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A m s t e r d a m

# Scaling from a systems perspective



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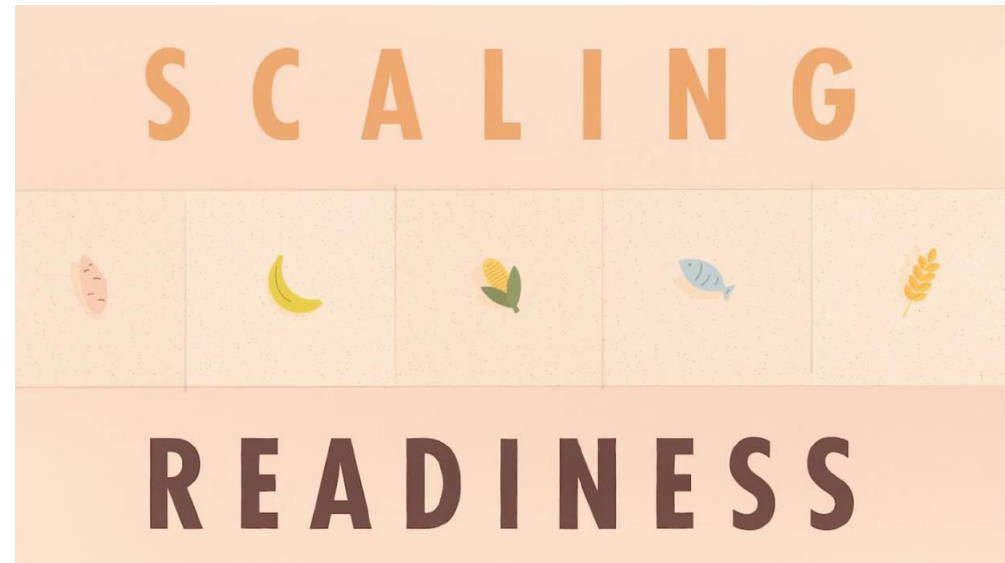
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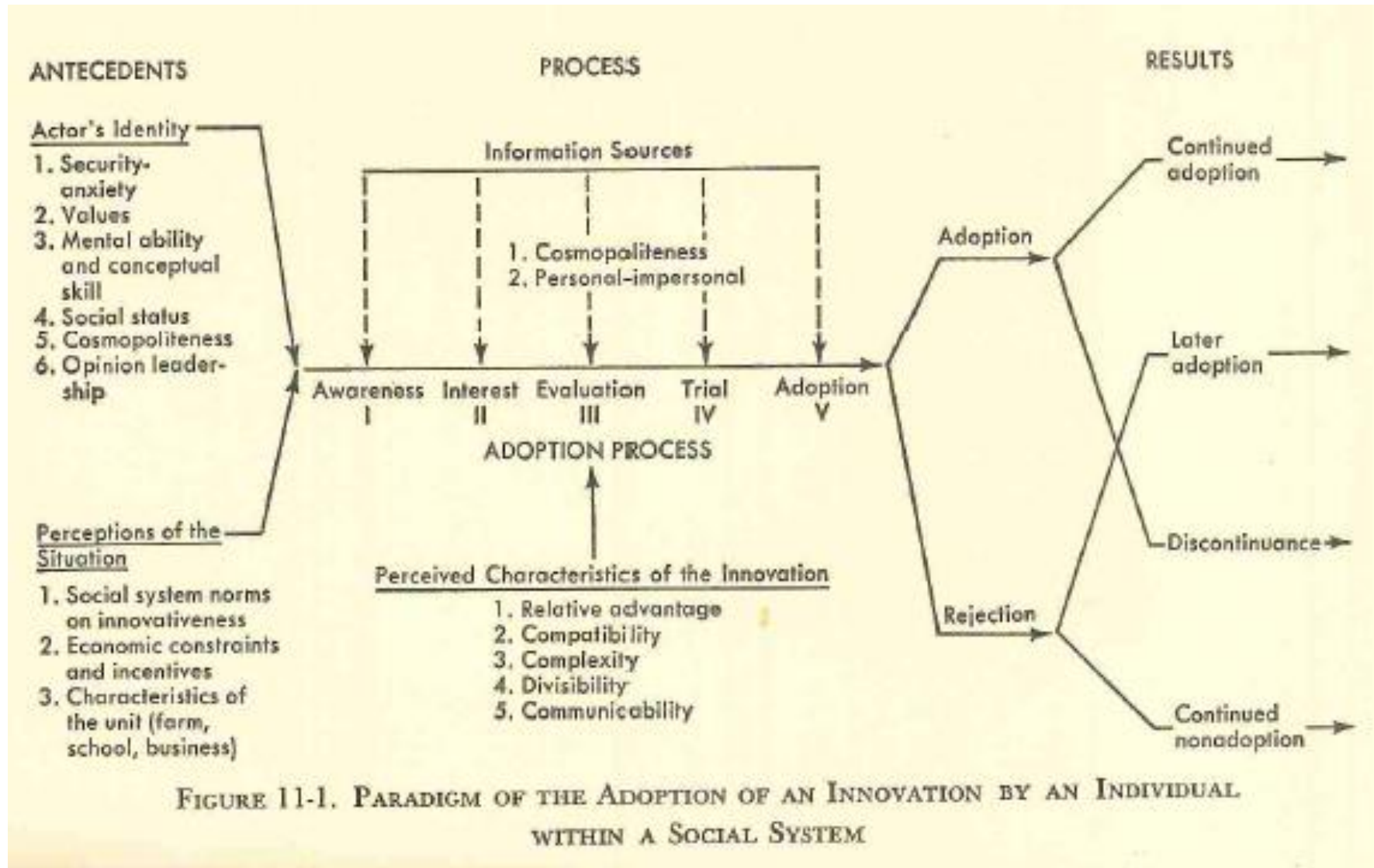
# Outline: Scaling from a systems perspective

- 1. Some relevant insights about scaling
- 2. Scaling Readiness
  - Process
  - Theory of Change
  - Variables
  - Tracking evolution



# Individual adoption is NOT a good starting point

(Adoption and Diffusion Theory / Technology Uptake models)





# Such individual models overlook fundamental interdependencies

- vertical: e.g. behaviour of value chain actors
- horizontal: e.g. behaviour of community members
- temporal: e.g. past behaviours



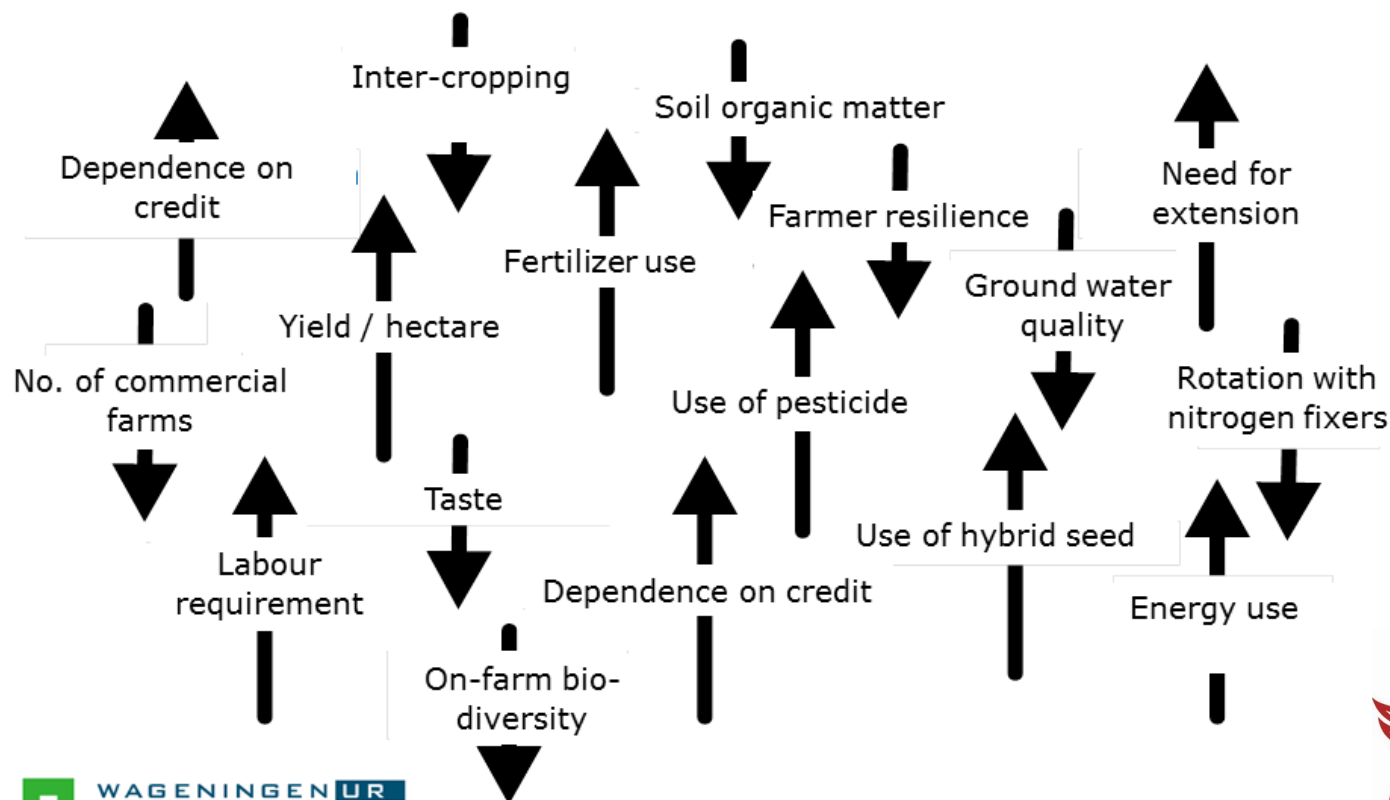
# Also: between technical and social: Technological innovations depend on social-organisational change

- distribution networks
- credit services
- legislation
- licencing
- business models
- input supply / output channels
- land tenure & land security
- re-organised labour
- data sharing



# Changes never come alone: scaling happens in configurations

- Multiple variables & practices are scaling up and down
- Involving multiple interdependent actors





