

SYSTEMIC INNOVATION

SIRL analysis to increase innovation success rates

Innovation ecosystems have been topic of friction within the EU. Healthy innovation ecosystems promote holistic multi-dimensional problem solving. The SIRL Tool has been developed to bridge the gap.

INTRODUCTION

- Definition
- History
- SIRL Framework & Tool
- Practitioner Testimony

GLOSSARY

*“Innovation is **the use** of new ideas, products or methods where they have not been used before.” – European Commission*

*“An important factor regarding the adoption rate of an innovation is its **compatibility with the values, beliefs, and past experiences of individuals in the social system.**” — Everett M. Rogers*

YOUR INNOVATION

Whether you are here as a policymaker, sector specialist, or actual innovator it is likely you are trying to evoke societal change through your work.

That. In a way. Is **Innovation**.

What is the (systemic) innovation you are working on?

SHORT HISTORY “Readiness Levels”

From NASA to ZeroW. A short history of measuring
innovation to adoption in regulation.

EMERGENCE



Technology Readiness Level (or TRL)
*was conceived to measure
the maturity of space technologies
on a 7-step ladder, later a 9-step ladder.*

EMERGENCE



Technology Readiness Level (or TRL)
was generalized
to measure technological readiness
of research output.

TRL

Have you ever used TRLs in your own work?

Thinking about the innovation you wrote down earlier, do you have an idea where it would sit on a TRL scale?

Does it work for your kind of innovation?

TECHNOLOGY READINESS LEVEL (TRL)

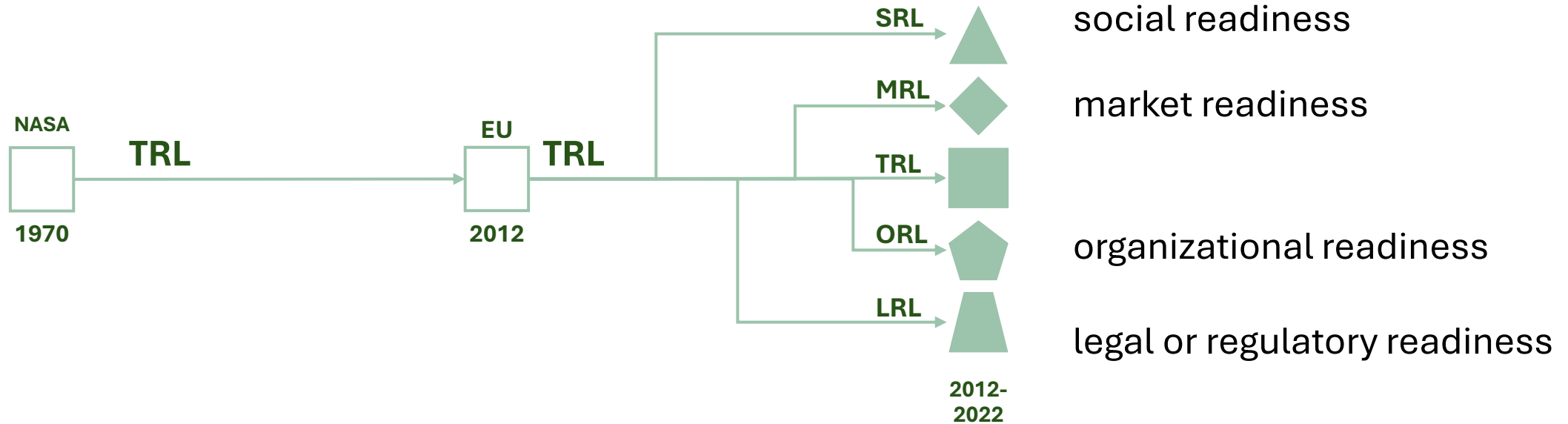
RESEARCH	9	ACTUAL SYSTEM PROVEN IN OPERATIONAL ENVIRONMENT
	8	SYSTEM COMPLETE AND QUALIFIED
	7	SYSTEM PROTOTYPE DEMONSTRATION IN OPERATIONAL ENVIRONMENT
DEVELOPMENT	6	TECHNOLOGY DEMONSTRATED IN RELEVANT ENVIRONMENT
	5	TECHNOLOGY VALIDATED IN RELEVANT ENVIRONMENT
	4	TECHNOLOGY VALIDATED IN LAB
DEVELOPMENT	3	EXPERIMENTAL PROOF OF CONCEPT
	2	TECHNOLOGY CONCEPT FORMULATED
	1	BASIC PRINCIPLES OBSERVED

Time for reflection!

**On your innovation and the
TRL**



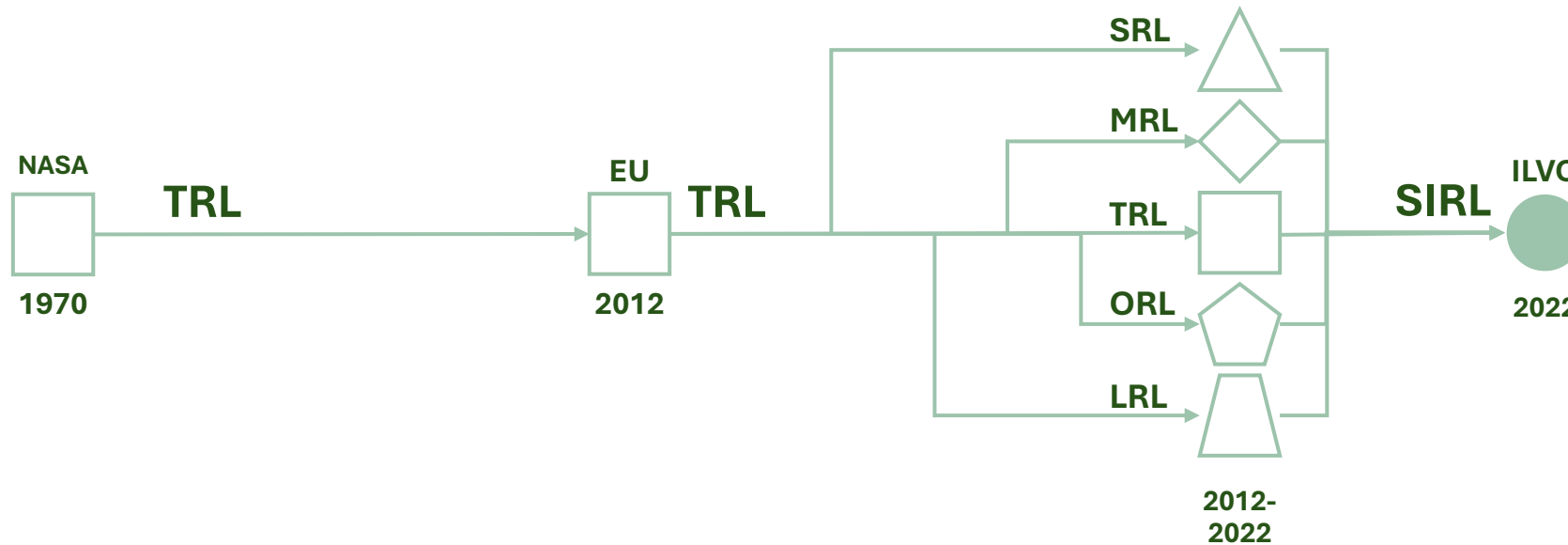
DEVELOPMENT



*New parallel dimensions were trailed and tested,
to accommodate its new function
as a broad-spectrum policy instrument*

