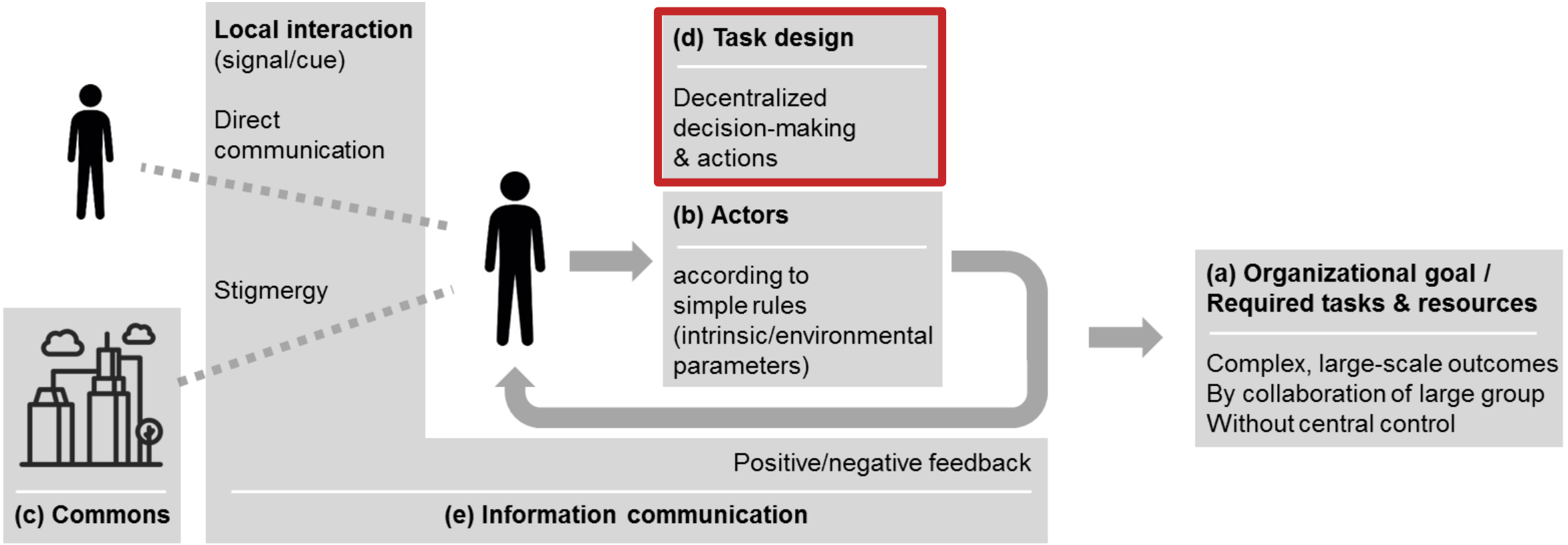

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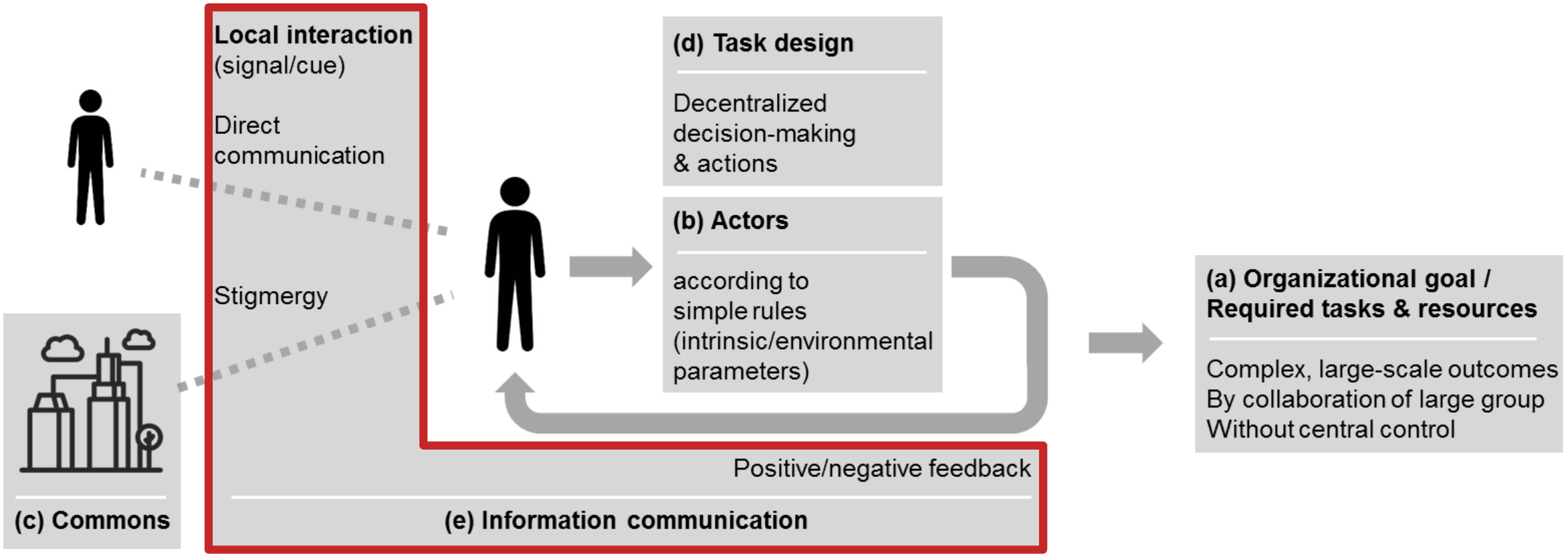

