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ROOTS AND USES OF AN EMERGING NOTION IN AGRONOMY: FARMER-DESIGNERS

Lorène PROST, Chloé SALEMBIER, Margot LECLERE, Quentin TOFFOLINI, Jean-Marc MEYNARD
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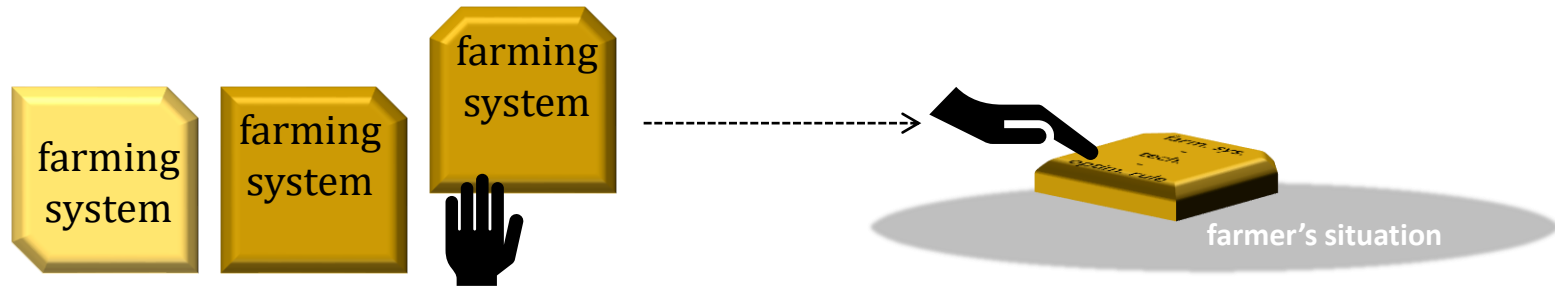


“FARMER-DESIGNERS”

- 1. Why emphasizing the design part in farmers' activity ?**
- 2. What is the design part in farmers' activity ?**
- 3. What implications for agronomists ?**
- 4. Distributed design or multiple design activities in interaction ?**

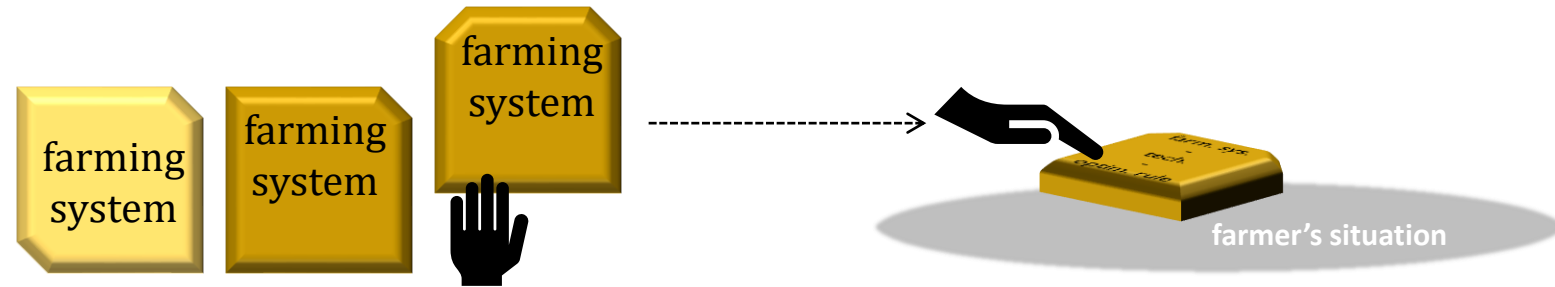
« farmer-designer »: why emphasizing the design part in farmers' activity?

Breaking with the diffusionist idea that best farming systems could be disseminated without local, farmers' led adaptation.