# Scaling involves struggle

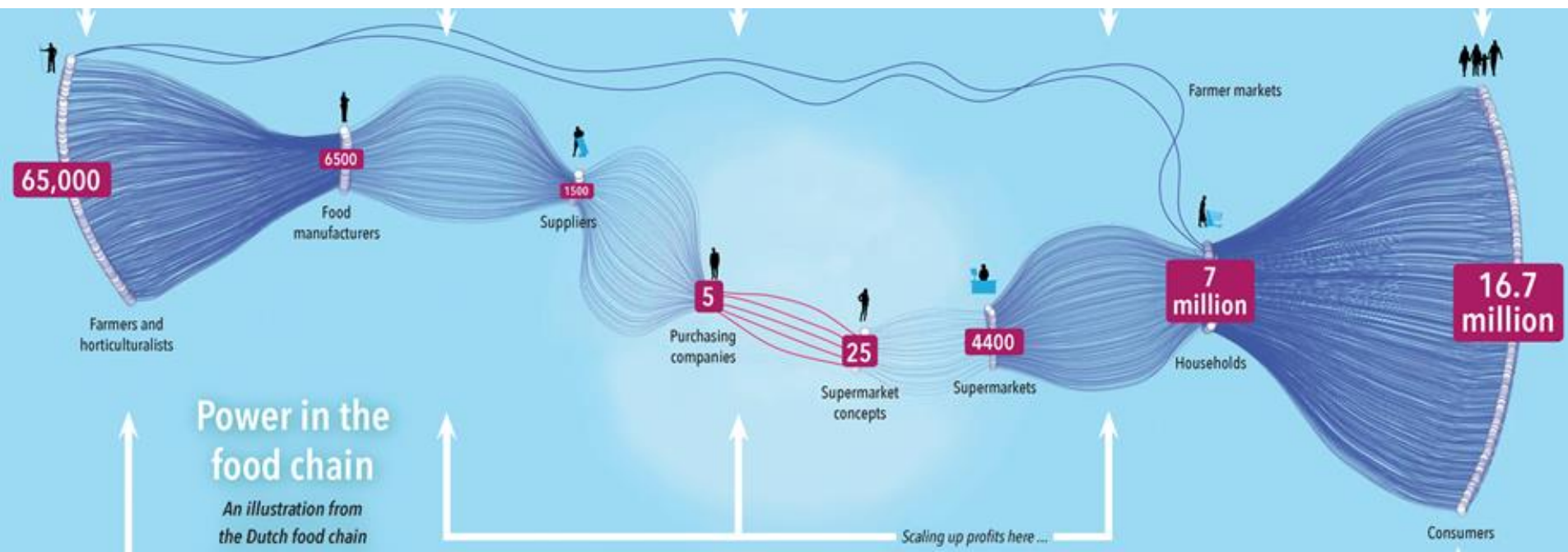
## There are always multiple options competing



RESEARCH  
PROGRAM ON  
Roots, Tubers  
and Bananas

# Scaling can be leveraged or hindered from elsewhere in the value chain (push vs pull)

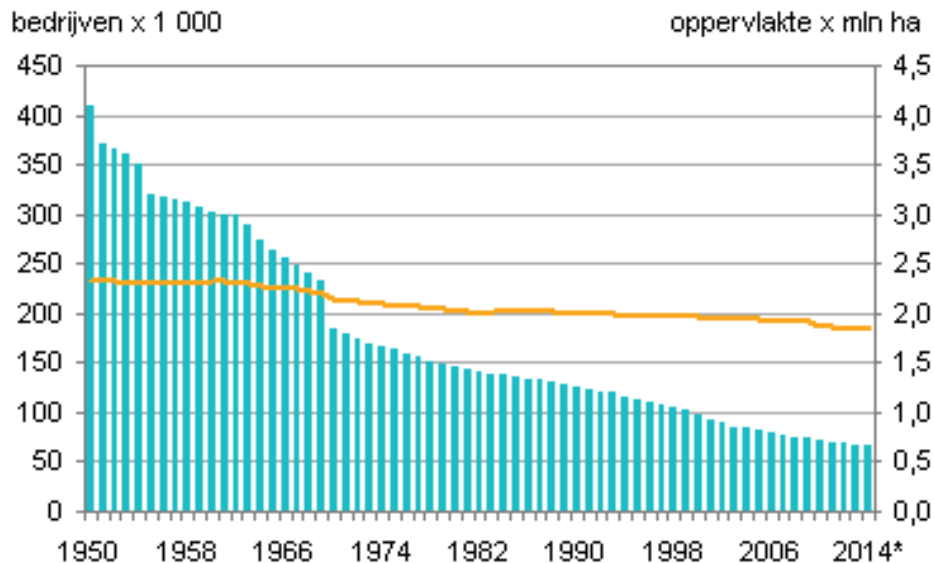
- So we need to decide where to invest our efforts





# Scaling is not inherently good

- It is likely to foster new forms of inclusion / exclusion
- It may have undesirable consequences at other levels
- We need to support **Responsible Scaling**

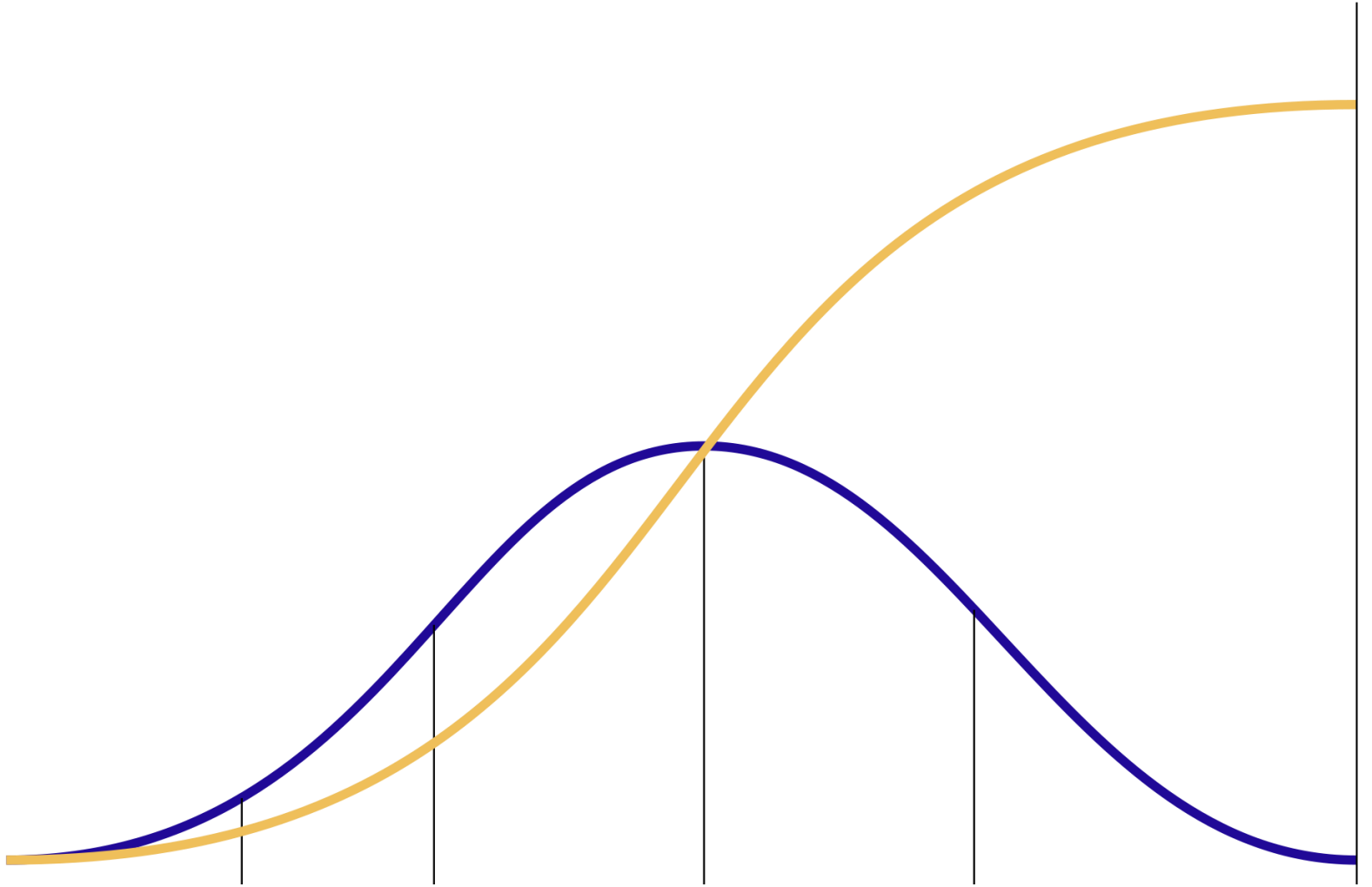


Bron: CBS

Bedrijven Cultuurgrond



In essence this picture is misleading (Ryan & Gross, 1943; Rogers, 1962)