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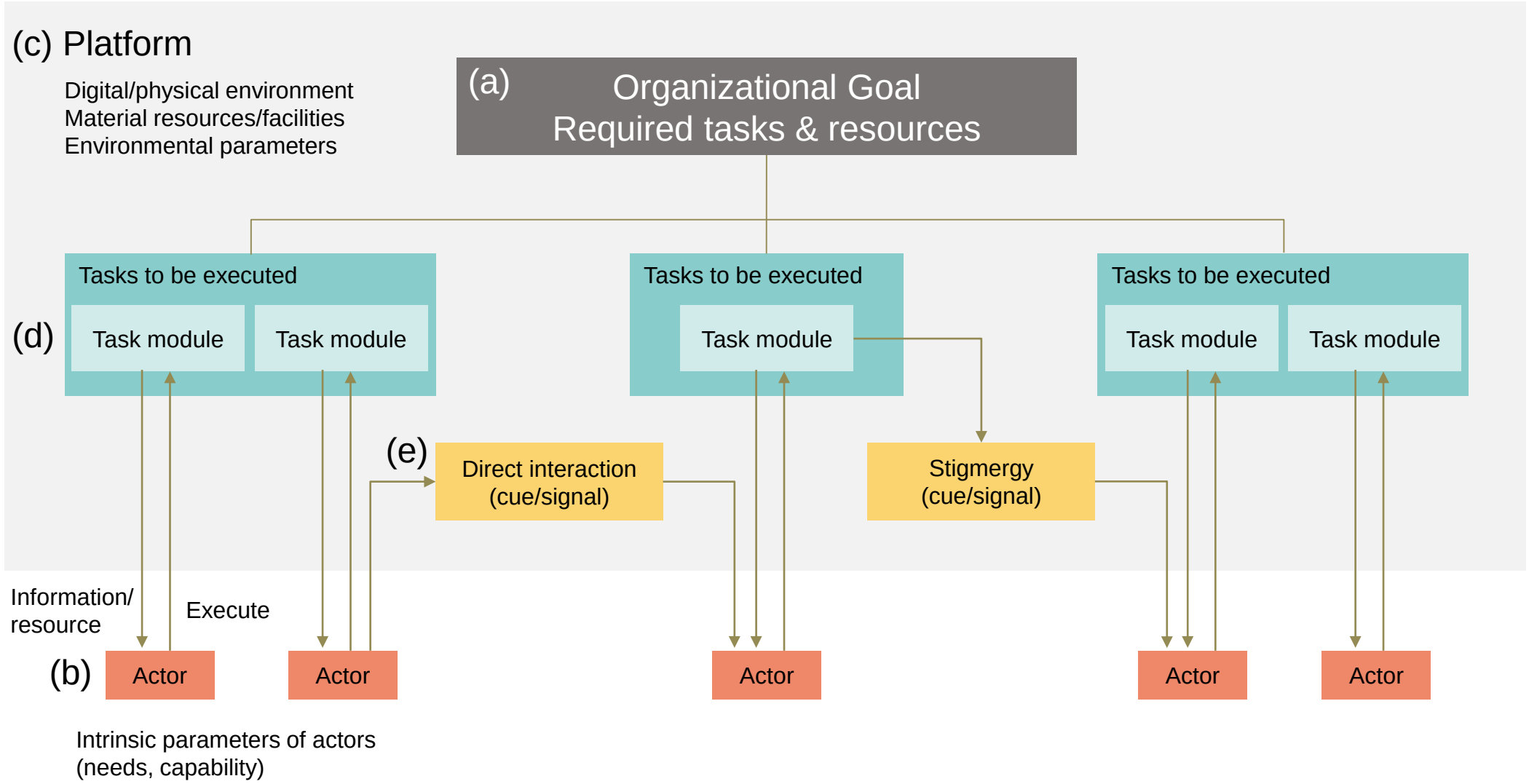