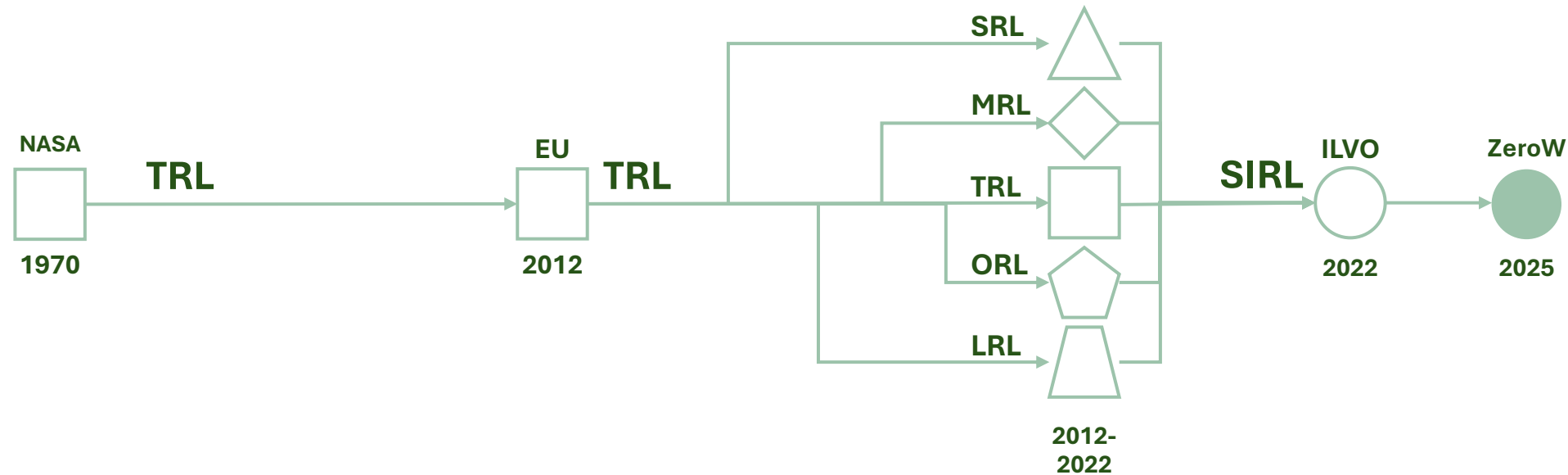
DEVELOPMENT

*The first version of the **Systemic Innovation Readiness Level** was conceived by ILVO to measure the maturity of systemic innovations.*



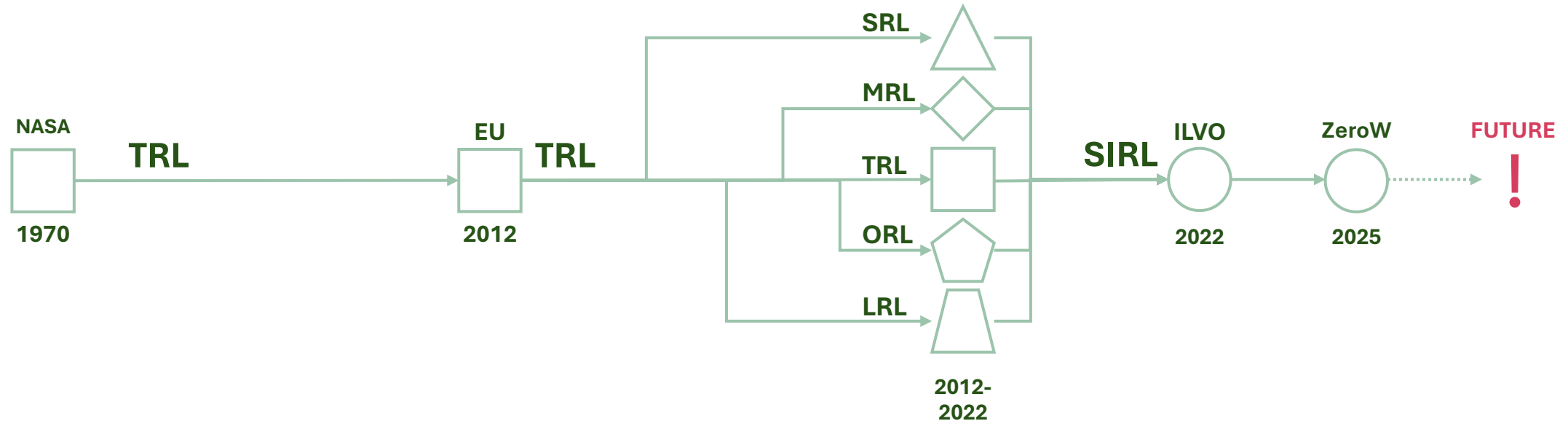
CALIBRATION

*Calibration of the
Systemic Innovation Readiness Level
within the ZeroW project led to
an improved and practice-proof prototype*



BURGEONING

With this jump we have reached the present. In which we are proud to present you the improved framework and tool, based on participatory research.