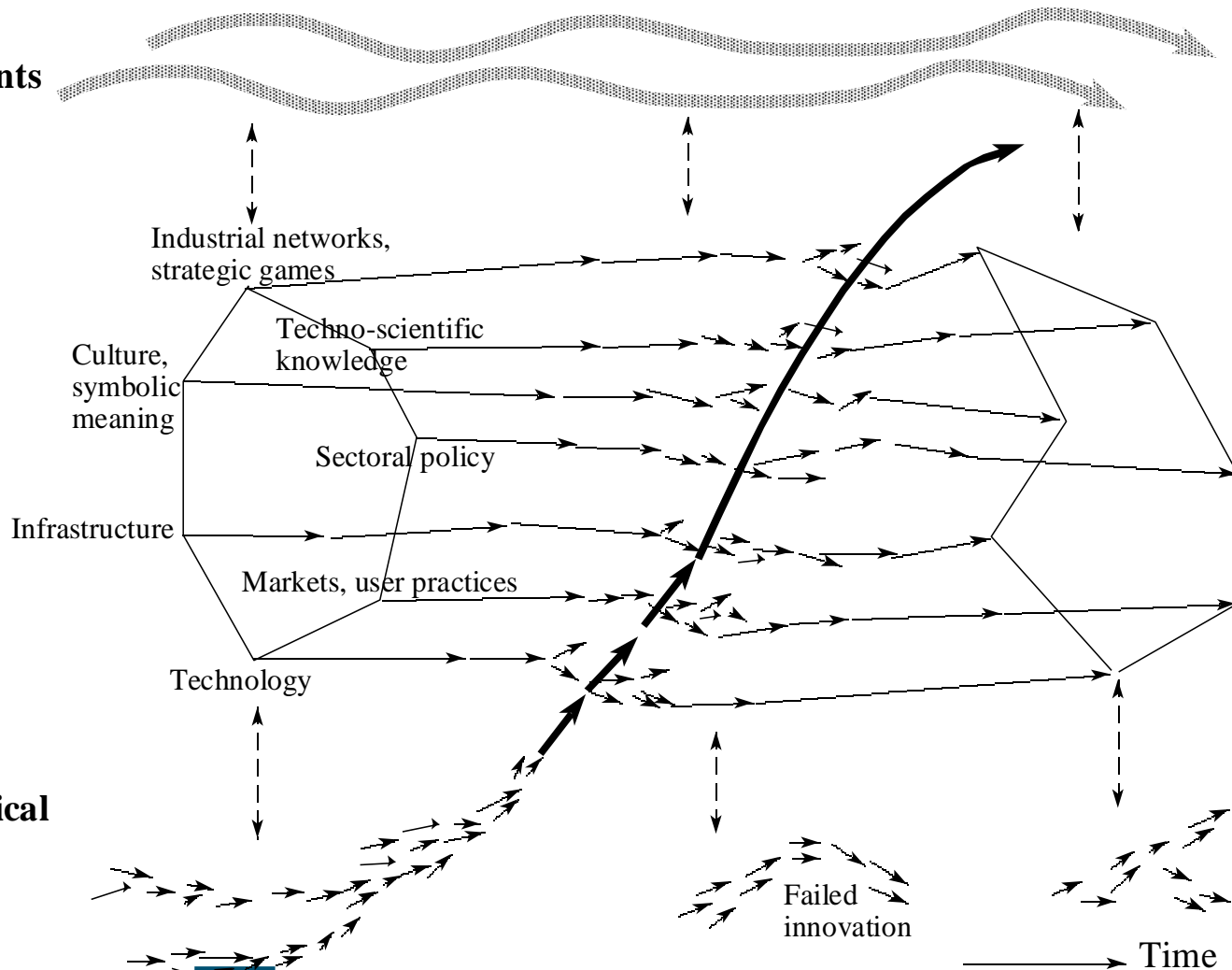


# This is how innovation scholars look at it today (Geels, 2002)

**Landscape developments**

**Socio-technical regimes**

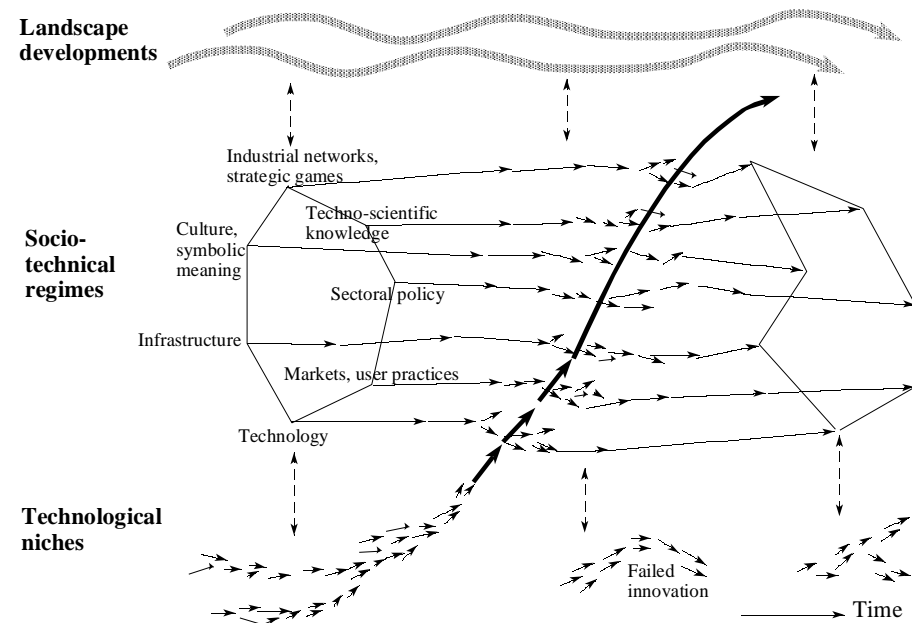
**Technological niches**





# Some critical processes for scaling

- Ensuring variation at niche level
- Learning towards maturity / readiness
- Redundancy: scaling failure to is also necessary
- Building support networks and coalitions





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# Scaling Readiness



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# A methodology to assess and enhance 'innovation and scaling readiness' (start 2017)

- Builds on EU typology & language
- From idea to maturity / suitability in intended environment
- We added:
  - Attention for interdependencies
  - A learning and enhancement process



## Technology Readiness Levels

**TRL 0: Idea.** Unproven concept, no testing has been performed.

**TRL 1: Basic research.** Principles postulated and observed but no experimental proof available.

**TRL 2: Technology formulation.** Concept and application have been formulated.

**TRL 3: Applied research.** First laboratory tests completed; proof of concept.

**TRL 4: Small scale prototype** built in a laboratory environment ("ugly" prototype).

**TRL 5: Large scale prototype** tested in intended environment.

**TRL 6: Prototype system** tested in intended environment close to expected performance.

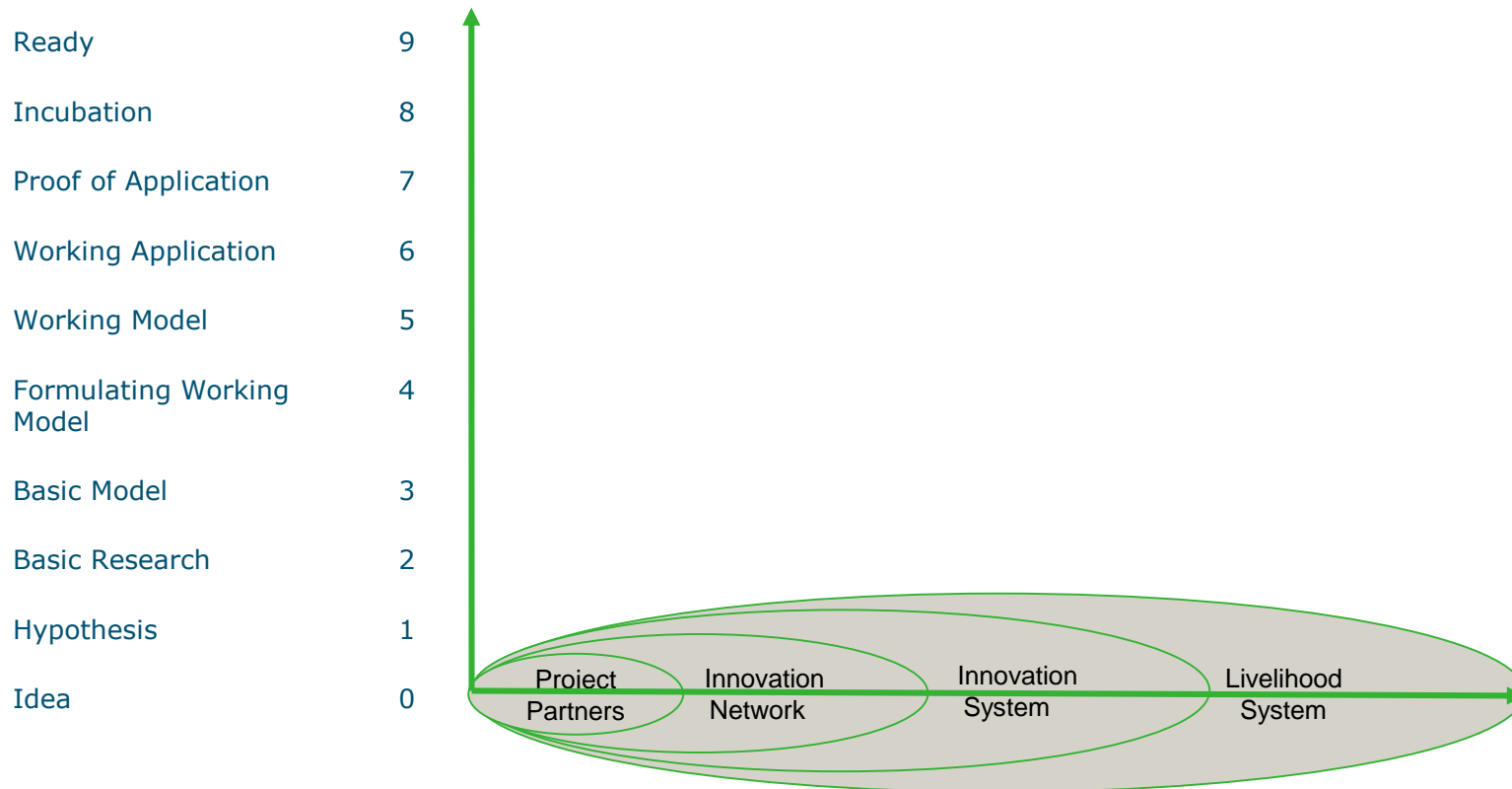
**TRL 7: Demonstration system** operating in operational environment at pre-commercial scale.

