

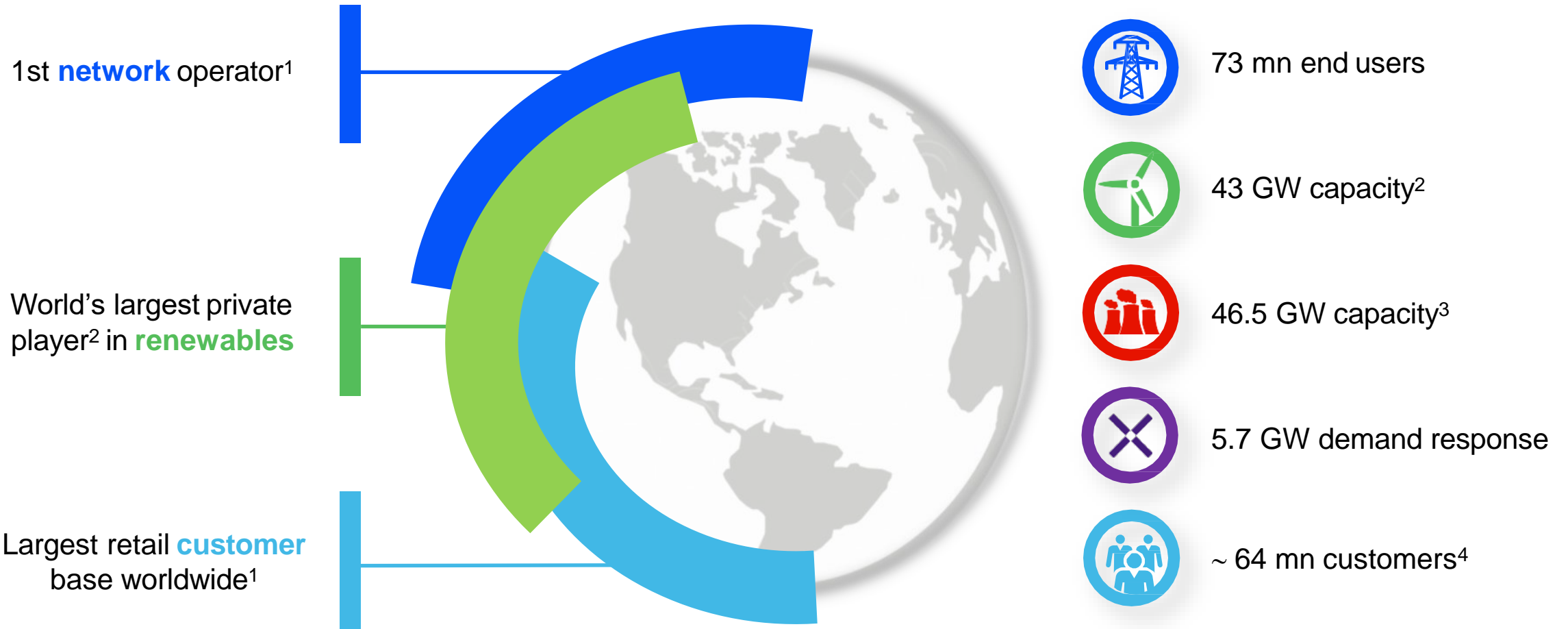
Open Science and Innovation Forum



Giovanni Tula
Chief Innovation & Sustainability officer
Enel Green Power

Enel Today

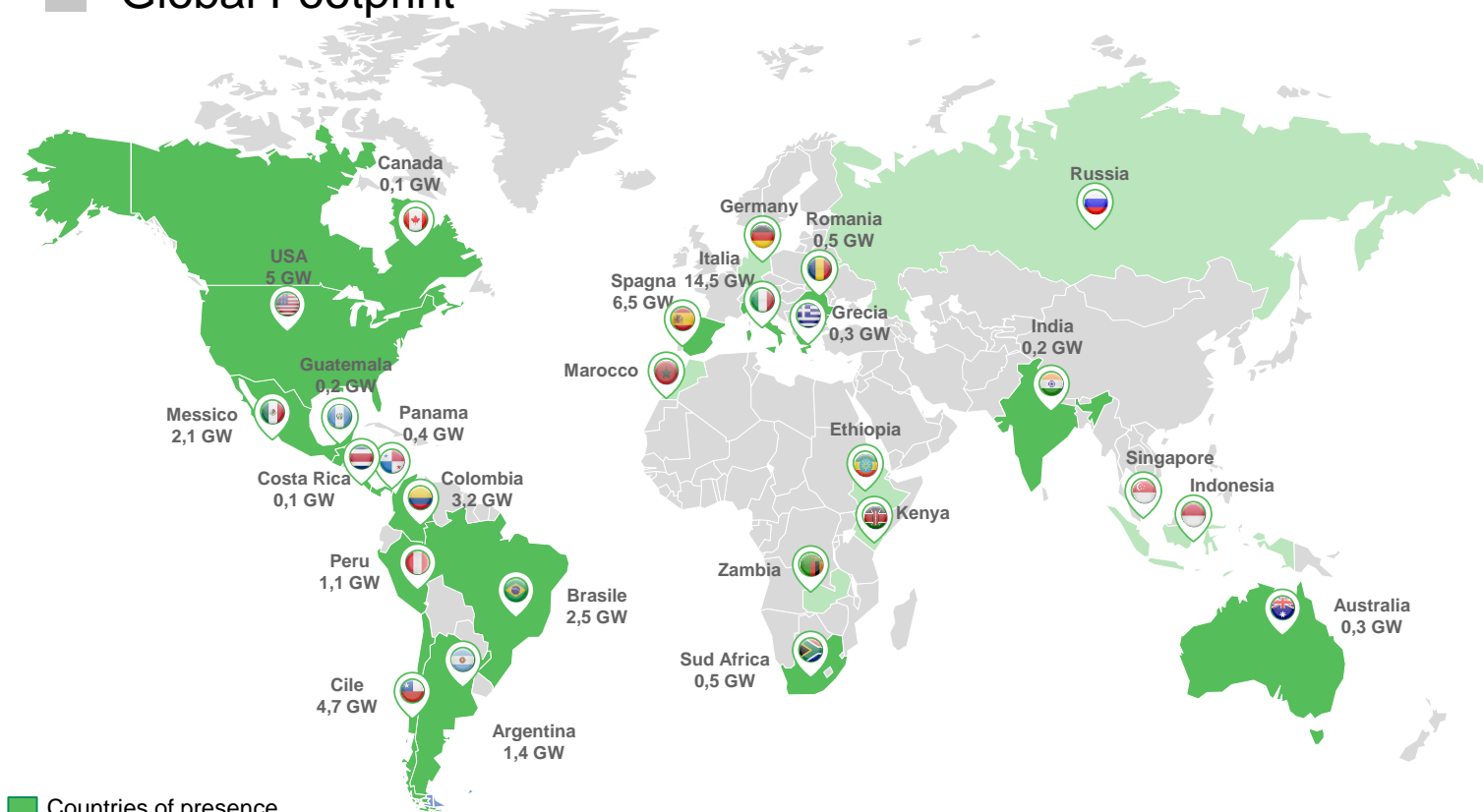
We are a leader in the new energy world



1. By number of customers. Publicly owned operators not included
2. By installed capacity. Includes managed capacity for 4.2 GW
3. It includes nuclear
4. Includes customers of free and regulated power and gas markets

Enel Green Power

Global Footprint



■ Countries of presence

■ Countries with advanced stage of development



Wind



Solar



Hydro



Geo

Key figures

2018

Capacity (GW)

43,4

Managed

Production (TWh)

108,4

Managed

Key financials (€bn)