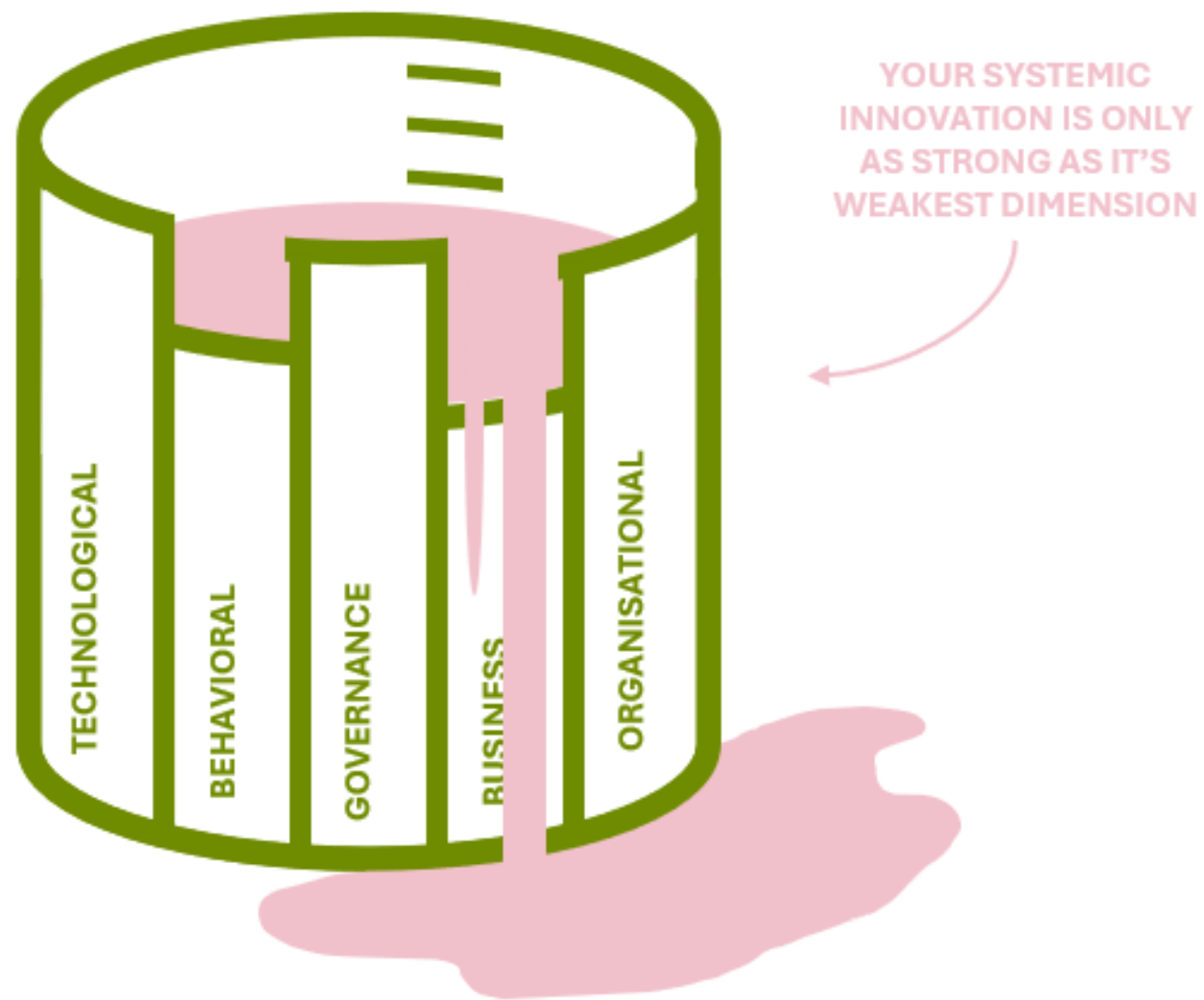


Systemic Innovation Readiness Level
(or *SIRL*) ready to be deployed.

FRAMEWORK “SIRL”

An integrated multi-dimensional (systemic) framework to
measure innovation readiness against society’s most
wicked problems.

WHY?



INNOVATION DIMENSIONS



TECHNOLOGICAL

Innovation(s) on product level, such as physical or digital inventions.



BEHAVIORAL

Innovation(s) on socio-cultural level, such as individual behavior changes or shifts in societal norms, values, and/or beliefs.



GOVERNANCE

Innovation(s) on policy level, such as changes in regulations, support actions, or legal context.



BUSINESS

Innovation(s) on economic level, such as financial feasibility and market context.



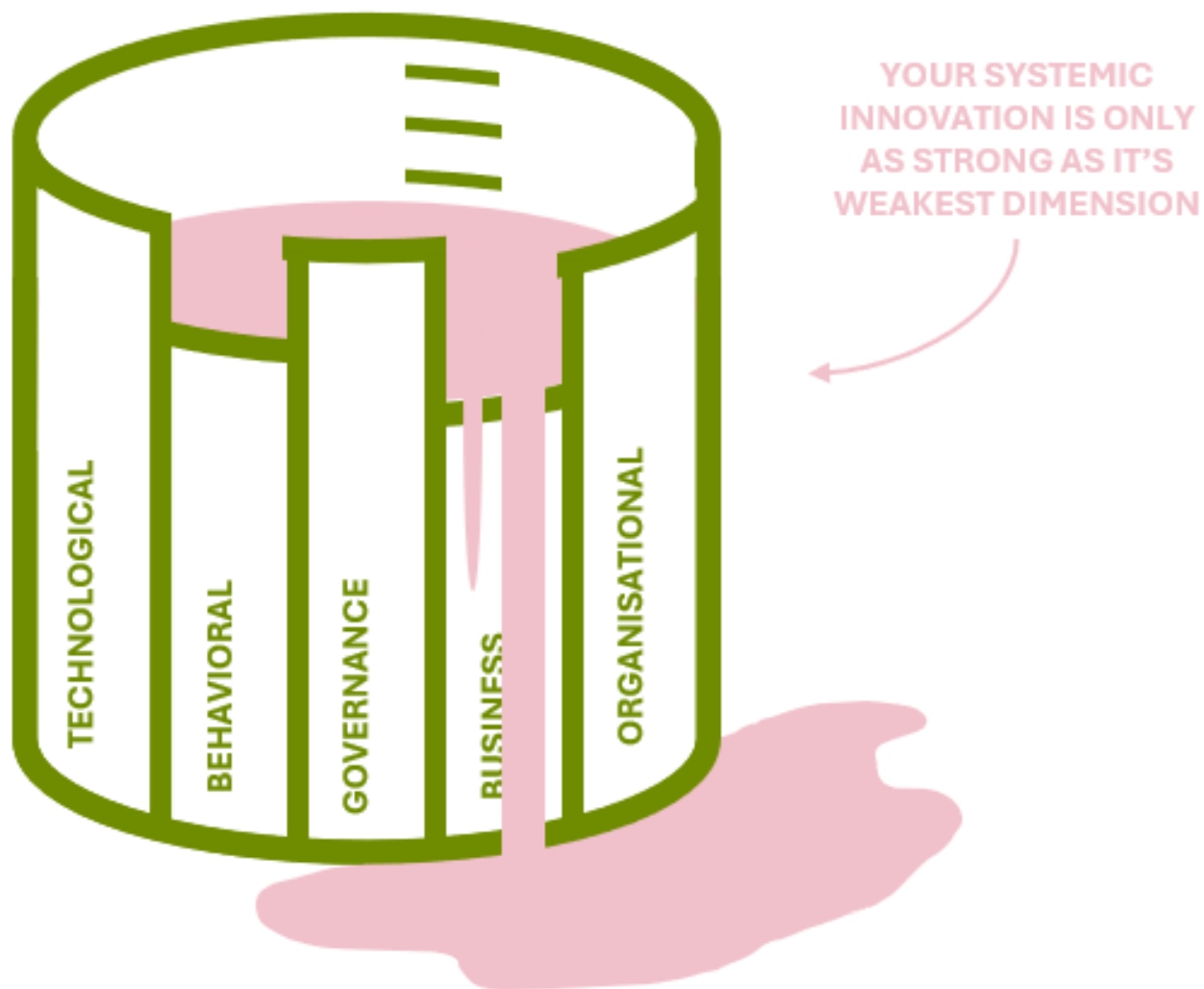
ORGANISATIONAL

Innovation(s) on collaboration level, such sector structure, lobby groups, and/or value chain adaptations.



(CUSTOM)

Context depended there may be additional relevant dimension(s).



Which stave in your innovation barrel might be the shortest ?”