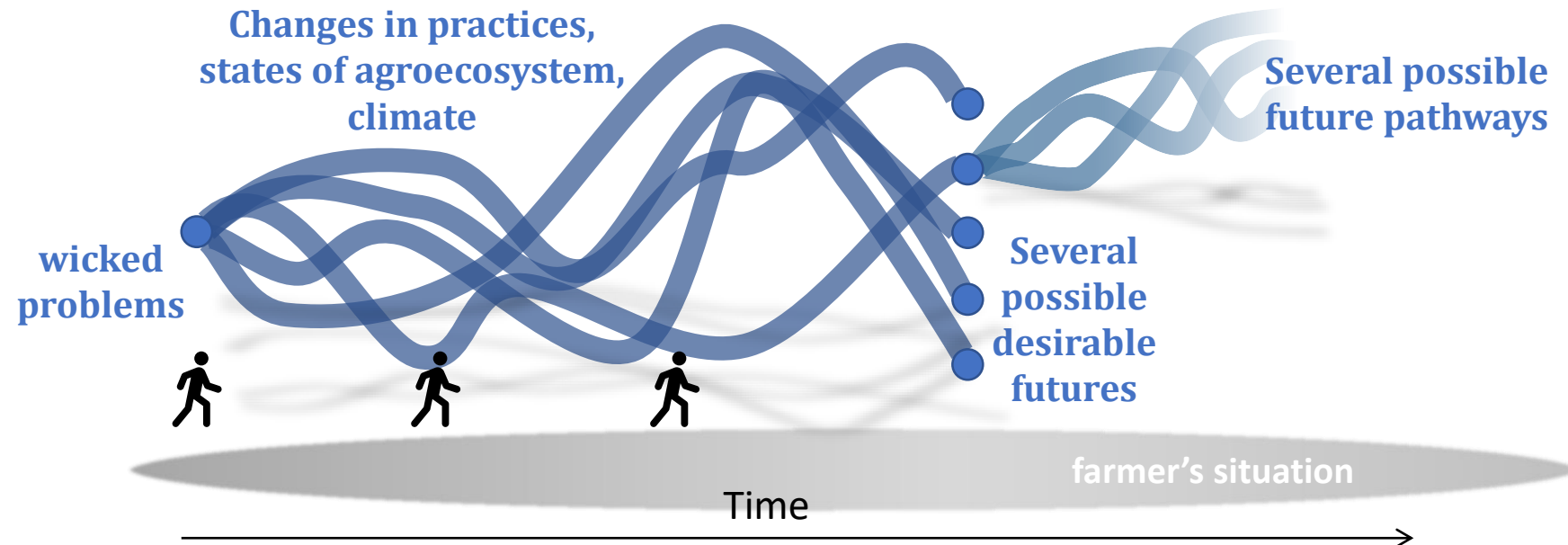
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Agricultural systems and actors face typical innovative design issues :

- > ill-defined directions of transformations required
- > uncertainties, difficulties to define the paths
- > context-dependent and fundamentally unknown



“Design is concerned with *how things ought to be*, with devising *artifacts to attain goals*” (Simon, 1969)
A **desirable and unknown future** + a **transformative** intent (of situations, objects, actions)

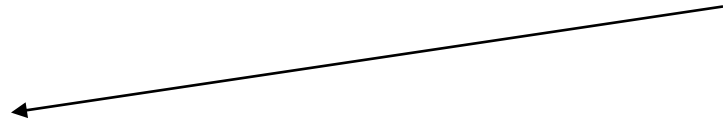
« farmer-designer »: why emphasizing the design part in farmers' activity?

Designing farming systems → dealing with interconnections

- between techniques, or between techniques & socio-institutional contexts
- between scales
- between time steps

(Meynard et al., 2012)

But who designs and how?



Usual design methods for agricultural scientists :