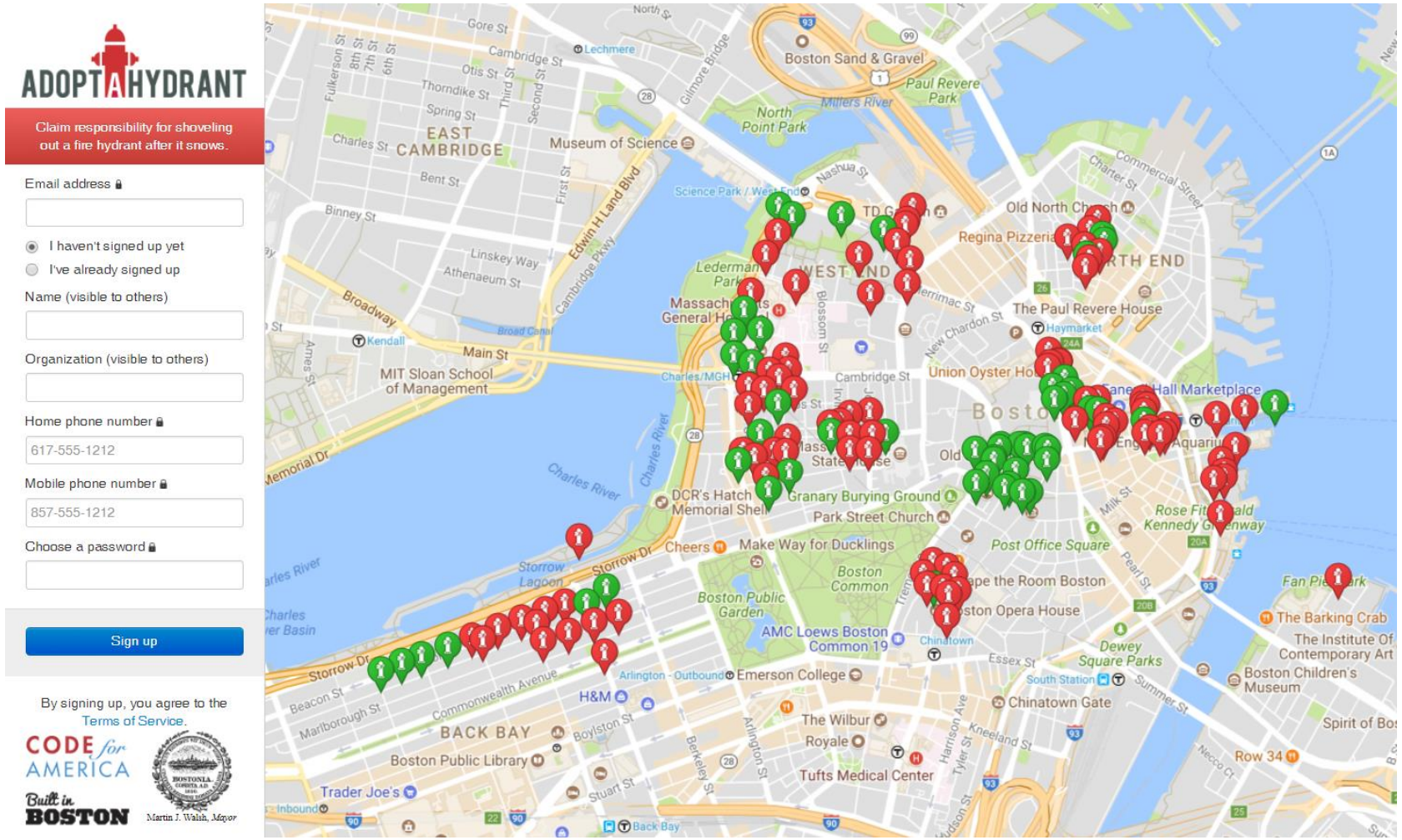
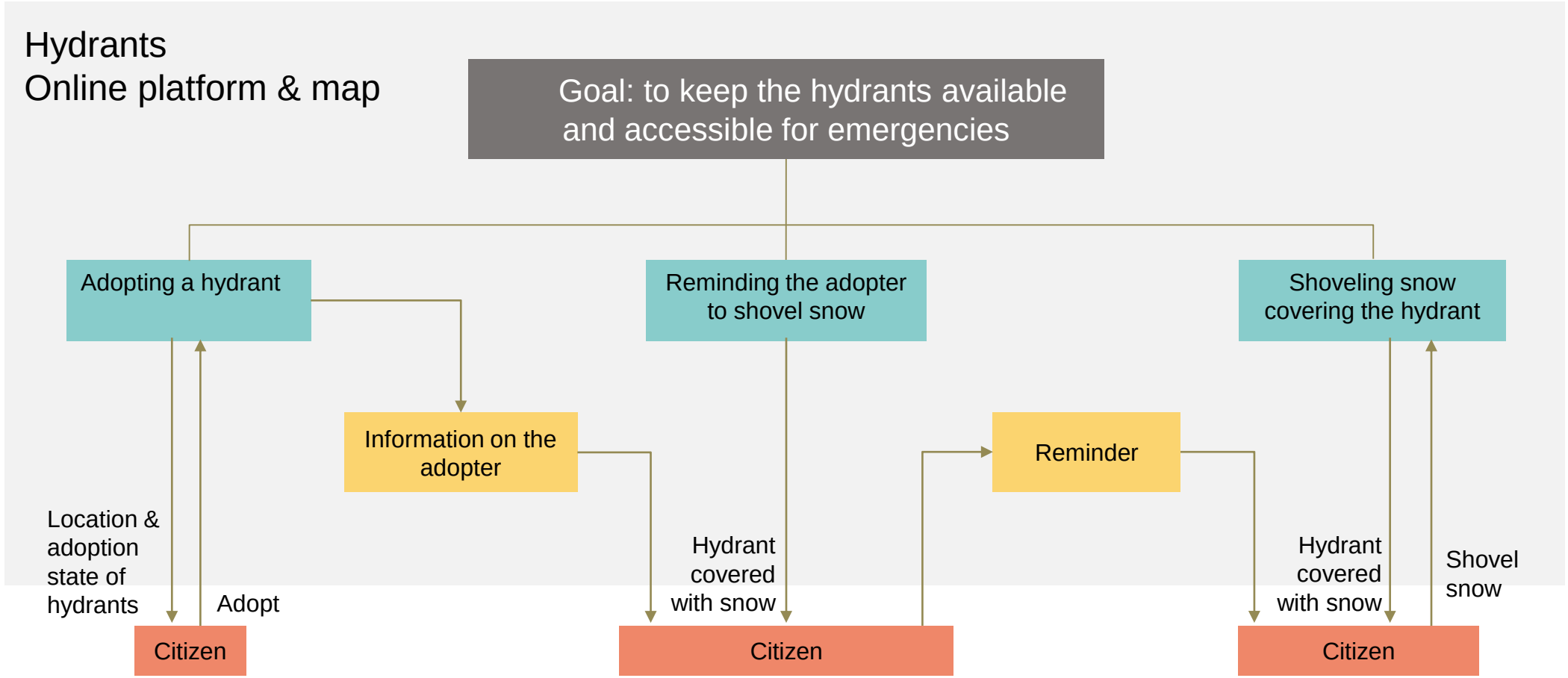