READINESS LEVELS

TECHNOLOGY	1	2	3	4	5	6	7	8	9
BEHAVIORAL									
GOVERNANCE									
BUSINESS									
ORGANISATIONAL									

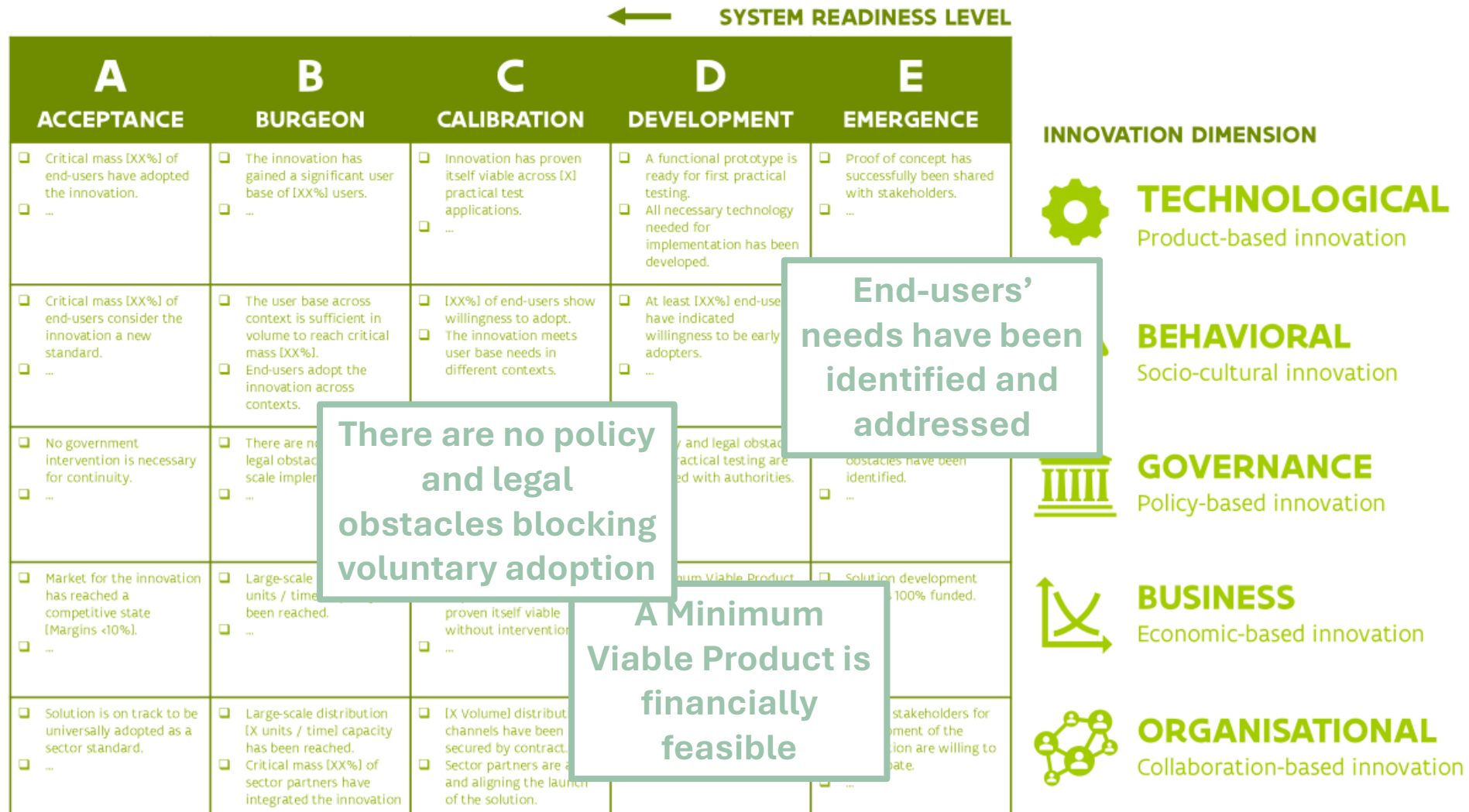
TECHNOLOGY	1	2	3	4	5
BEHAVIORAL					
GOVERNANCE					
BUSINESS					
ORGANISATIONAL					