**TRL 8: First of a kind commercial system.** Manufacturing issues solved.

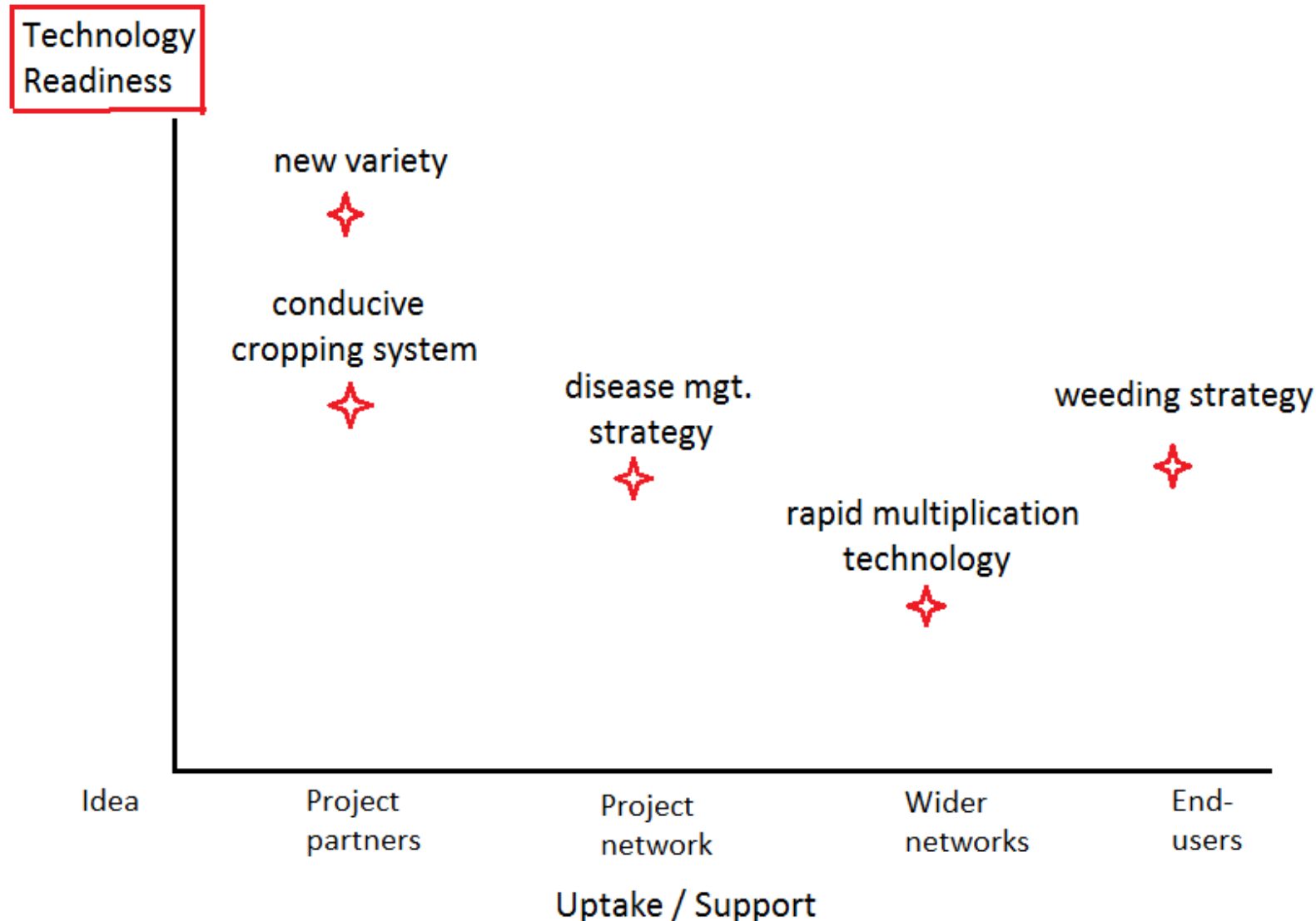
**TRL 9: Full commercial application,** technology available for consumers.