modelling *(e.g. Bergez et al., 2010)*

experimentation *(e.g. Debaeke et al., 2009; Silva and Tchamitchian, 2018)*

prototyping workshops *(e.g. Vereijken, 1997; Jeuffroy et al. 2022)*

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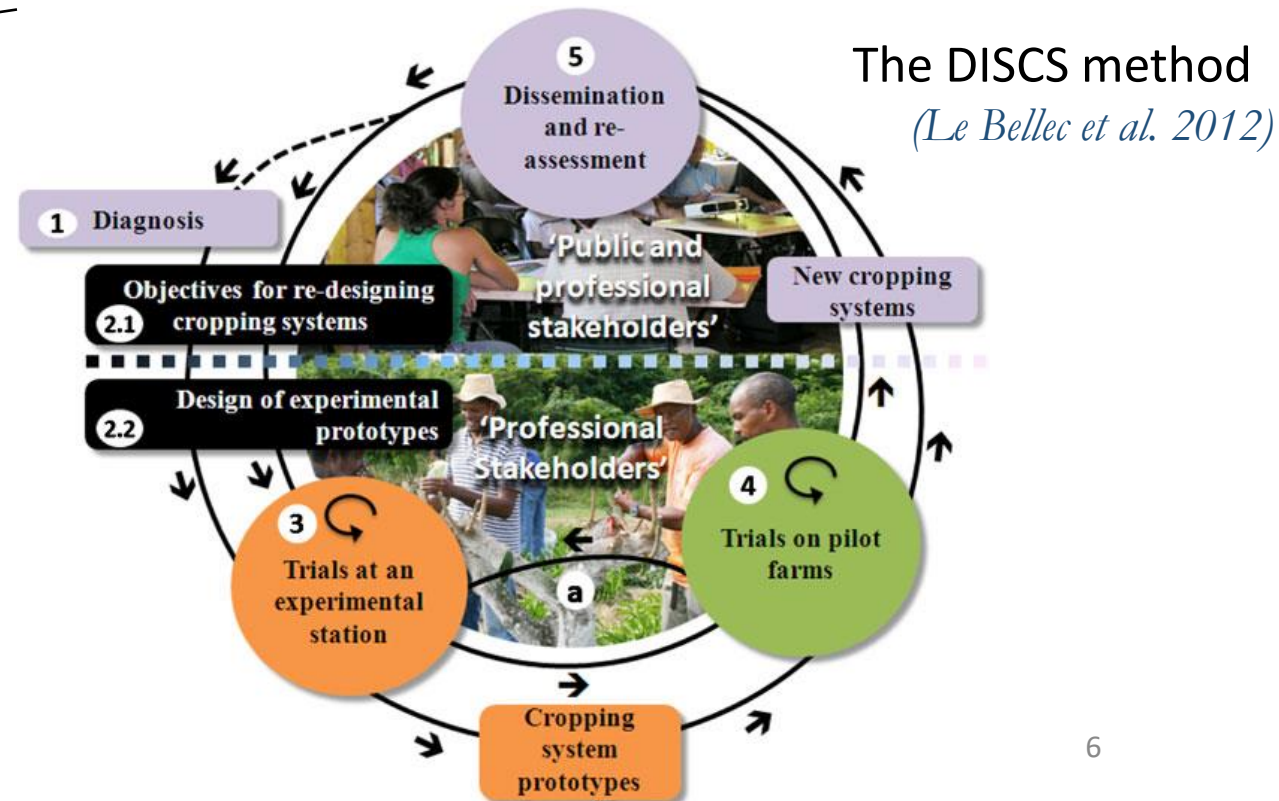
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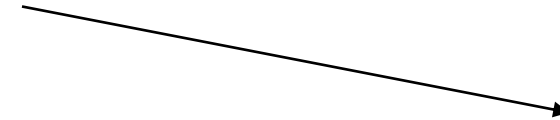
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Farmers don't just *apply* or *use* agricultural systems or techniques, but *build* and *adapt* them in their activity and creativity

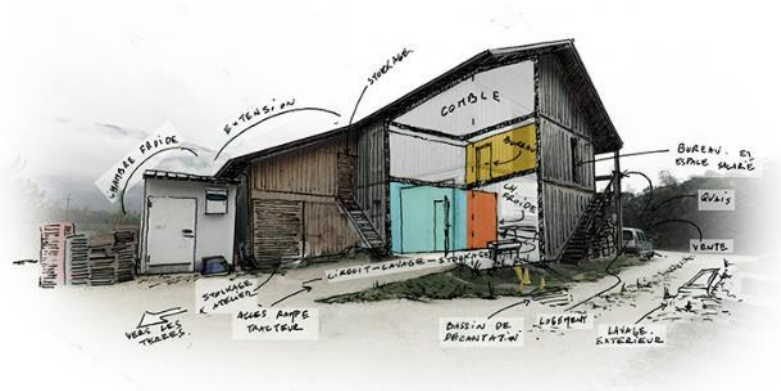
Step-by-step design *(Meynard et al. 2012, Coquil et al. 2017)*