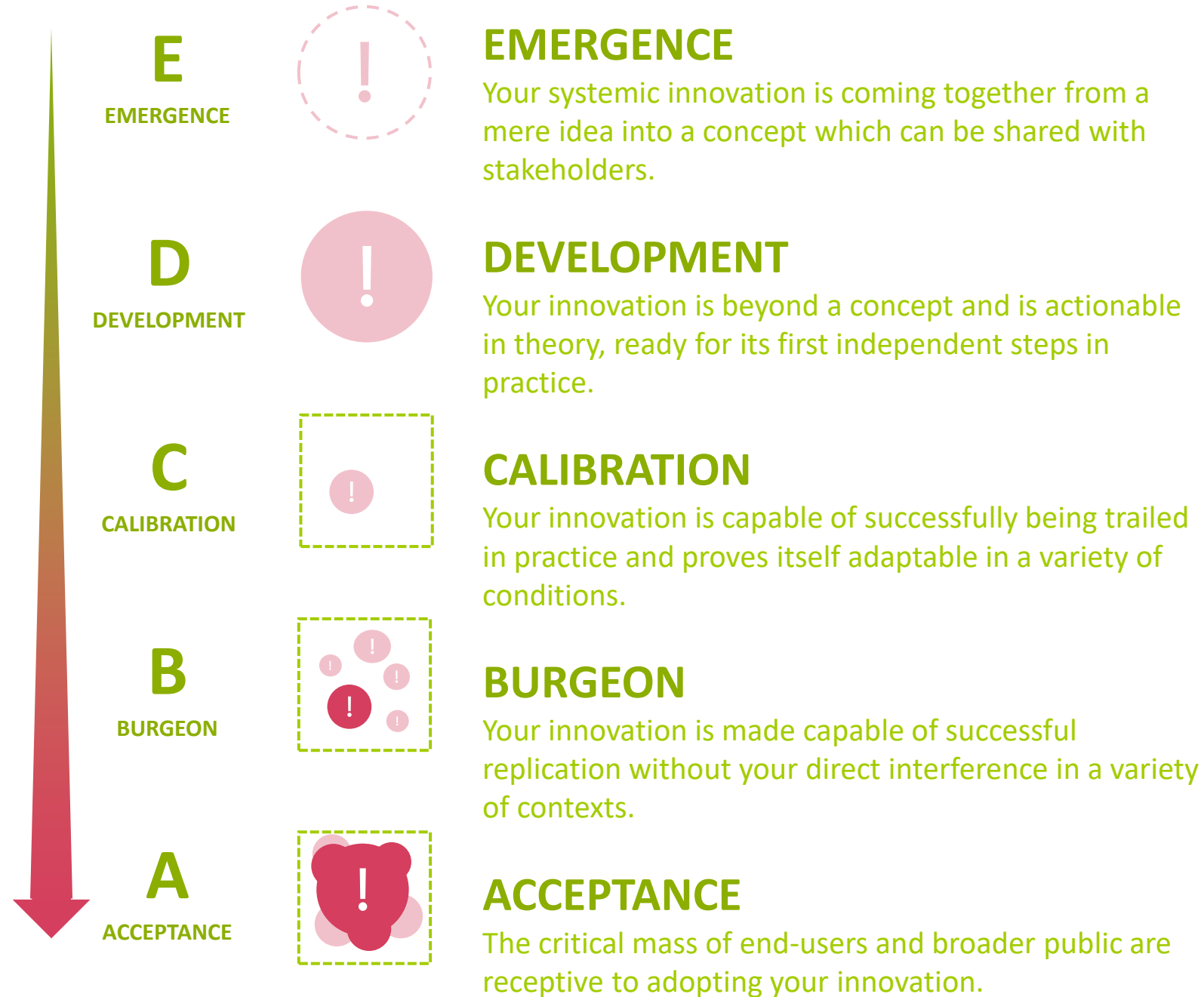
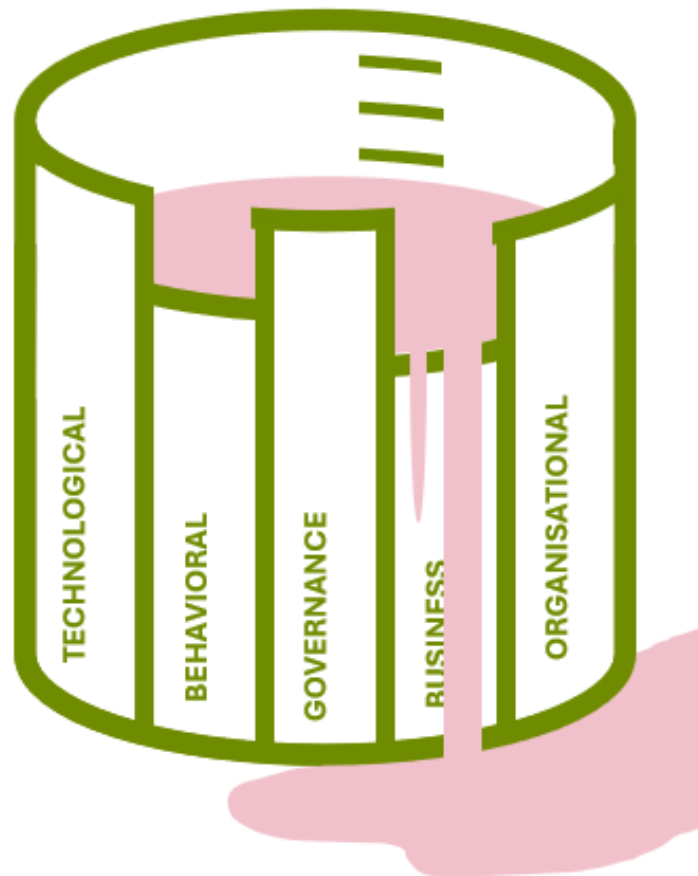
READINESS STANDARDISED



KPI CHART AT THE CORE



Choose your weakest and most strong dimension, and try to define the level ?



Time for reflection!

On weak and strong
dimensions



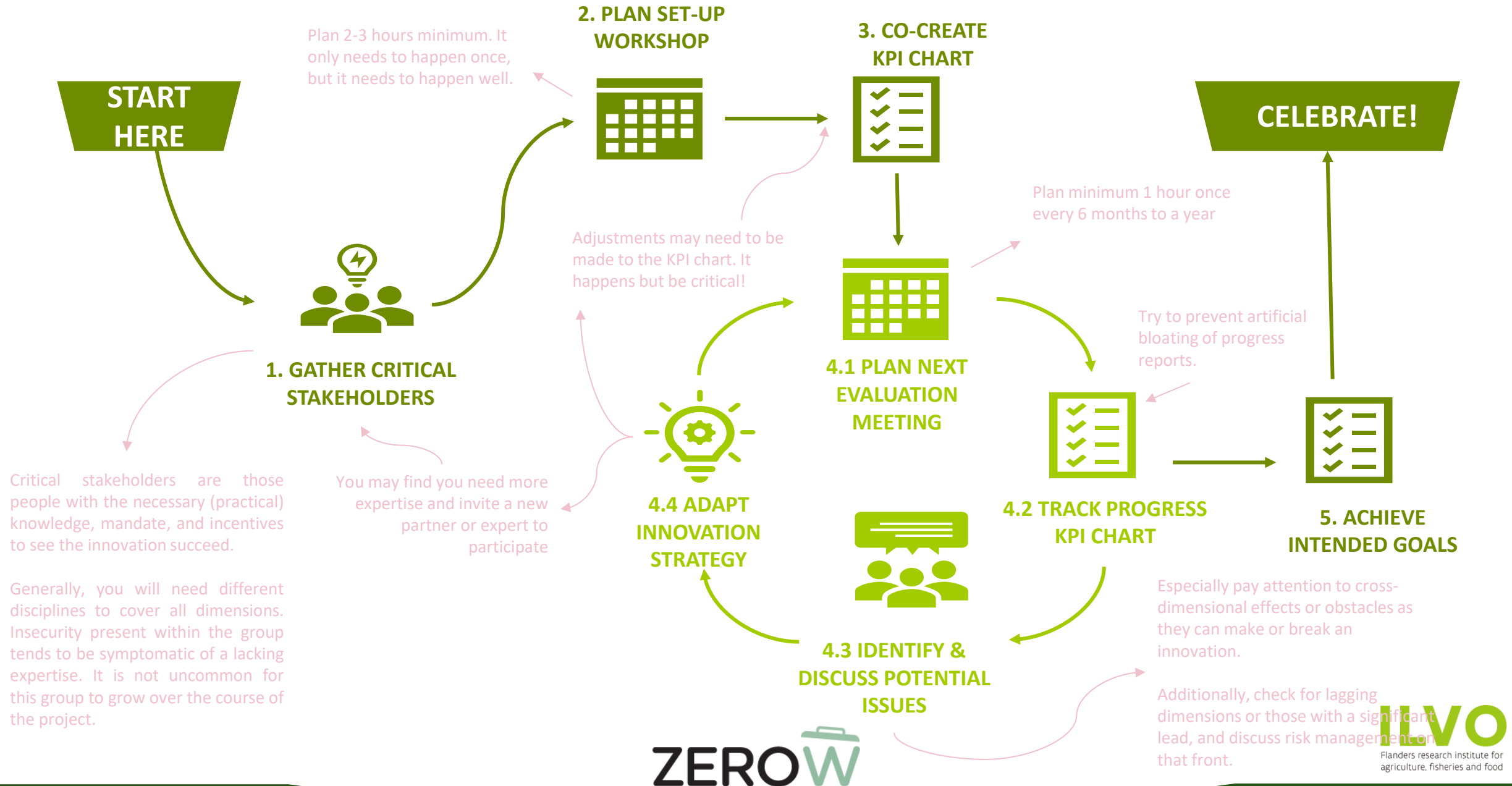


TOOL “SIRL”

An instrument to apply the SIRL Framework to active real-life innovations, to measure their progress and guide innovators in a holistic way.