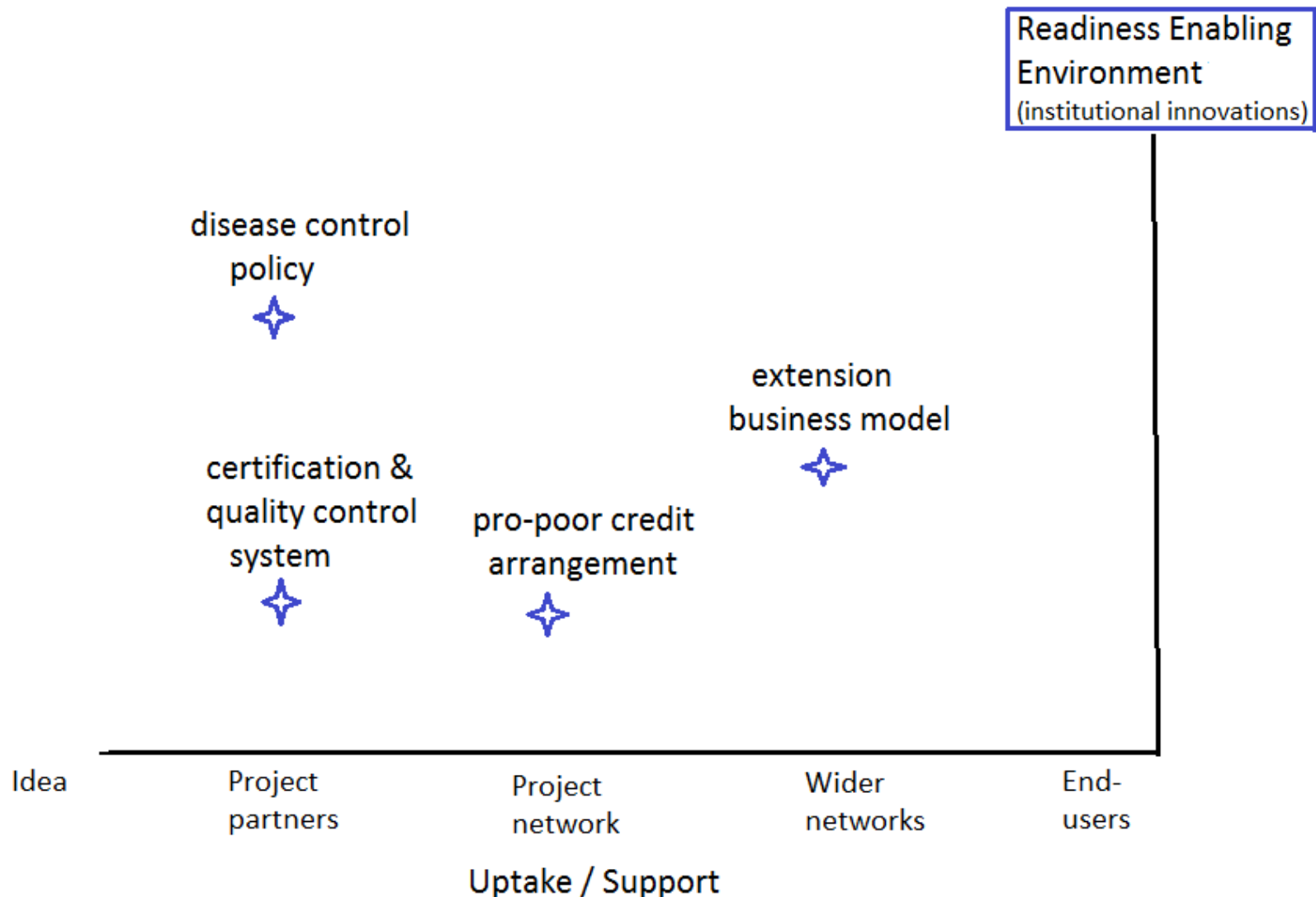
# Two key dimensions



# Used to map interdependent technologies (technical practices and innovations)

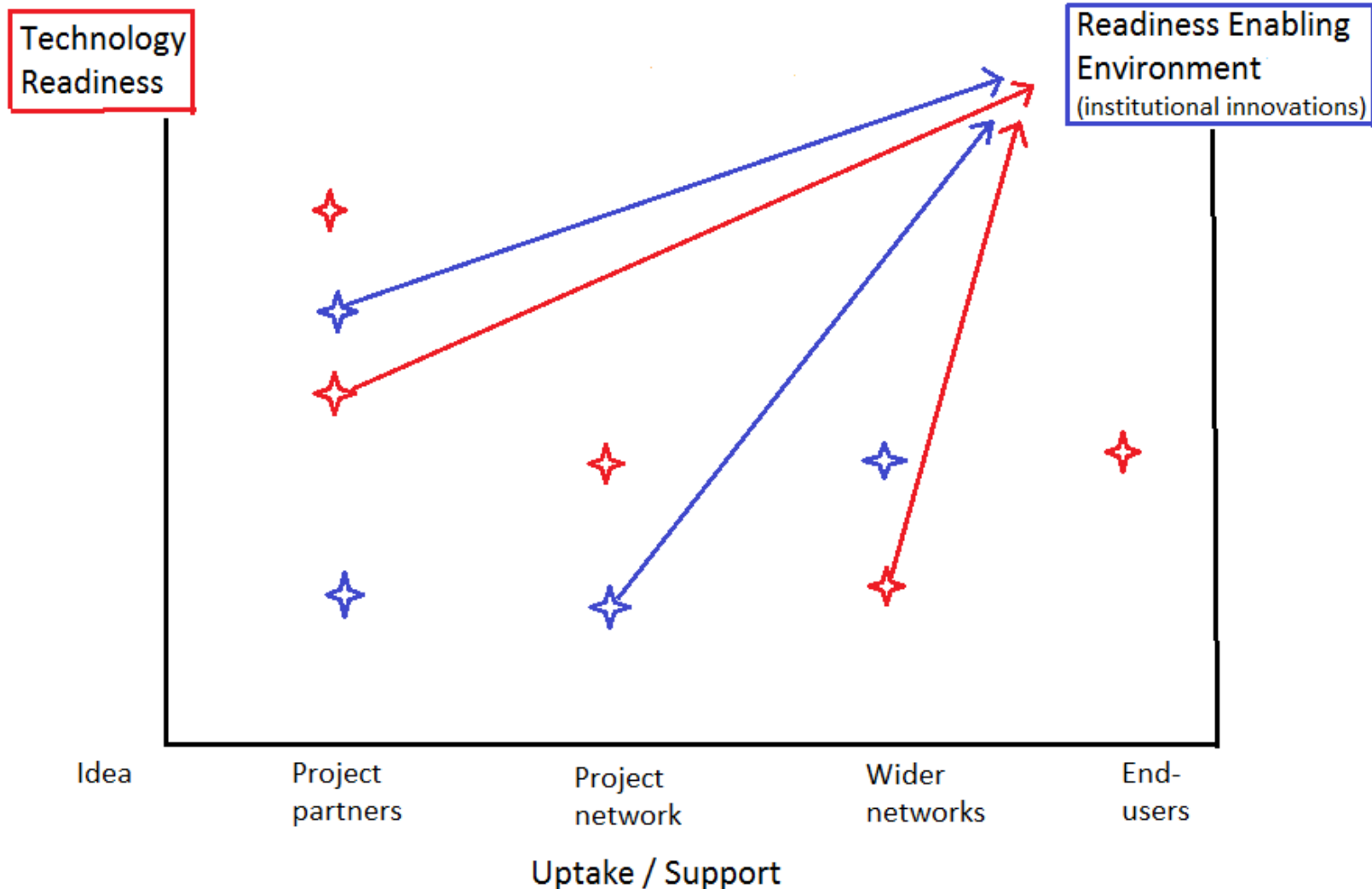


# Used to map relevant 'enabling environment' (institutional practices and innovations)





# And identify strategies that enhance innovation and scaling readiness

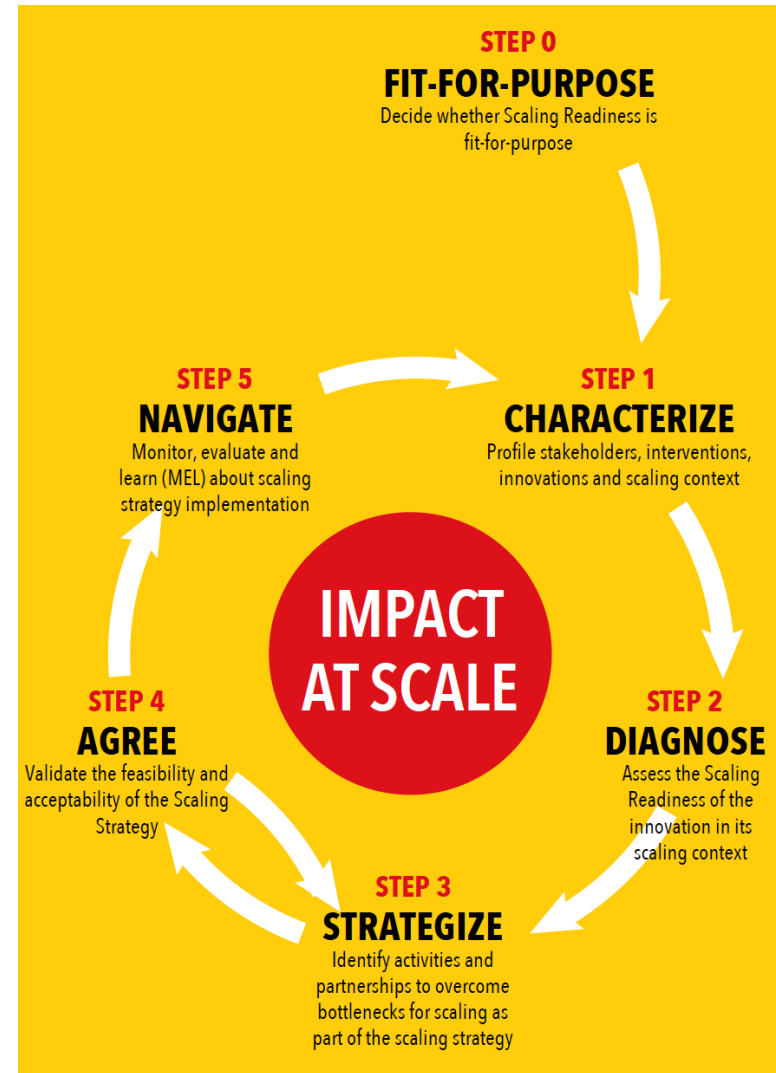


# Scaling Readiness Process

Stepwise approach to scaling of innovation:

0. Fit-for-Purpose
1. Characterise
2. Diagnose
3. Strategize
4. Agree
5. Navigate

Tested and used in  
'development' and 'scaling  
fund' cases



# Step 1 - Characterize

- Characterize interventions, context, stakeholder networks
- Understand innovations as packages

Resistant varieties  
Sensitization of cassava farmers  
Credit schemes for purchasing  
resistant varieties  
By-laws and policies

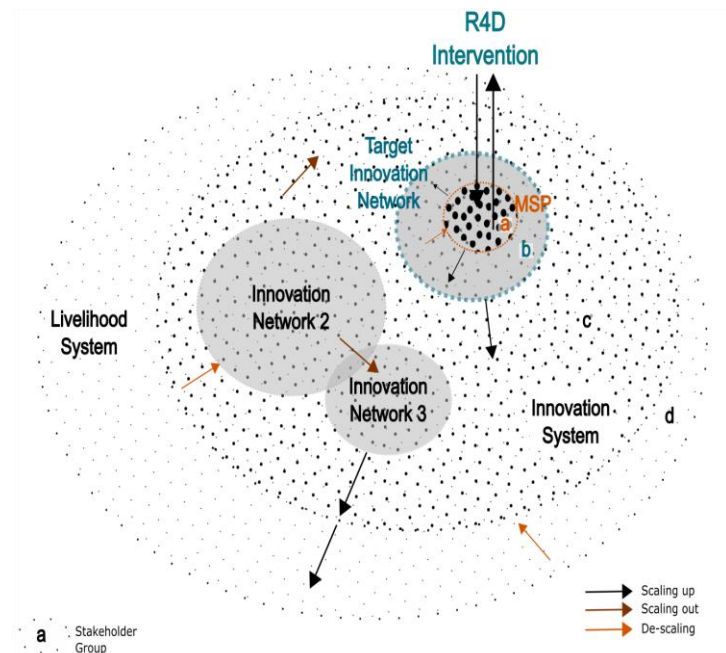
- Demonstration plots with local varieties and resistant varieties
- Functional Government Seed System
  - Innovation Platform
- Contract farming with cassava processor
- Collective communal action



Scaling cassava disease control in southern Tanzania

# Step 1 – Characterise

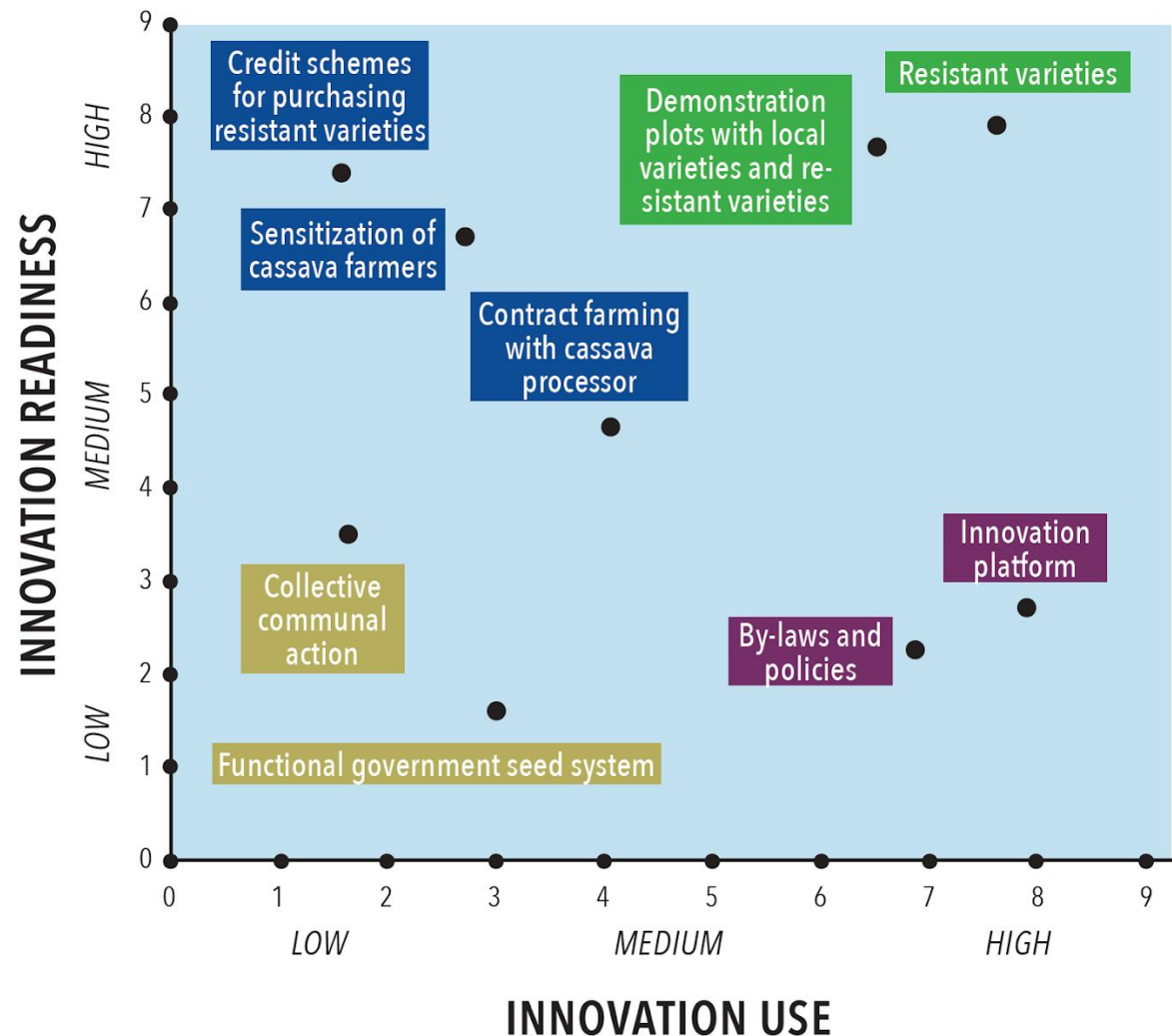
- A workshop to elicit interdependent technical and institutional elements
- Followed by survey based assessments of:
  - readiness / use
  - networks features
  - involvement levels





## Step 2 – Diagnose the bottlenecks

- Scaling Readiness assessment of an innovation package showing how “government seed system” is the main bottleneck.