Analysis of an Existing Platform Using the Framework



Analysis of an Existing Platform Using the Framework



Limitation: lack of elements to facilitate positive feedback (competition among districts, invitation of neighbors)

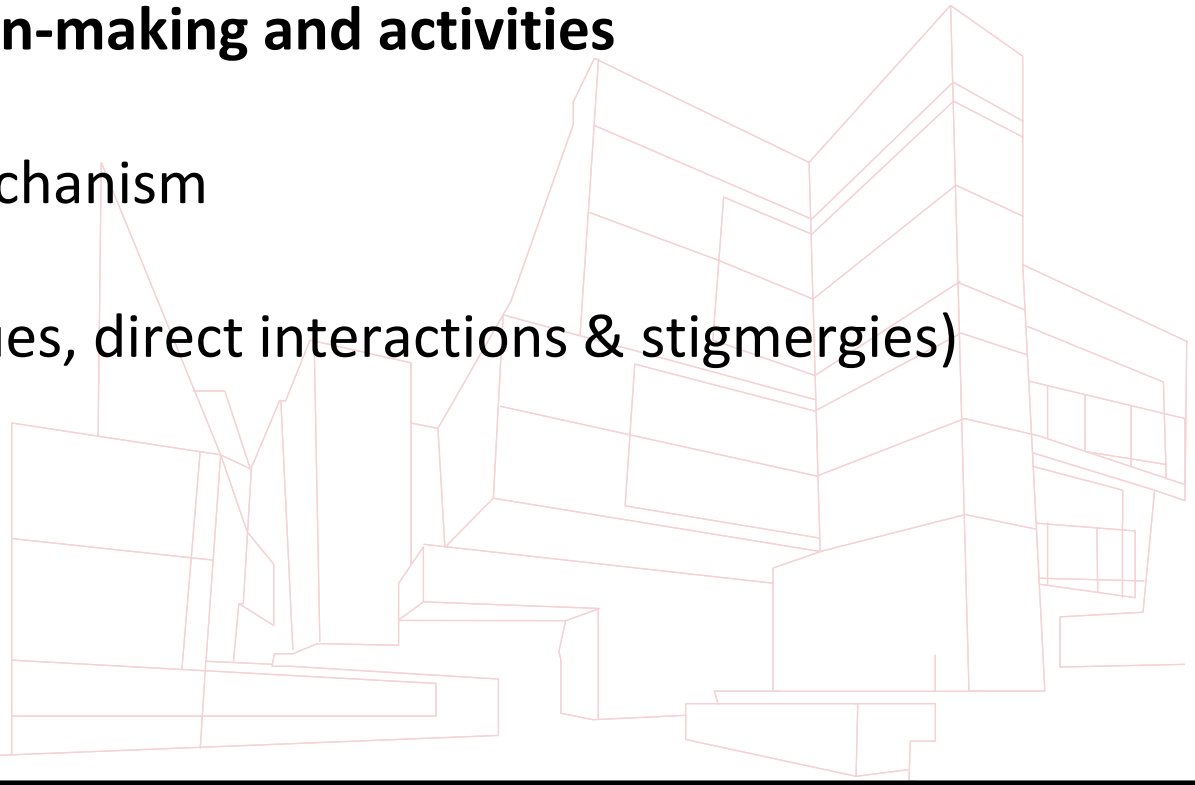
Discussion

(1) Application of the self-organization mechanism to organizational design

Similarities between self-organization and open collaboration: achieving goals through **indirect control** based on **autonomous decision-making and activities**