APPLYING THE FRAMEWORK



*When it comes to your own innovation,
are you truly in touch with all the critical stakeholders?*



COMPREHENSIVE DEFINITIONS

2. SET-UP: DIMENSIONS

As a facilitator it is your challenge to set the stage for systemic thinking. A large part of setting that stage is explained as a group gain consensus on what each dimension contains. What exactly is contained in each dimension is color-coded to guide you through each core dimension. For illustration purposes it will be accompanied by a simplified example with a novel tomato product called "tomato soup".

TECHNOLOGICAL

This dimension is focused on physical things, products and their processes, inventions and novel objects, machines, hardware, and software. From prototype to consumer goods, from tool to app.

Included in this dimension are sub-domains such as:

- **PRODUCT**
- **PROCESS**
- **PACKAGING**
- **PRODUCTION**



NOVEL TOMATO SOUP

One option to deal with a seasonal tomato surplus is making novel products with a longer shelf life, such as fancy tomato soup. Or are local canned tomatoes better? What equipment does one need to prepare either? What quality can be produced? Canned or bottled?

BEHAVIOURAL

This dimension is focused on social context, including cultural and socio-economic factors, but also customer and stakeholder behavior. It deals with motivation, acceptance, and perception.

Included in this dimension are sub-domains such as:

- **MARKETING**
- **CONSUMER**
- **SOCIETY**
- **SOCIAL ACCEPTANCE**



SOUP CONSUMER BASE

How many people consume tomatoes in the region, and in what form? What keeps these consumers from making their own preserved tomatoes? What does this behavior do to a farmer, are they motivated to solve the surplus? What are they looking for in a solution?

GOVERNANCE

This dimension is focused on regulatory, governmental, internal and external factors as qualifications.

Included in this dimension are sub-domains such as:

- **QUALITY**
- **POLICY**
- **LOBBYING**

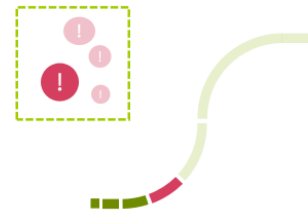
FOOD SAFETY

What are the safety standards and pre-conditions allowed? Are the tomatoes safe? How can the market be protected?

2. SET-UP: READINESS LEVELS

BURGEON

This stage marks the launch of your innovation into the real world. It starts with the launch of the solution and ends when the innovation is adaptable enough that its market potential can reach critical mass*.

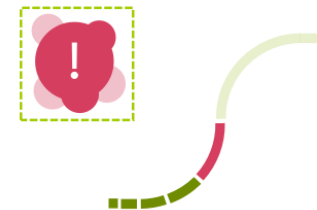


FEEDING THE BRAND

The first flavors are launched under a brand aimed at sustainability minded consumers. This user-base alone is insufficient, as at least 10k units/year needs to be sold to resolve the surplus and be profitable. Creating additional brands aimed at hospitals, retirement homes, and B&Bs should fill the gap.

ACCEPTANCE

This stage marks the last step necessary to make the innovation self-sustainable. It starts when the potential user-base* necessary to reach critical mass* is identified and ends when critical mass of end-users* is reached.



TOMATO SOUP IS THE NEW RED!

Brands are launched towards targeted markets. B&B market did not perform as expected, and the brand was realigned towards hotels. Additionally, two new flavors were launched to boost end-user reach. As of today, we reached the 10k sales mark and we are financially self-sustainable!

INNOVATION IN STEPS

Obviously reducing any innovation process down to a mere five steps is an oversimplification. Yet, the abstractness helps keep the broader picture in mind. It provides a mental framework on which to pin your context.

In the next steps you are going to project your own context over these five steps and identify the critical junctions your innovation needs to pass to get from one stage to the next.

In this way we will use this abstract framework to form concrete milestones for your innovation to aim for.

GLOSSARY*

- **End-users**
Individuals or organizations which are using your solution(s) firsthand.
- **User-base**
Collective total of end-users.
- **Critical mass**
The number of end-users needed in order for the innovation to be self-sustainable. Its size is dependent on context, the sector, current reliance on external funding, economy of scale benefits, etc. and needs to be estimated.

What happens after Acceptance? Your solution continues to grow and evolve. However, it ceases to be an innovation, as by then it is a full-fledged self-sustainable movement. Once you surpass critical mass you should not only be financially self-sufficient (no longer relying on subsidies), but the value proposition of your solution is a competitive alternative to the status quo. Your user-base is self-propelling, gaining its own momentum, but you will find competitors on your trail seeking to copy you. Congratulations are in order, and not small ones either.

SMART KPI



TOMATO
SURPLUS
PROBLEM

C CALIBRATION		D DEVELOPMENT	E EMERGENCE
	<ul style="list-style-type: none"> •Pilot scale multi-batch different flavors proves consistent (Taste-test panel). •Branding solution for each consumer-base reaches (License) 	<ul style="list-style-type: none"> •1000L assembly line ready for first practical testing (Volume test). •Minimum three different and successful flavor blends (Blind taste-test chef). 	<ul style="list-style-type: none"> •Agreement on 10L Batch recipe with SAUCE&Co partner. •Equipment and processes required listed (Operational Requirements pdf).
	At least 40 of the consumers show willingness to consume according soup (Survey)	<ul style="list-style-type: none"> •At least 50 consumers, from a variety of backgrounds, agreed to be taste-testers (Contracted). •Low cancel-risk due to cultural backlash (Survey). 	<ul style="list-style-type: none"> •Consumers for “soup” have been found (Survey). •How thin before sauce is no longer a sauce known (Survey).
		<ul style="list-style-type: none"> •Food and Safety Regulations industrial line check (License). 	<ul style="list-style-type: none"> •Food and Safety Regulations scan for legal requirements (Report). •Patent and/or protected license check shows no hits (Report).

*Any ideas on KPIs
for your innovation?*

SUPPORT FOR INTERPRETATION

SYSTEMIC INNOVATION TRACKER

You most likely find yourself here because you are working on a brilliant innovation, transformation of a sector, or because you aim to change the world altogether. Either way, you have probably found out these are rather complex tasks. While this tool is not going to solve all your problems, it aims to put your task in a systemic perspective. Successful innovations/transformations tend not to be simply one-dimensional, rather they consist of multiple smaller interventions which work together as a package in their systemic context. This tool will guide you through an assessment of how ready the sector or world is for your systemic innovation, and whether your "innovation package" is complete. It will do this across multiple dimensions relevant for innovation, it will help you set systemic indicators to track progress, and help you reflect on the systemic readiness level.

The chart below is a little preview of the **core of the tool**, with which to assess the **systemic innovation readiness level**. You will notice the chart has two axis, **system readiness level** and **innovation dimensions**. In order for us to understand these two concepts there will be an explanation on the next page. Suffice to say, with the readiness level we measure how far the innovation is on its way towards systemic integration whereas with the innovation dimensions we distinguish which aspects of the innovation are further along than others. Additionally, in pink you will find **Key Performance Indicators (KPIs)** trackers. Each phase of each dimension will have a small set of such indicators by which you measure if the necessary conditions have been reached to progress to the next phase.