Trajectories of practices change *(Mauvois et al. 2019)*

The human aspects of farming systems (aesthetics, sense, values) *(Darnhofer et al. 2012, Brédart et Stassart, 2017)*

The design part in farmers' activity : individual and collective

Individual design of (sub)systems



Building - self-built tool by a farmer (Atelier Paysan)



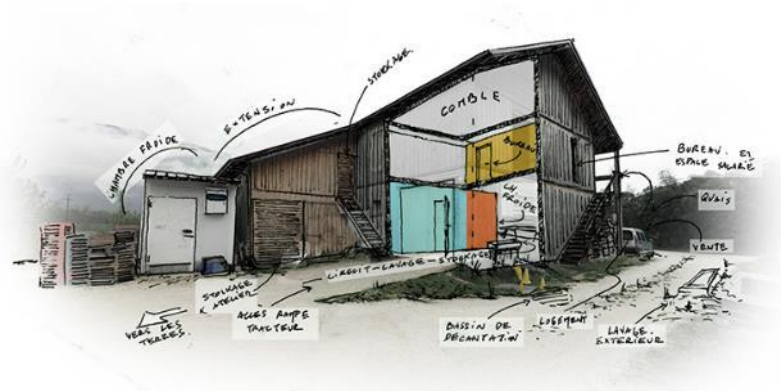
Rapeseed under clover cover (Agri'novateurs, 2016)



Breeding with the Simmental breed (Agri'novateurs, 2016)

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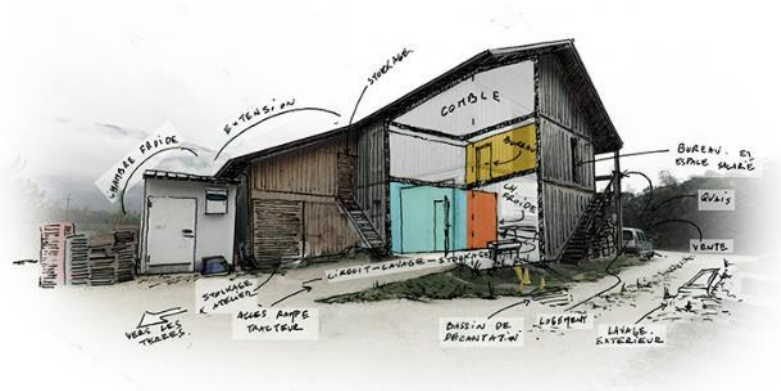


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Collective experimentation and knowledge sharing supporting design activities

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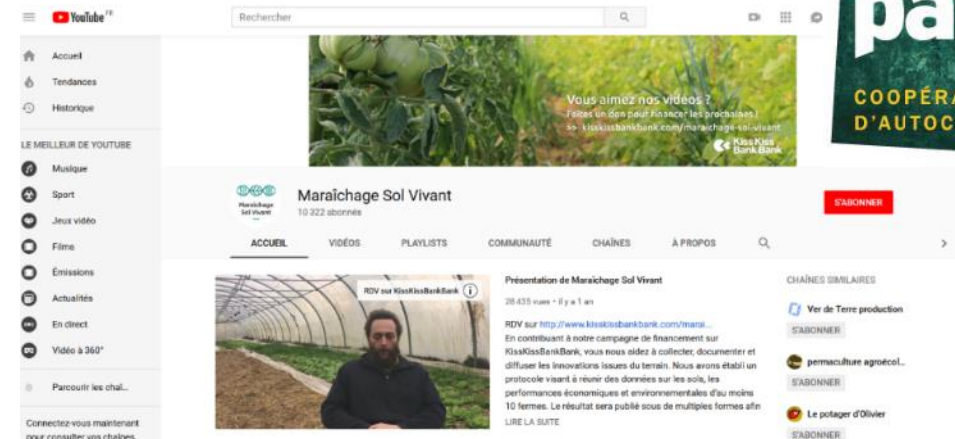