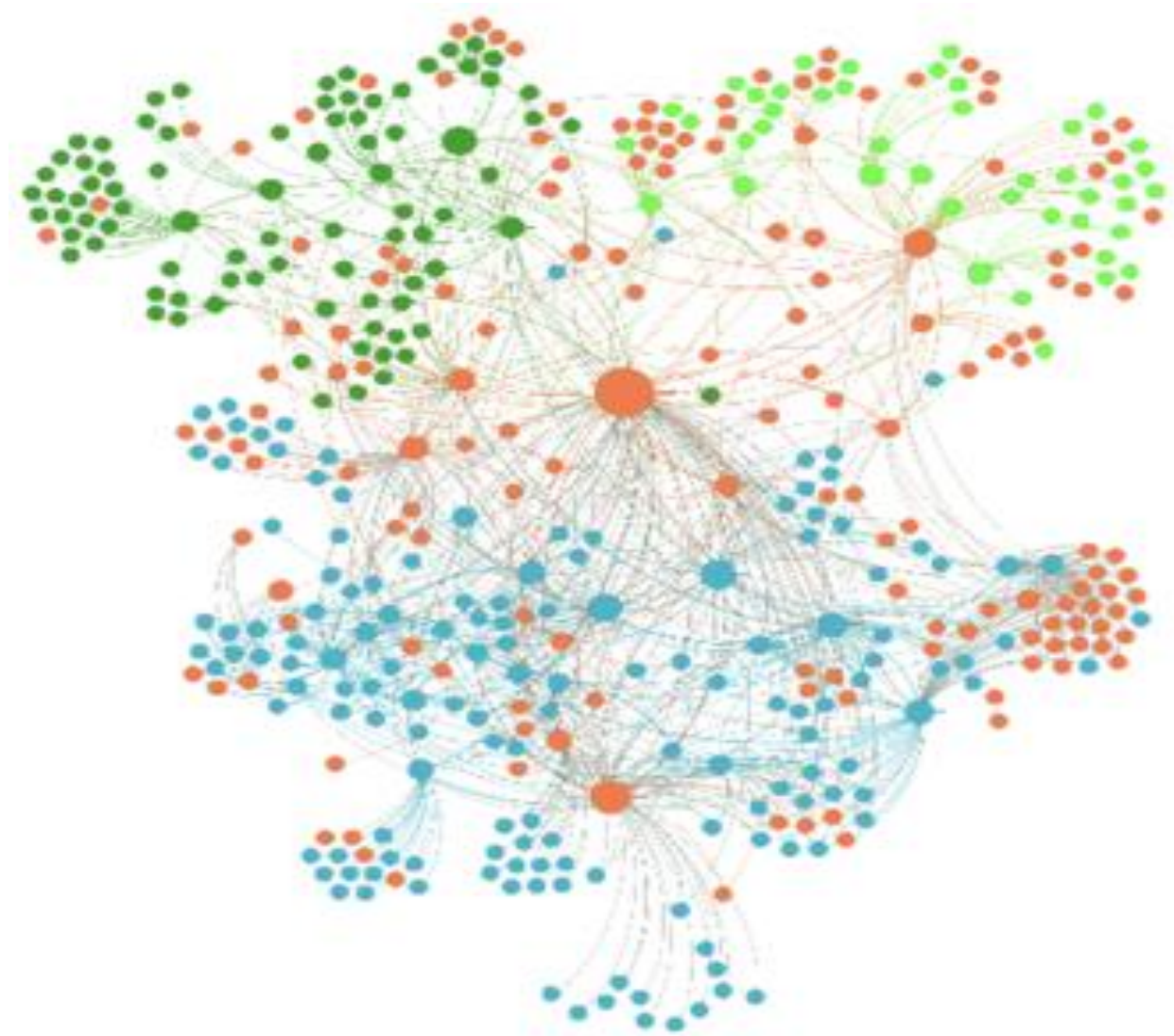
## Step 3 - Strategize

Strategic option	Description
Substitute	Can the bottleneck be replaced by another innovation which is of higher readiness and/ or use in the given context?
Outsource	Are there any organisations or external experts which can improve the Scaling Readiness of the bottleneck more (cost-)effective and efficient than your intervention team?
Develop	If outsourcing is not possible, feasible or too expensive, can the intervention team improve the readiness and/or the use by investing available intervention capacities and resources?
Relocate	Can the intervention be implemented in another location where the bottleneck is absent or can be addressed by one of the above strategic options?
Reorient	Can the objective of the intervention be changed so that the (new) bottleneck can be addressed by one of the above strategic options?
Postpone	Can the scaling of the innovation package be achieved at a later point in time?
Stop	If none of the above strategic options are likely to overcome the bottlenecks for scaling, then stopping the investment in the scaling intervention should be considered as an option.

Explore strategic options to overcome scaling bottlenecks

## Step 3 - Strategize

- E.g. replace bottleneck by an innovation that has higher Scaling Readiness
- Evidence based partner selection



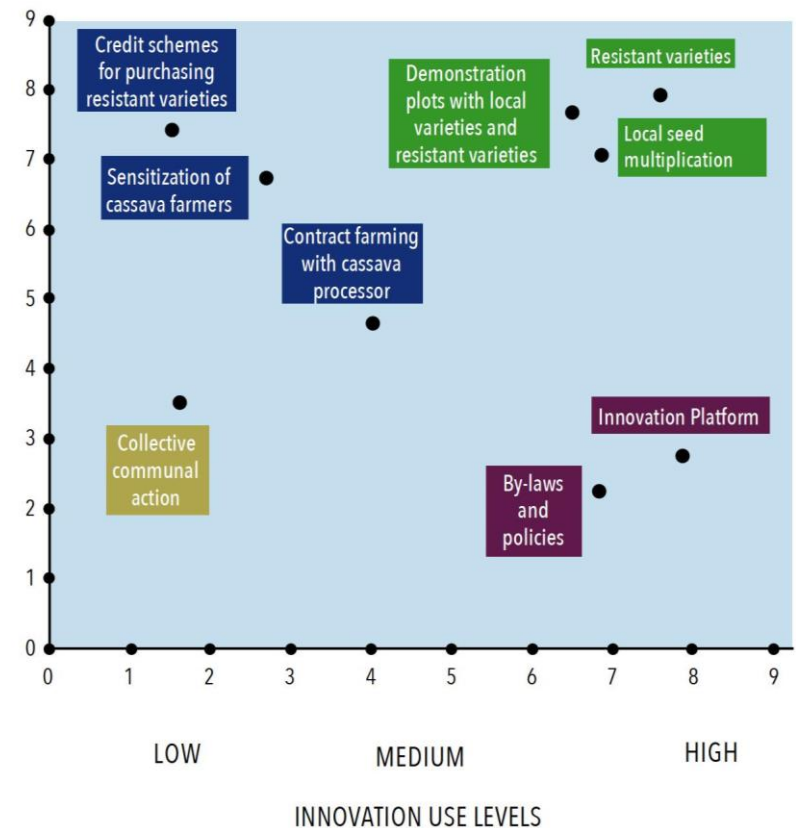
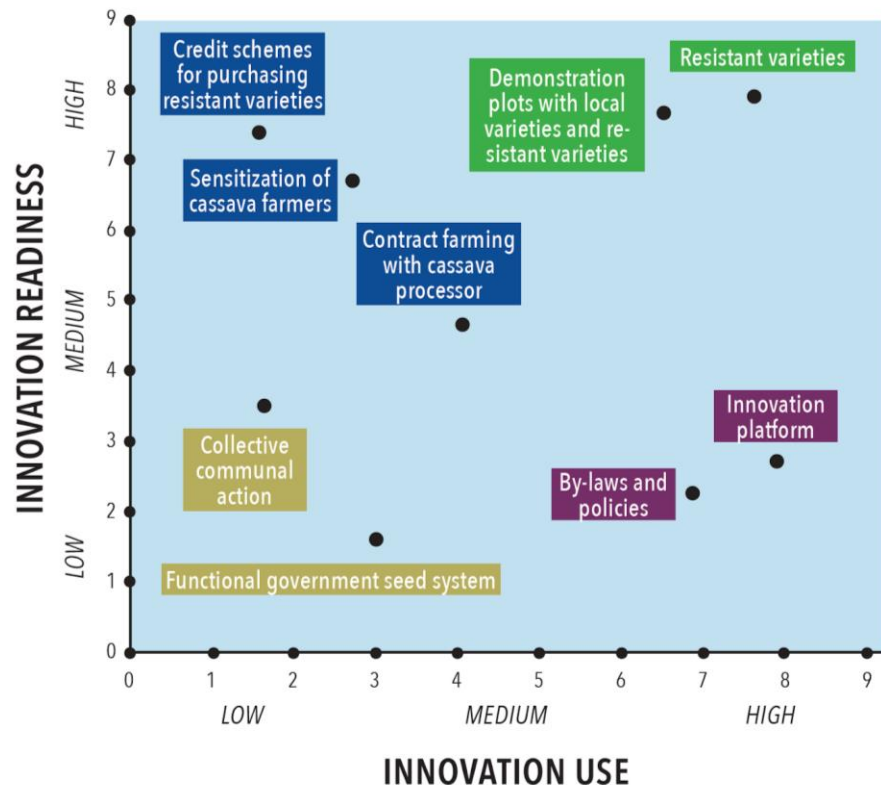
## Step 4 – Agree on Scaling Strategy

- Engage key stakeholders (project partners, donors, etc.) in developing a Scaling Strategy and Scaling Action Plan