SYSTEM READINESS LEVEL					INNOVATION DIMENSION
A	B	C	D	E	
ACCEPTANCE	BURDEN	CALIBRATION	DEVELOPMENT	EMERGENCE	
	0/3	✓	✓	✓	TECHNOLOGICAL Product-based innovation
			2/3	✓	BEHAVIORAL Socio-cultural innovation
		0/2	✓	✓	GOVERNANCE Policy-based innovation
		1/2	✓	✓	BUSINESS Economic-based innovation
			1/2	✓	ORGANISATIONAL Collaboration-based innovation
			1/3	✓	ICUSTOMI Context-relevant dimension

TIME NEEDED
2-3 hours initially
1 hour periodically

DIFFICULTY
Medium

ILVO
Flanders research institute for
agriculture, fisheries and food



**TOMATO
SURPLUS
PROBLEM**

Strategic decision

Innovators should pause product development in favor of advancing behavior KPIs of their solution. By doing so they likely prevent des-investments when unexpected obstacles occur such as through lack of consumer awareness or regional-specific market preferences.



3. THE KPI CHART

As you may have guessed from the tool title, the dimensions and readiness levels had to meet at some point. Glad you made it.

As you can tell from the chart below, we will have our dimensions listed vertically, and horizontally across you will find the readiness levels. In principle we can already start tracking an innovation; the more checkmarks we can put down across the board and towards the left the more mature an innovation is. However, it would neither be accurate nor informative, let alone helps us set constructive milestones.

SYSTEM READINESS LEVEL					INNOVATION DIMENSION
A	B	C	D	E	
ACCEPTANCE	BURDEN	CALIBRATION	DEVELOPMENT	EMERGENCE	
					TECHNOLOGICAL Product-based innovation
					BEHAVIORAL Socio-cultural innovation
					GOVERNANCE Policy-based innovation
					BUSINESS Economic-based innovation
					ORGANISATIONAL Collaboration-based innovation
					ICUSTOMI Context-relevant dimension

For the purpose of tracking useful progress, relevant for a specific innovation, we need to fill the chart with KPIs. A KPI otherwise known as a **Key Performance Indicator**, is a measurable activity by which progress can be tracked. **The goal is to have 2-3 KPIs per empty cell in the chart.** In the next chapter we will provide you with the guidance and template to set your own KPIs with your team of stakeholders.

This activity requires the lion's share of time during the initial workshop. After the general explanation, including dimensions and readiness levels, **prepare at least 1.5-2 hours together with your team for setting up the chart and its KPIs.**

4. CYCLING: SYSTEM INNOVATION READINESS LEVEL

Welcome to the most exciting part of the process: analysis and interpretation. In this section you will be guided through how to read the chart, and what to take away from it. Check "The Process" for the individual steps to follow.

HOW READY ARE WE?

To understand how ready the sector or world is for your innovation you need to find your readiness level in the chart. Your **READINESS LEVEL** is the most right column that has outstanding KPIs. In the example below this is column D.

A	B	C	D	E
0/1			0/1	
	0/1			
		0/1		
		1/1		
		0/1		
		0/1		
		0/1		

READINESS LEVEL

Systemic KPIs in column E have been successfully achieved, meaning the innovation left the Emergence phase and is currently in the Development phase. Since KPIs on three dimensions are yet to be achieved within Development, the matching column C remains empty.

HOW MUCH PROGRESS?

Innovation processes on a systemic level take time, often multiple decades. Still, we can measure its progress throughout the years by filling in the chart, again periodically (1-1) per year and comparing it to the previous measurement.

A	B	C	D	E
0/1			0/1	
	0/1			
		0/1		
		1/1		
		0/1		
		0/1		
		0/1		

PROGRESS

As you can tell, progress has been made on different systemic KPIs. It may not seem like it, but this represents a massive amount of work! Each step taken on this chart should be celebrated for the systemic achievement it is.

BALANCE NEEDED?

Your systemic innovation is only as strong as its weakest dimension. Watch out for having more than two steps between your best and worst dimension, since this likely leads to "false" progress in the leading dimension.

A	B	C	D	E
0/1			0/1	
	0/1			
		0/1		
		1/1		
		0/1		
		0/1		
		0/1		

BALANCE

Working ahead on one dimension while another lags can be detrimental. Often insights will be gained from the lagging dimension that alter the conditions of success in the other dimensions. In turn, this may lead to having to backtrack and redo work in the leading dimensions.

Time for reflection!

On stakeholders and KPIs



PRACTITIONER TESTIMONY

“SIRL IN ACTION”

Systemic Innovation Living Lab 4 tackled the FLW wicked problem by pursuing innovation of a novel mobile processing unit for on-field excess production during peak season.

INNOVATION SILL4

How to make better use of surplus fruit and vegetables that go wasted or remain underutilized in the future? Could (mobile) processing as a service be of use?

Let's keep food in the food chain! #foodfirst

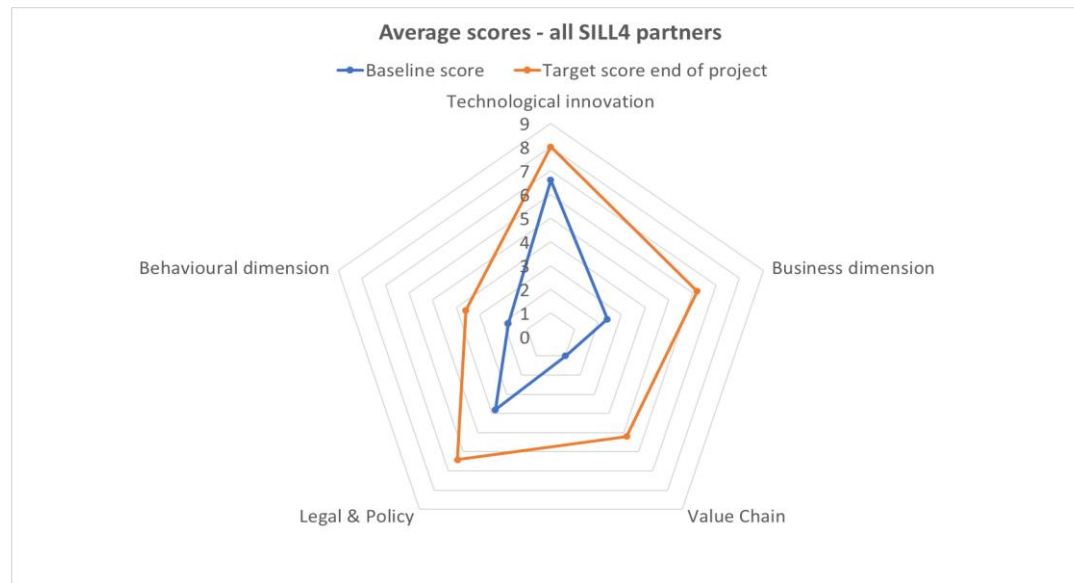


Over 15 different tests carried out at different locations illustrated the efficiency of the evaluated processing line in converting a wide diversity of perishable fruits and vegetables into tasteful and healthy juices and smoothies with a prolonged shelf life.