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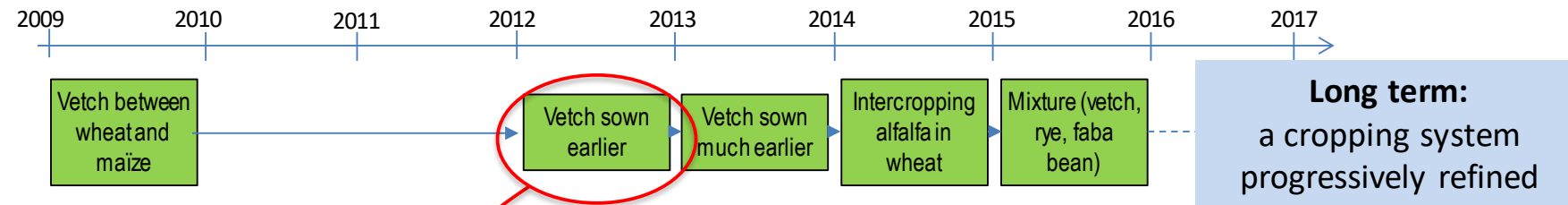
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Collective experimentation and knowledge sharing supporting design activities



The design part in farmers' activity : iterative and long term process

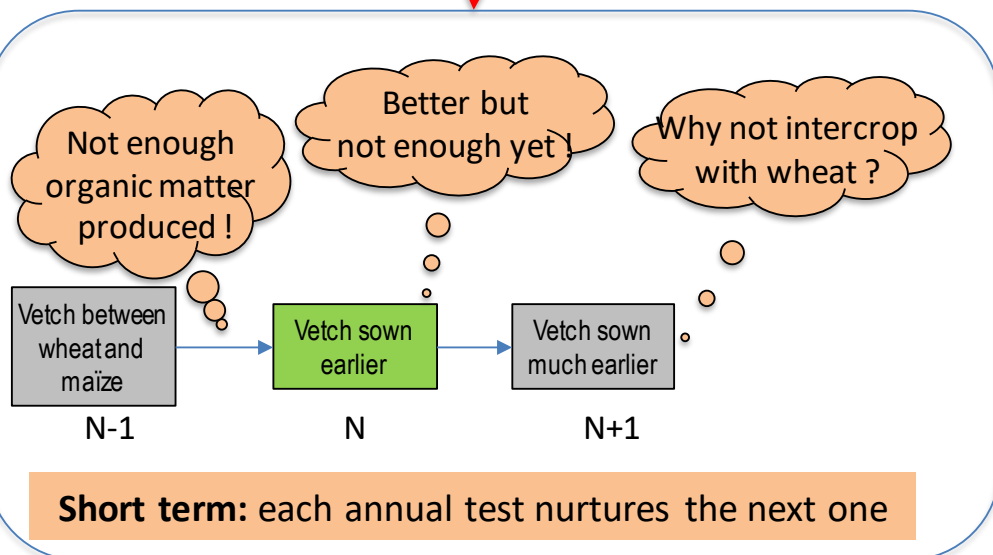
Ex: a farmer introducing a leguminous cover crop to reduce the use of N fertilizers in a crop sequence based on wheat and corn.



How to reduce fertilizer purchase with a legume cover crop?

How to optimize legume development?

Interest of diversifying legume species (pure crop or mixture)?



(Catalogna, 2018)

What implications for agronomists ?

A role in **design-support** rather than only design (*e.g. Le Gal 2011*)