Useful concepts from the self-organization mechanism

- Intrinsic attributes of actors
- Diverse communication modes (signals & cues, direct interactions & stigmergies)
- Positive/negative feedback



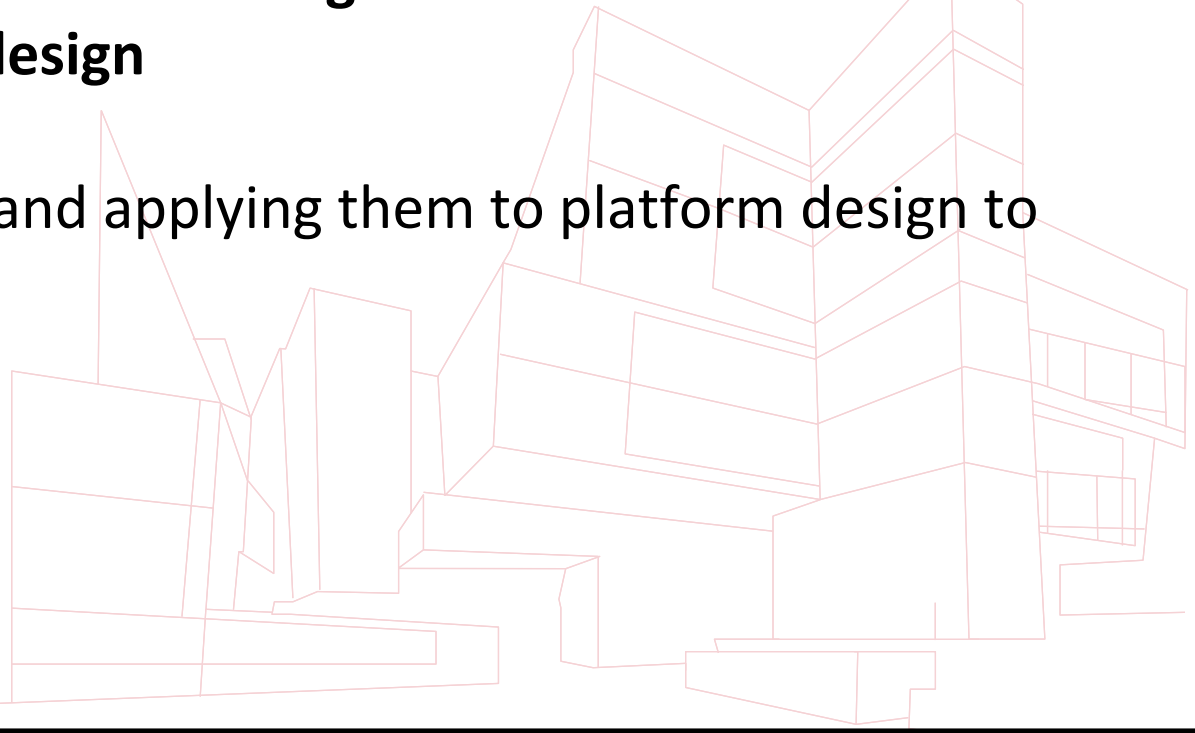
Discussion

(2) Role of designers in organizational design

Designing environment (platform) for open collaboration

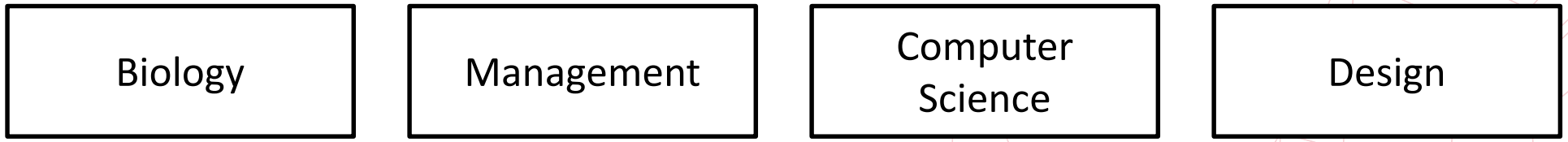
- Providing novel perspective and approach to **derive design directions** from natural principles and **apply them to organization design**

- Analyzing **intrinsic characteristics** of actors and applying them to platform design to induce participation and collaboration



Conclusion

- Potential of the framework as a guideline for the platform design approach
- Potential of interdisciplinary collaboration to promote innovation