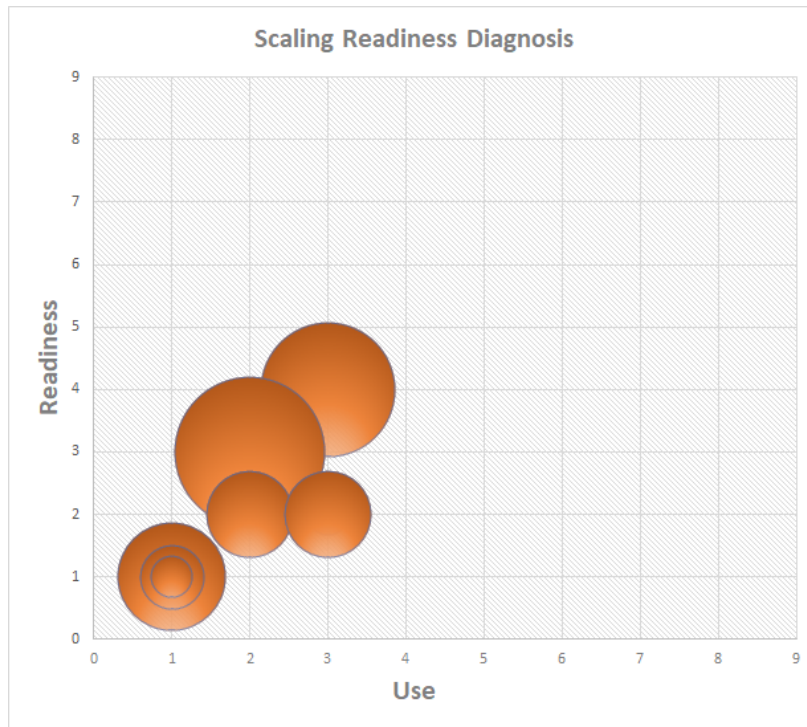


# Step 5 – Navigate, monitor and learn

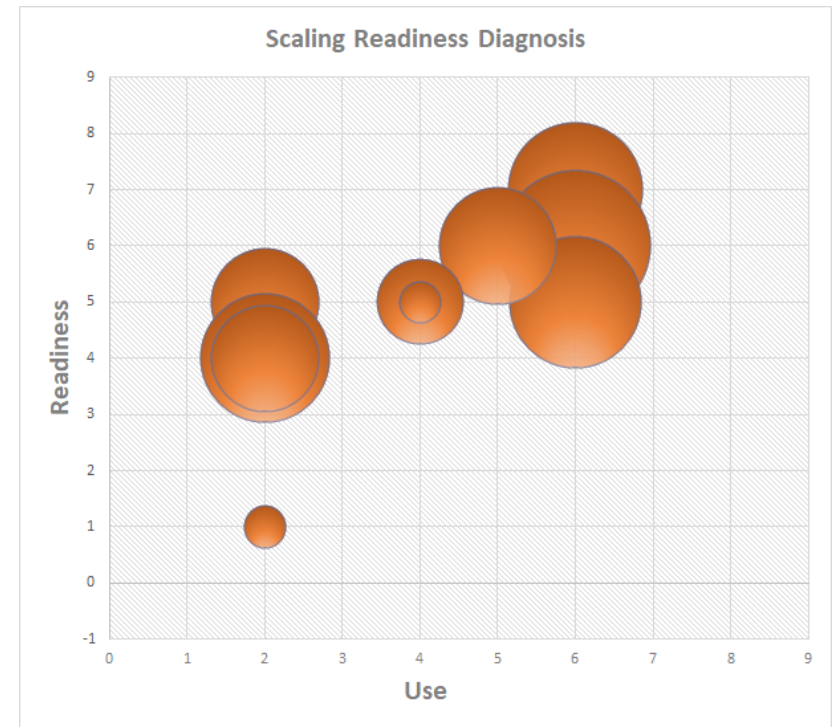


Did the strategy and actions have the desired effect?

# Step 5 – Navigate, monitor and learn



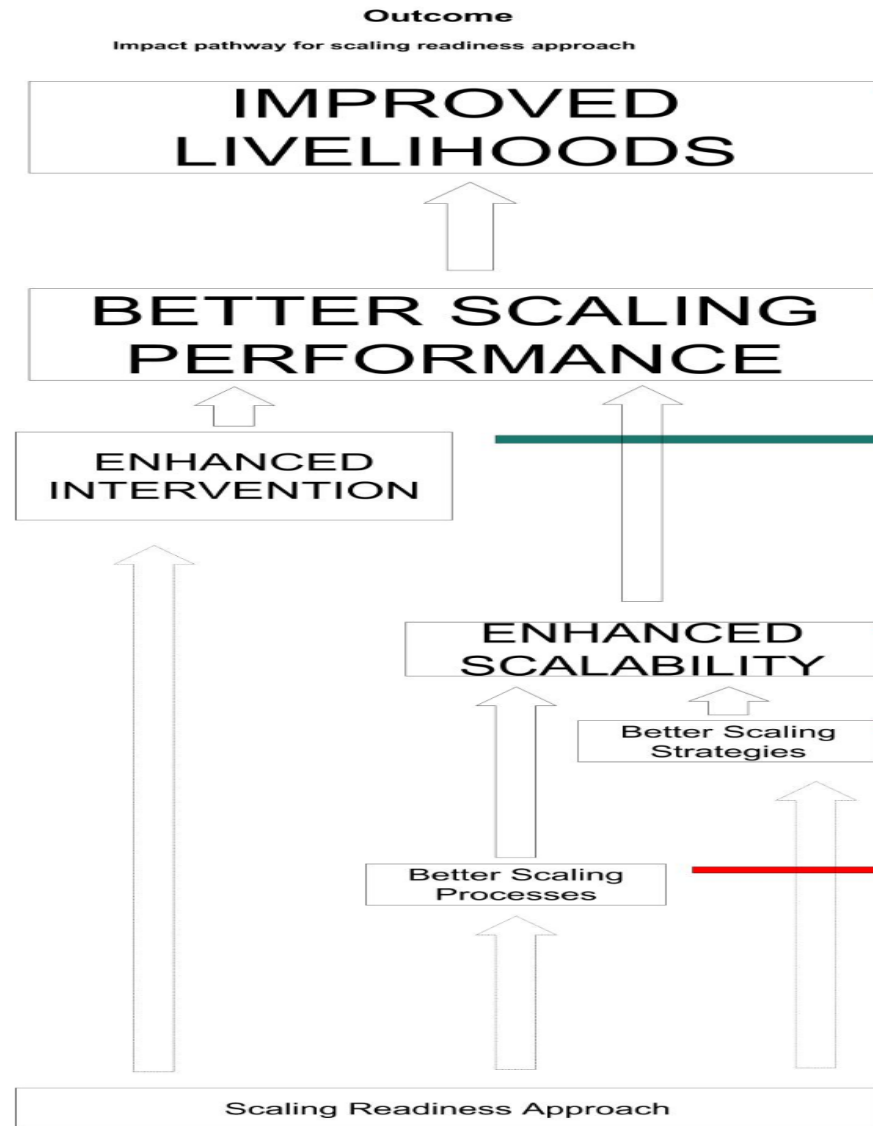
Before



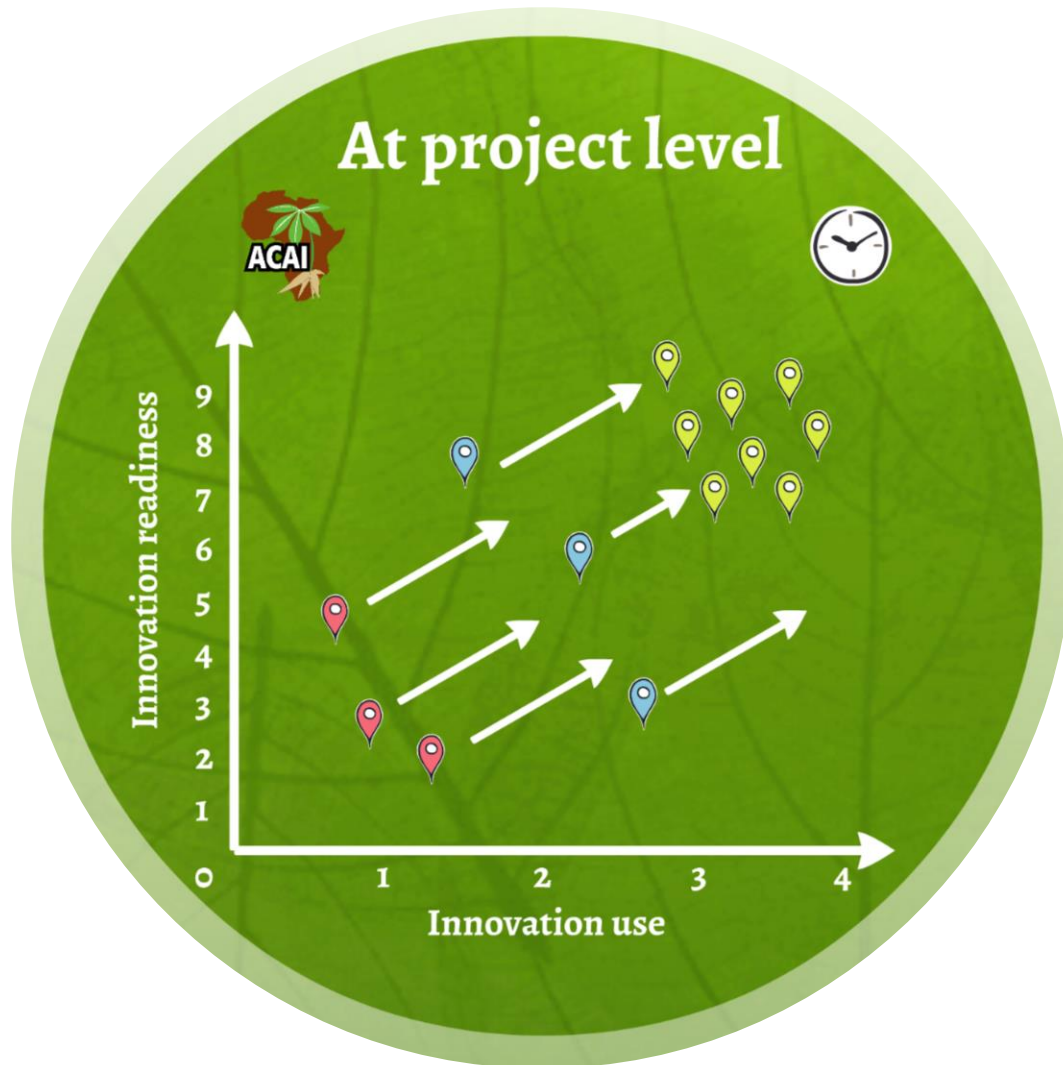
After

# Scaling Readiness – Theory of Change

- In essence:
- Enhanced collective capacity to deal with the complexity of scaling