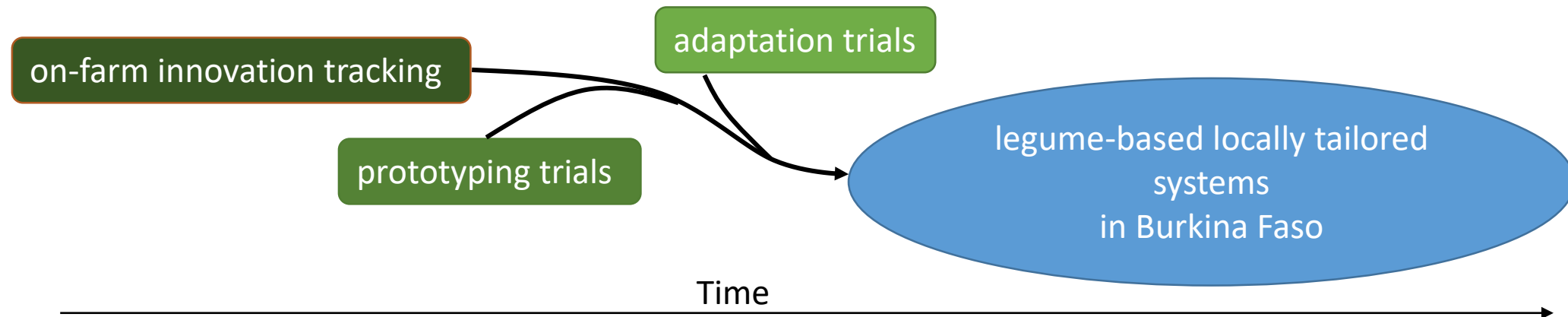
- Which methods and tools to support farmers' creativity and design processes ?
 - From *decision support tools* to ***design support tools***
 - ***Traking farmers' innovations*** → acknowledgement of farmers' creativity and inspiration for other farmers

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 - **Combine methods** to intertwine time scales (events, follow up) and **reach situated processes**

Ex.: (*Périnelle et al. 2022*)



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 - **Combine methods** to intertwine time scales (events, follow up) and **reach situated processes**
Ex.: (*Périnelle et al. 2022*)
- **Which scientific knowledge** to fuel these design processes ?
 - **disruptive** knowledge to **inspire** farmers
 - knowledge about **what the design problem actually is**
 - Knowledge to **assess the impacts of changes** on farmers' design goals

What implications for agronomists ?

Agronomists' practices

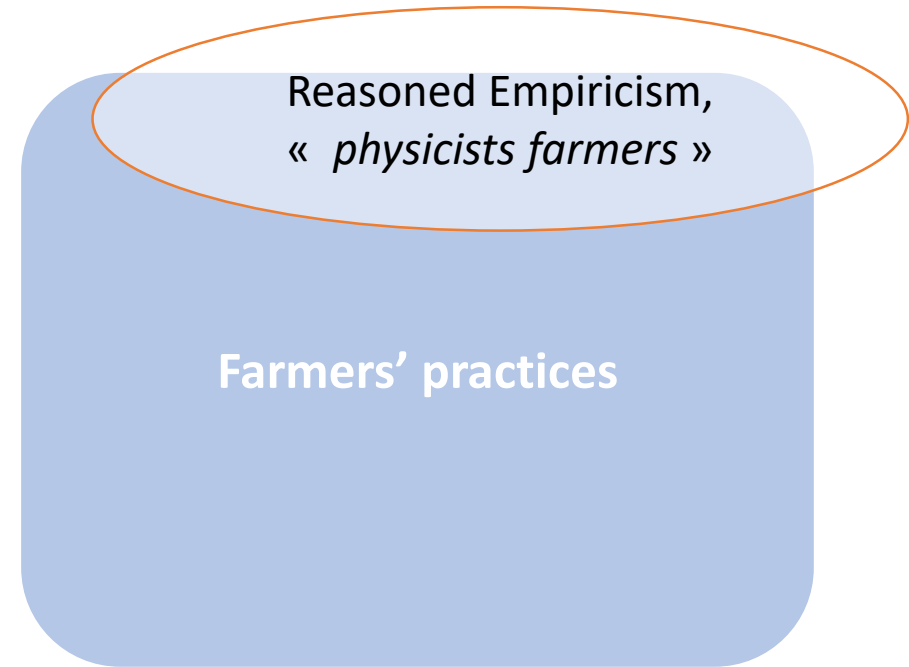
Farmers' practices

(Jouve 2007, Salembier et al. 2018)

A need to acculturate ourselves to design sciences ? :

mobilize proven methods and theories to support design events and processes in farmers' activities

What implications for agronomists ?