APPLICATION SIRL

The SIRL evaluation rounds carried out during the project were very useful, providing insight on what dimensions to focus.

Support by experts with background in specific dimension was sometimes lacking and therefore contact with external actors/experts established

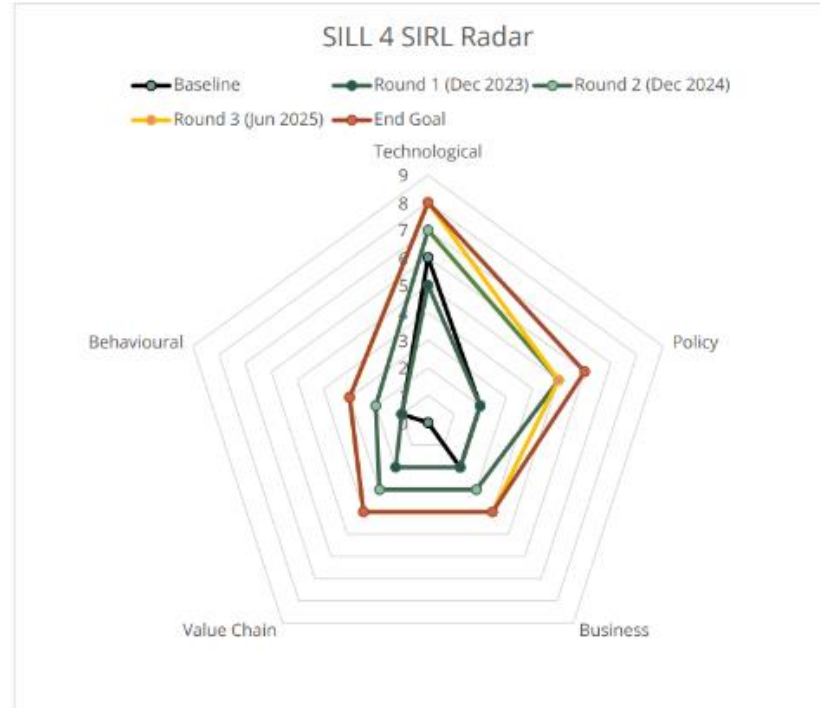


Collaboration is key!

Smart choices, SIRC guided allowed to make clear progress.

Further validation of business model via pilots, flagships, startups wanted.

New project ideas were developed in collaboration with enthusiastic actors



FUTURE of the “SIRL TOOL”

This tool is freely available and accessible.
Feel free to explore and find out what it could mean for you!

DIGITALISATION

Currently, description of the process and the use by the ZEROW SILLs is available on ZENODO:

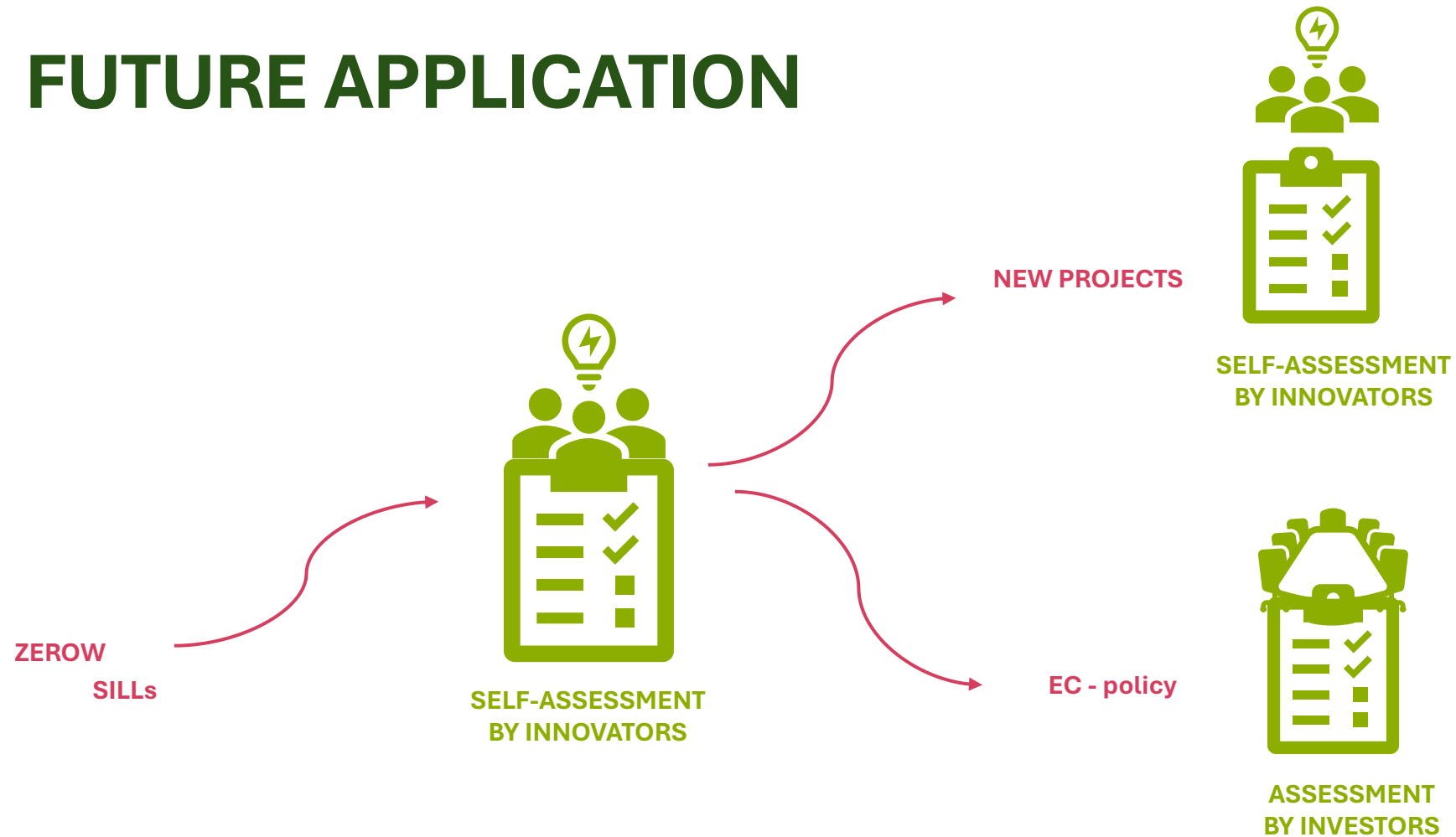
[ZeroW D4.1: Systemic Innovation Maturity Gaps](#)

The SIRL Tool will be freely available (creative commons) as online webpage, in which practitioners will have **free access** to an **interactive version** of the tool.

Where they can:

- Draw up their custom KPI charts,
- Track and save their progress, and
- Share the results with their stakeholders.

FUTURE APPLICATION



WHY?