- Future work: empirical validation through practical application

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Thank you

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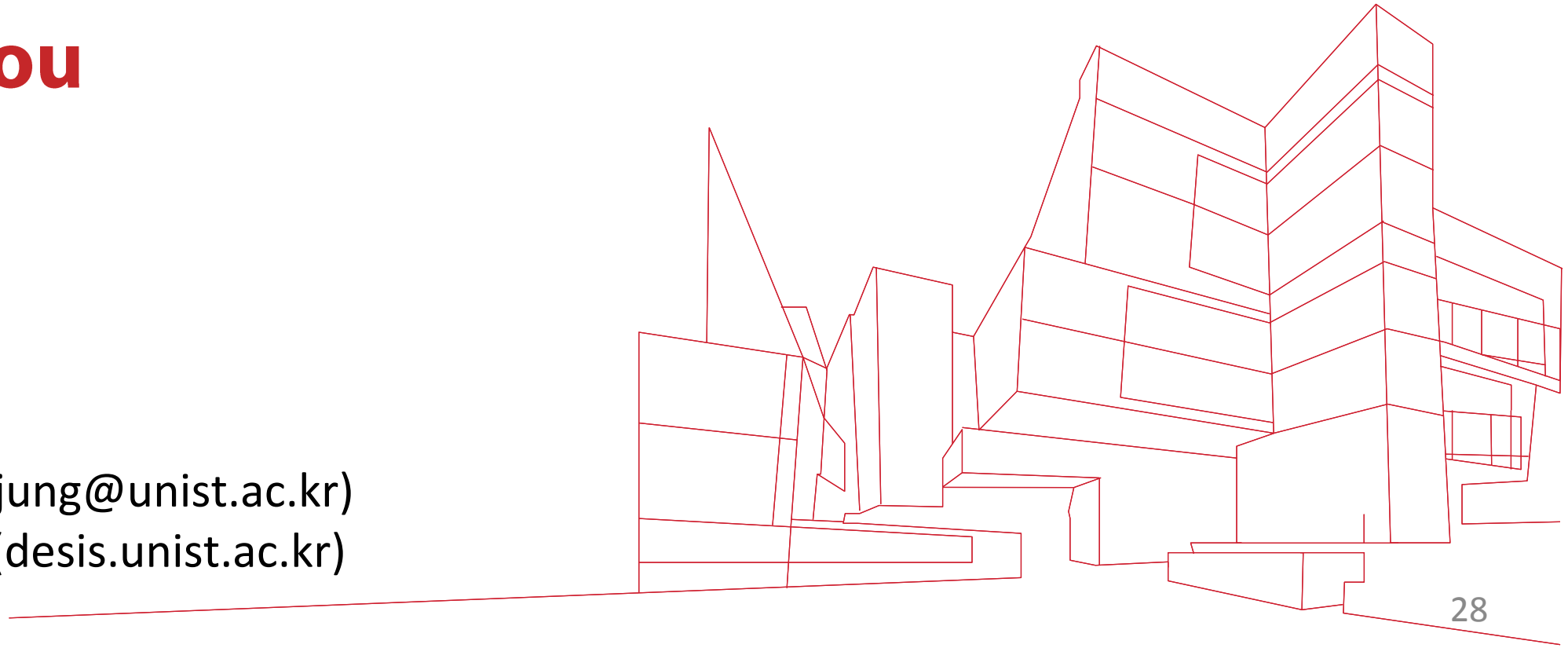
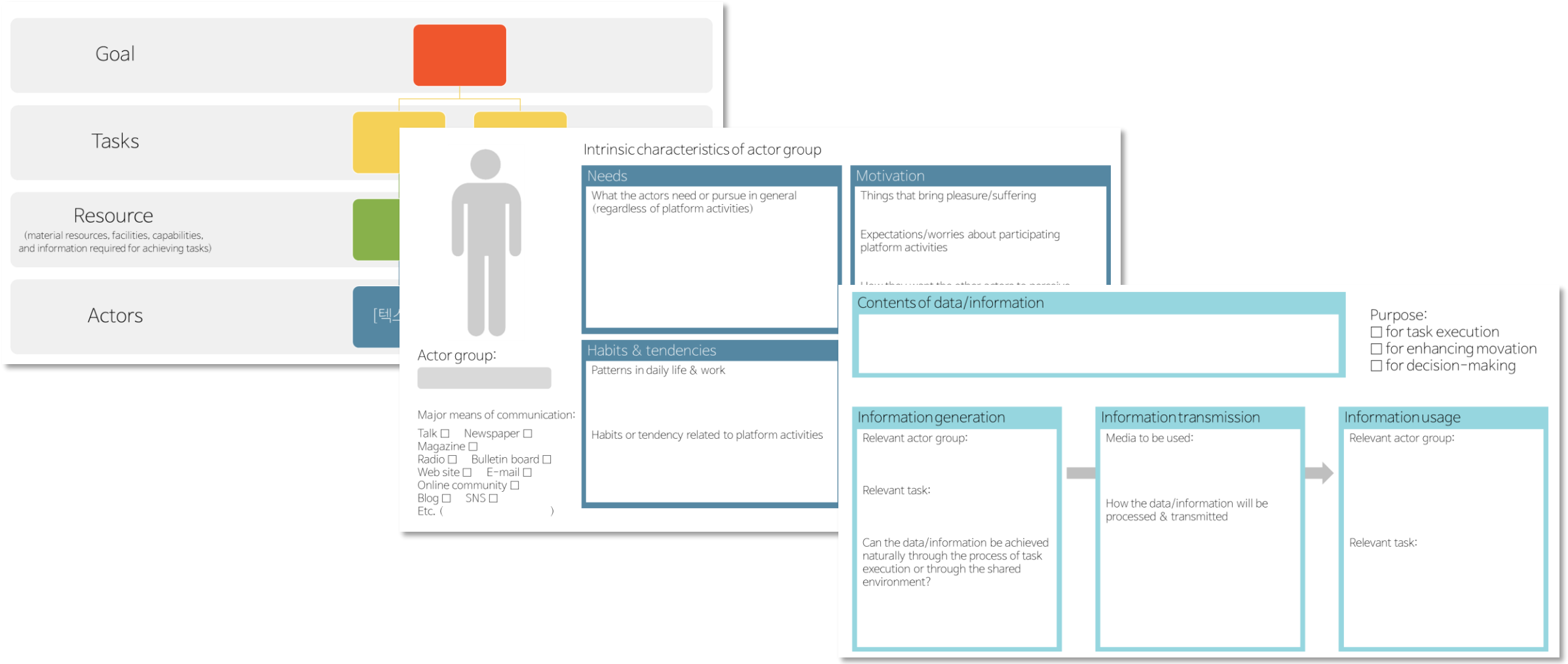