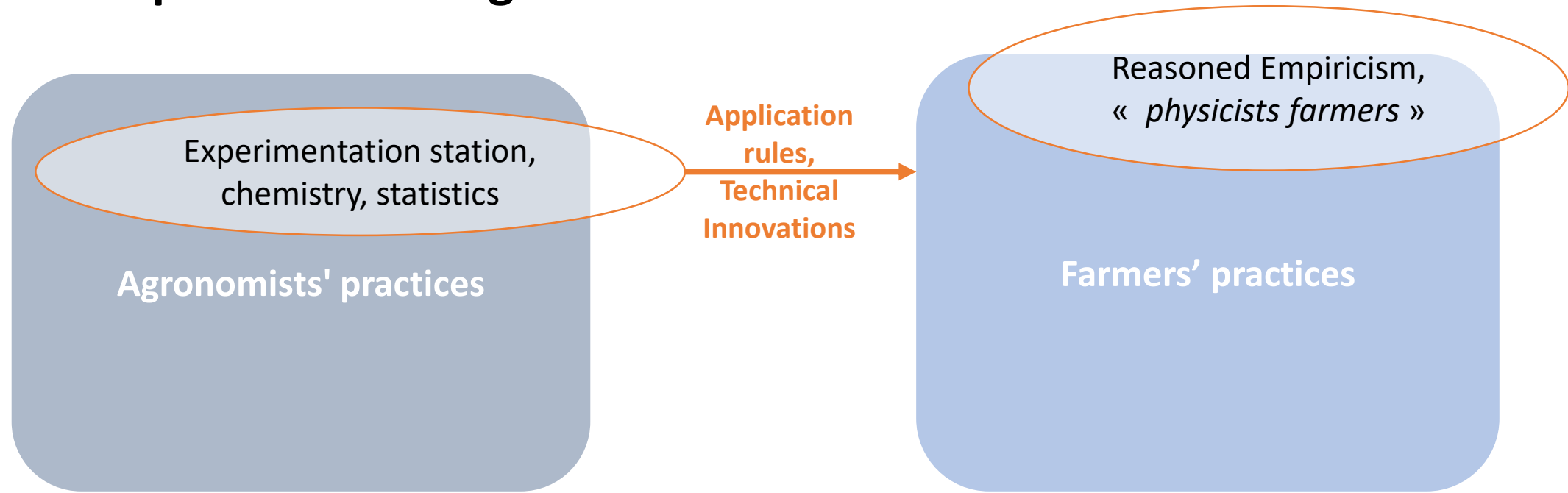


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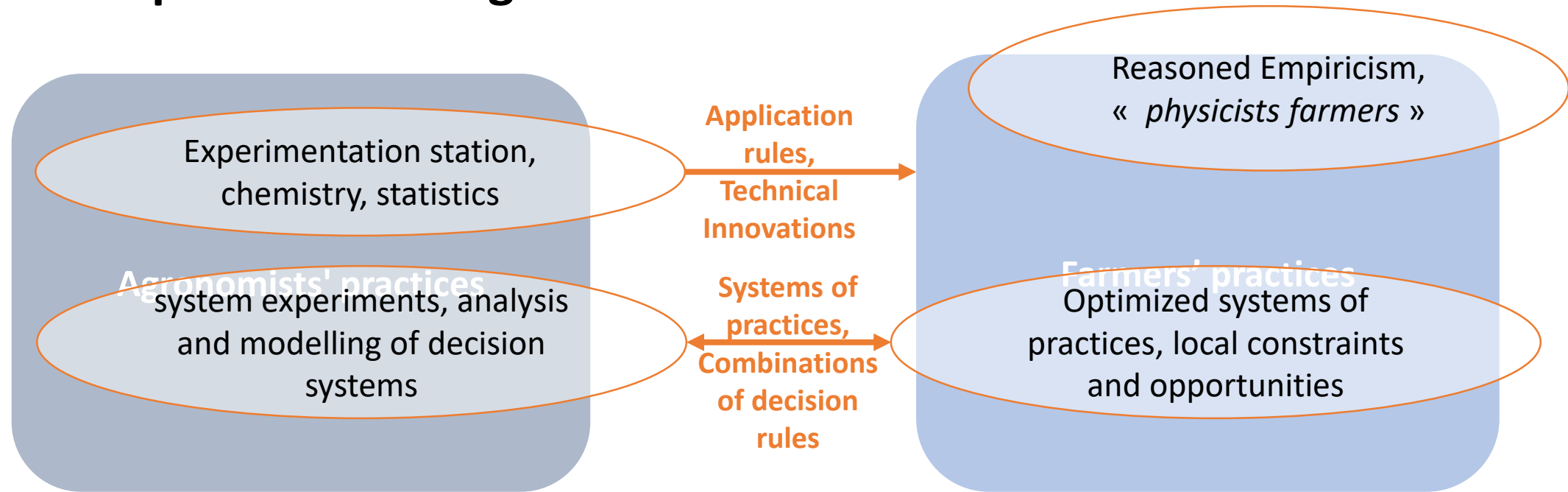