# Objective 1: Project management

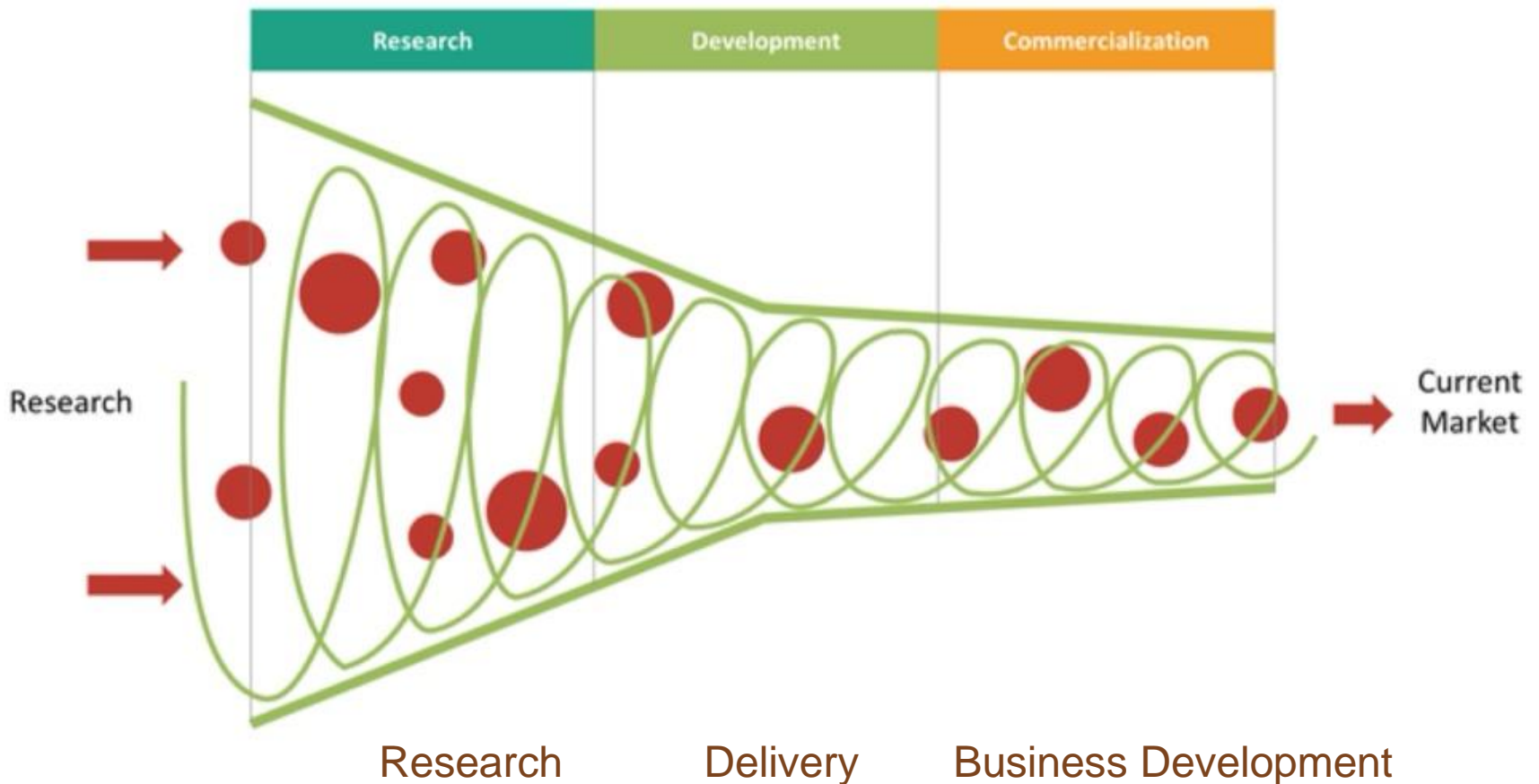


1. What are the bottlenecks for scaling?
2. Develop Scaling Strategies to overcome them
3. Identify the right partners to work on overcoming the bottlenecks



## Objective 2: Portfolio management

Manage investments in innovation and scaling





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# Thank you!!



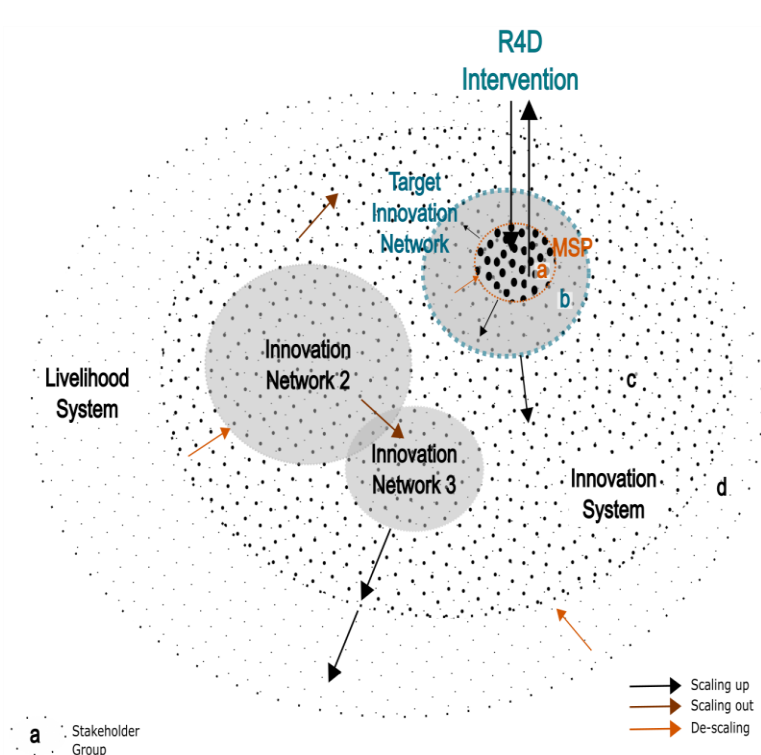
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# Scaling readiness indicator set - (RF6.2) Use Levels



Source: Modified from Sartas M, Schut M, Hermans F, van Asten P, Leeuwis C. **Effects of multi-stakeholder platforms on multi-stakeholder innovation networks: Implications for research for development interventions targeting innovations at scale.** PloS one. 2018 Jun 5;13(6):e0197993.

Livelihood System (Common)	9	Component has been commonly used by the stakeholders who are not involved in developing the component
Livelihood System (Rare)	8	Component started to be used by few stakeholders who are not involved in developing the component
Innovation System (Common)	7	Component has been commonly used by the stakeholders who work in developing the innovation but not directly connected to the partners
Innovation System (Rare)	6	Component started to be used by the stakeholders who work in developing the innovation but not directly connected to the partners
Innovation Network (Common)	5	Component has been commonly used by the stakeholders who are not involved in the project but are connected to partners
Innovation Network (Rare)	4	Component started to be used by the stakeholders who are not involved in the project but are connected to partners
Effective partners (Common)	3	Component started to be used by the many effective stakeholders in partnership within the intervention
Effective partners (Rare)	2	Component started to be used by the effective stakeholders in partnership within the intervention
Intervention Team	1	Component is only used by team who are working in the intervention
None	0	Component is not used for achieving the goal of the intervention in the area intervention target at the moment





## Scaling readiness indicator set - (RF6.2) Use Levels

<b>Livelihood System (Common)</b>	9	Component has been commonly used by the stakeholders who are not involved in developing the component
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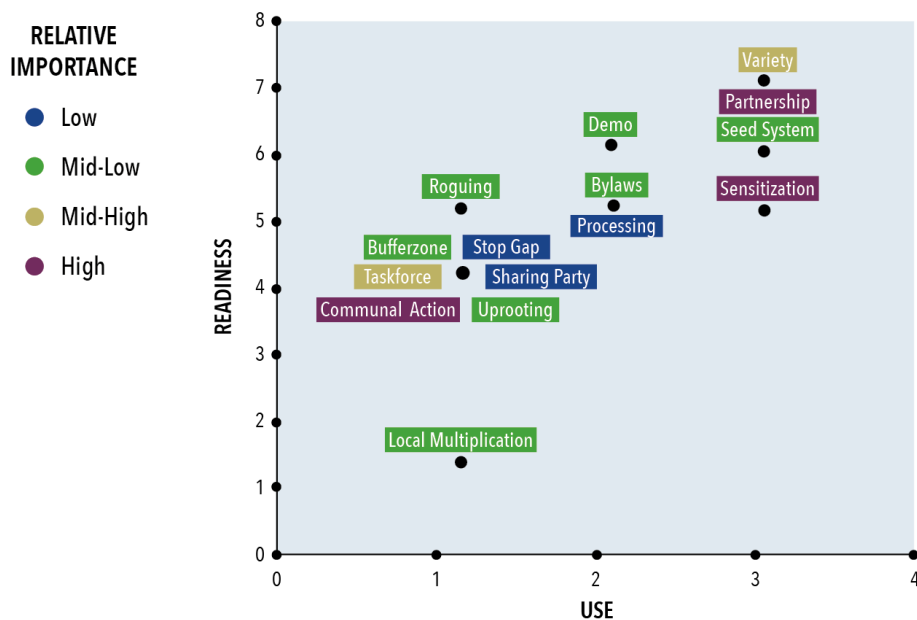


## Scaling readiness indicator set - (RF6.3) Involvement level

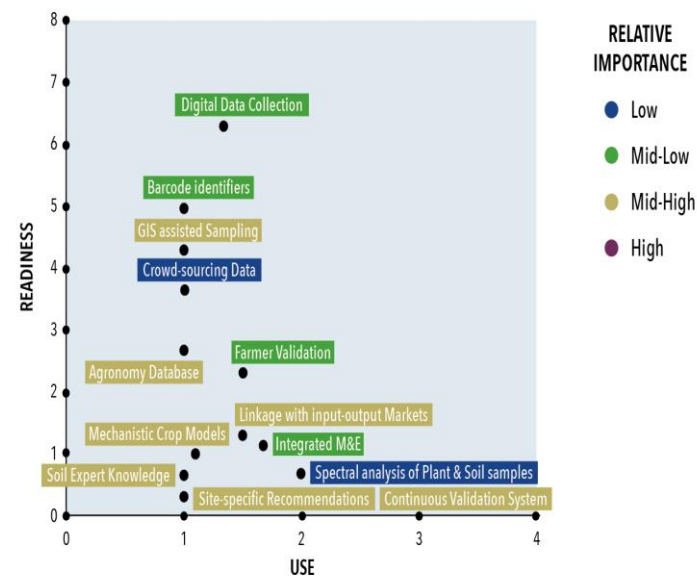
Champion	9	I lead the initiatives developing or promoting it
Responsible	8	I am responsible for a part of the work on developing and promoting it
Developer	7	I allocate some of my time to develop it
Promoter	6	I allocate some of my time to promote it
User	5	I use it
Convinced	4	I am convinced that it can be beneficial
Curious	3	I am interested to discuss about it
Observing	2	I am interested to learn more about it
Aware	1	I am aware of it
Unaware	0	I do not know about it

## Scaling Readiness Graph

- A graph presenting bottleneck components, their component readiness, component use



Location: Tanzania, Chato; Innovation Package: Community Phytosanitation; Date: 2017-02-09



Location: Nigeria, All; Innovation Package: Cassava Agronomy at Scale; Date: 2017-04-24