Open Collaboration Platform Design Tools



Organization Design for Open Collaboration

Meta-organization design (Gulati 2012)	Actor-oriented organizational scheme (Fjeldstad et al. 2012)	The principles or organization design for business ecosystems (Baldwin 2012)	Task and knowledge contingencies (Lakhani et al. 2013)	Design principles for organizing distributed innovation (Kornberger 2016)
Permeability of boundaries Degree of stratification	Actor Commons Protocol / processes / infrastructures	The number of for-profit owners of the core components Proprietorship of core components	Task decomposition Problem-solving knowledge distribution	Interface design Architectures of participation Evaluative infrastructure

Hierarchical structure: direct control of employees
Open collaboration: through spontaneous action of external participants

Approach to provide an **environment** proper for communication, decision-making and collaboration

Organizational design issues within the framework

	Meta-organizational design (Gulati, 2012)	Actor-oriented organizational scheme (Fjeldstad et al., 2012)	The principles or organizational design for business ecosystems (Baldwin, 2012)	Task and knowledge contingencies (Lakhani et al., 2013)	Design principles for organizing distributed innovation (Kornberger, 2016)
(a) Organizational goal / Required tasks & resources				Task decomposition Problem-solving knowledge distribution	
(b) Actors	Permeability of boundaries Degree of stratification	Actors	The number of for-profit owners of the core components		
(c) Commons		Commons	Proprietorship of core components		
(d) Task design		Protocol/processes/ infrastructures			Architectures of participation
(e) Information communication					Interface design Evaluative infrastructure

Open Collaboration

	Open innovation	Crowdsourcing	Open collaboration
Schenk and Guittard (2011)	Open innovation focuses on the **innovation processes** and **interactions between firms**	Crowdsourcing addresses the broader application scope of the **relationship between a firm and the crowd**	-
Estellés-Arolas & González-Ladrón-De-Guevara (2012)	Crowdsourcing is **a process** to facilitate open innovation		-
Seltzer & Mahmoudi (2012)	Crowdsourcing is **a technique** to facilitate open innovation		-
De Vreede et al. (2013)	-	Open collaboration is one of the three types of crowdsourcing. Different from the other two types which encourage competition among the participants, **a solution is synthesized** through the collaboration of participants in an open collaboration.	
Forte & Lampe (2013)	-	Tasks are conducted **without interaction** between the workers in crowdsourcing	Open collaboration facilitates **social interaction and collaboration** between participants
Levine and Prietula (2013)	Open collaboration is **a generalized concept** embracing open innovation, crowdsourcing and other similar phenomena		