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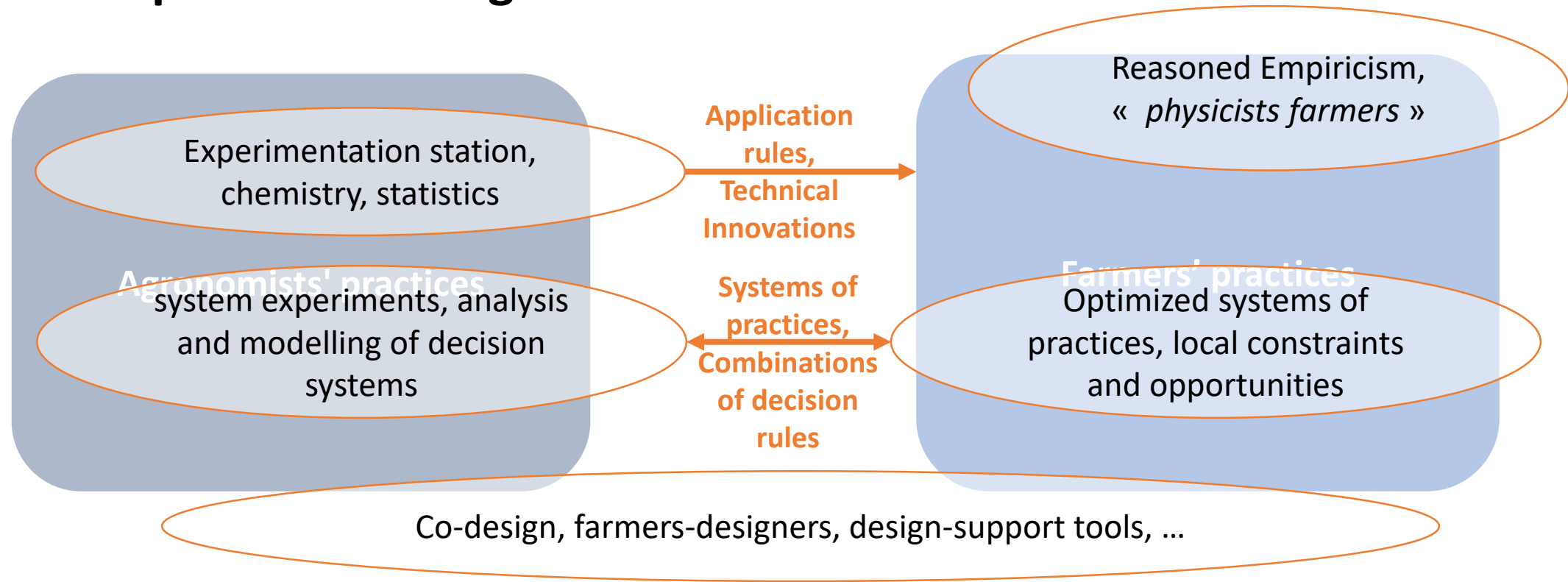


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Distributed design or multiple design activities in interaction?

Farmers don't design alone

- The farmers' **work systems** are transverse to biological and technical, socio-economic and family subsystems (*Chizallet et al. 2020*)
 - farmers design more than systems of practices
- **Multiple actors interact with farmers' design activities** : advisors, citizens, consumers, local institutional actors, researchers, etc.
 - **distributed** or **collaborative design** in open innovation infrastructures ?
- **Intertwined** activities within **territories**
 - **Territorial design ? coupled innovations ?** (equipment manufacturers, plant breeders, water providers, etc.)