Introduction

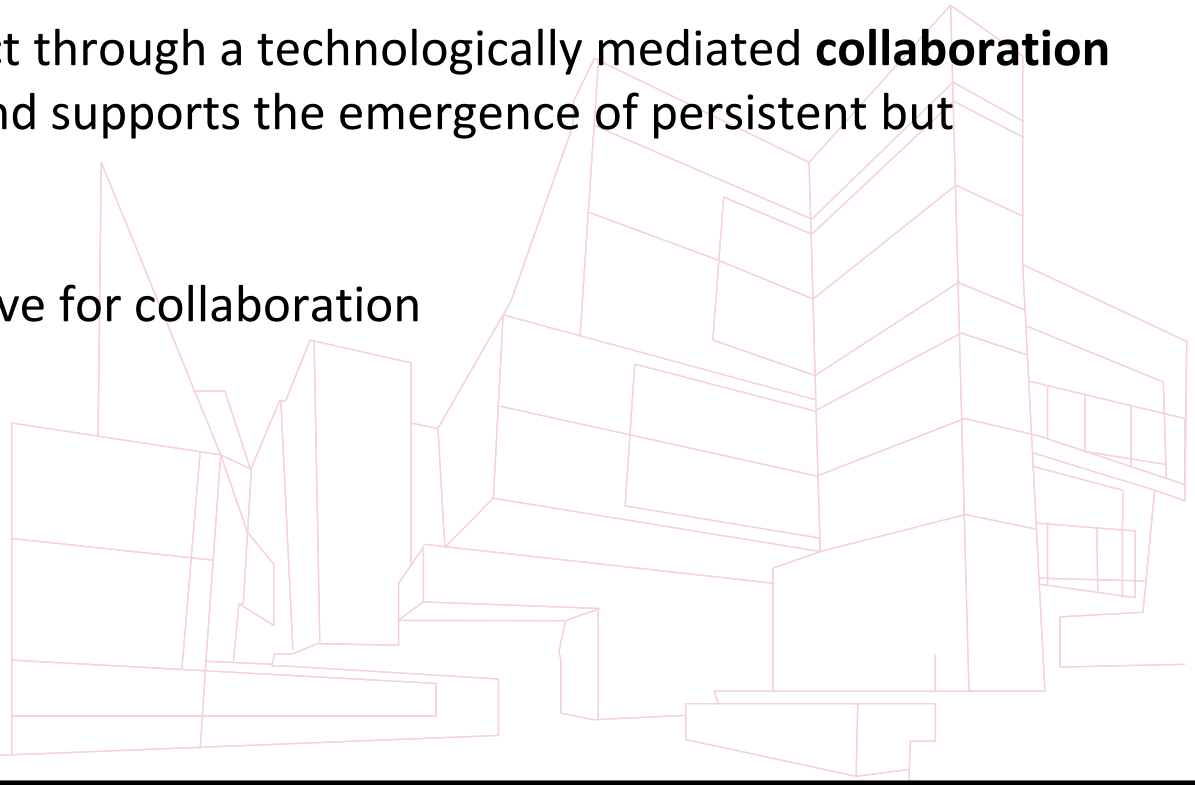
Open innovation & crowdsourcing strategies to tackle Complicated social & environmental problems

Involvement of stakeholders (citizen) - understanding problems & generating ideas in daily life

open collaboration: a collective production of an artifact through a technologically mediated **collaboration platform** that presents a low barrier to entry and exit and supports the emergence of persistent but malleable social structures

Designing platforms attractive for the crowd and effective for collaboration

- contribution to social innovation

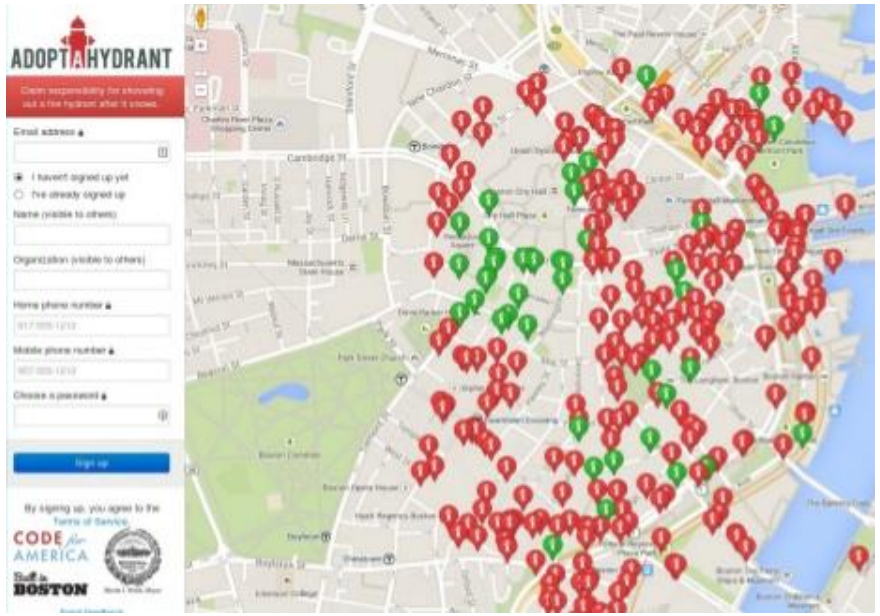


Organizational Design for Open Collaboration

Source	Elements of Organizational Design for Open Collaboration
Meta-organizational design (Gulati, 2012)	Permeability of boundaries
	Degree of stratification
Actor-oriented organizational scheme (Fjeldstad et al., 2012)	Actors
	Commons
	Protocol/processes/infrastructures
The principles or organizational design for business ecosystems (Baldwin, 2012)	Proprietorship of core components
	The number of for-profit owners of the core components
Task and knowledge c ontingencies (Lakhani et al., 2013)	Task decomposition
	Problem-solving knowledge distribution
Design principles for organizing distributed innovation (Kornberger, 2016)	Interface design
	Architectures of participation
	Evaluative infrastructure

A desirable organizational design for open collaboration necessitates certain **environmental conditions** for collaborative and communication activities.

Analysis of an Existing Platform Using the Framework



(a) Organizational goal / Required tasks & resources
Goal: to keep the hydrants available and accessible for emergencies
Tasks: to shovel snow covering the hydrants
Resource: a shovel, the information on hydrants

(b) Actors
Boston citizens

(c) Commons
Hydrants, the online platform & the map

(d) Task design
Adopting & maintaining each hydrant

(e) Information communication
Lack of elements to facilitate positive feedback (competition among districts, invitation of neighbors)