2018

EBITDA

4.5

Opex

1.4

Maintenance capex

0.3

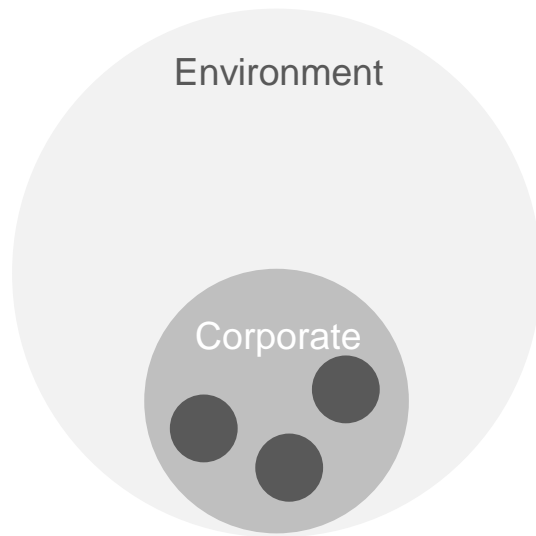
Growth capex

3.2



Can we DO it ALONE?

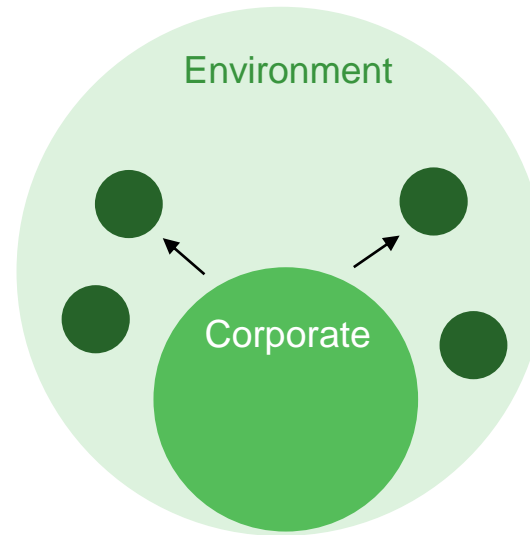
We changed the innovation paradigm



Closed Innovation

Process centralized based on
Internal sources

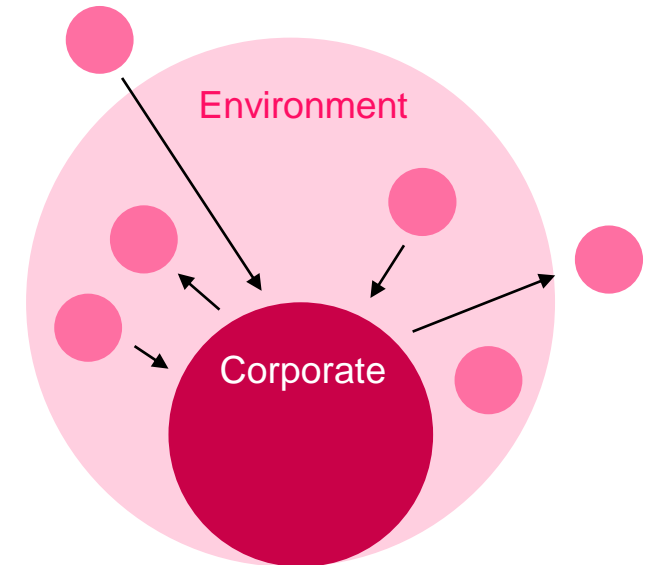
Years Ago



Open Innovation

Process focused on cooperation
with complementary partners

Few years Ago

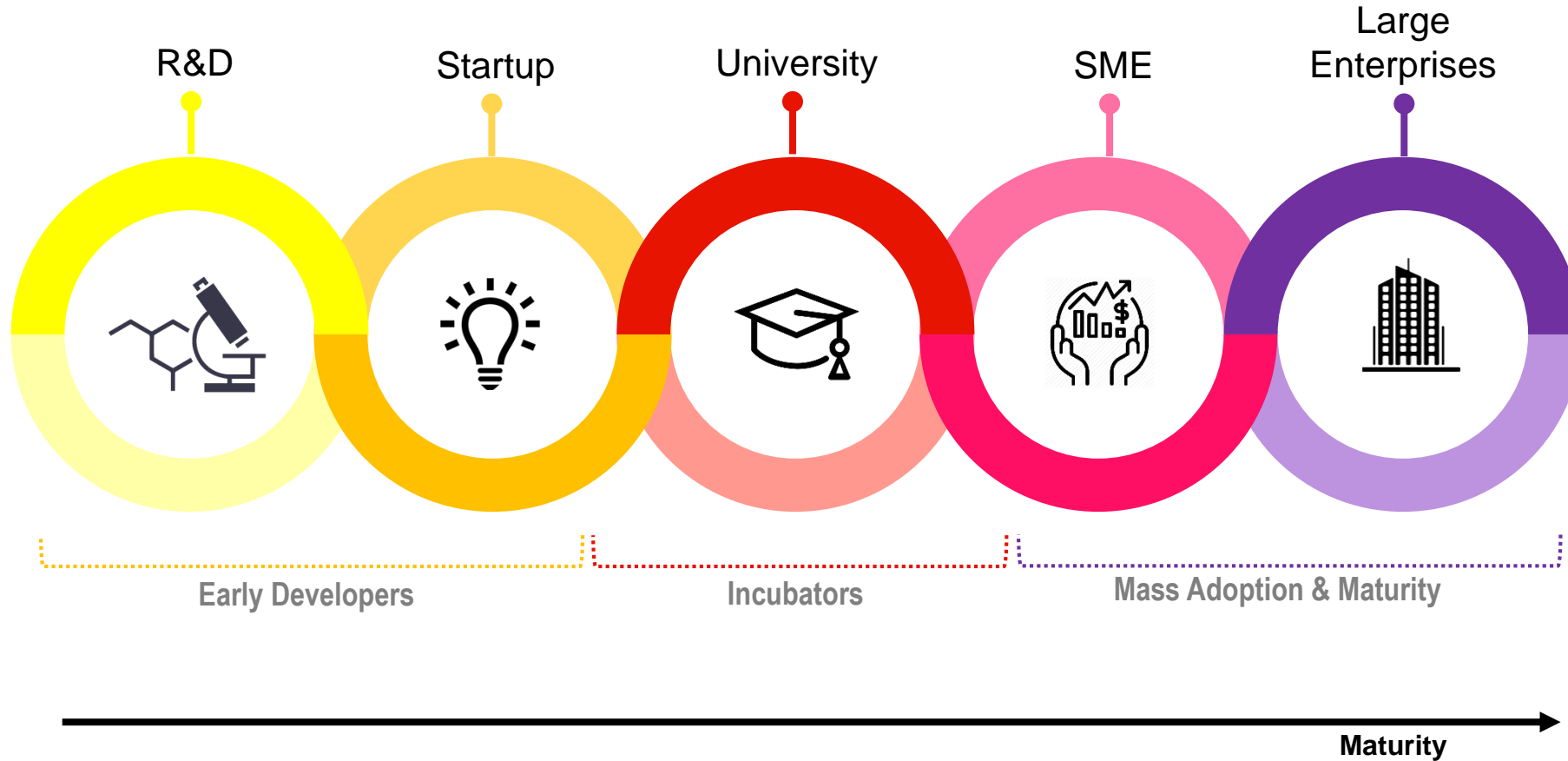


Innovation Network Ecosystem

Cross Organization Innovation
based on a community of partner

Today

We created an ecosystem of different players



WHAT we
NEED...





WE NEED...

TOOLS

What we need to create value?



A specific tool for each specific need

We need to collect any interesting idea

Reactive
Approach

Proactive
Approach

Startup

Suppliers

Co-workers

Venture Capital

Top Management

Peer Intelligence

Conferences

Market reports

Universities

CROUDSOURCING PLATFORMS

COMPETITIONS

INNOVATION HUBs

openinnovability.com
Our global digital
gateway

DISCOVER CHALLENGES

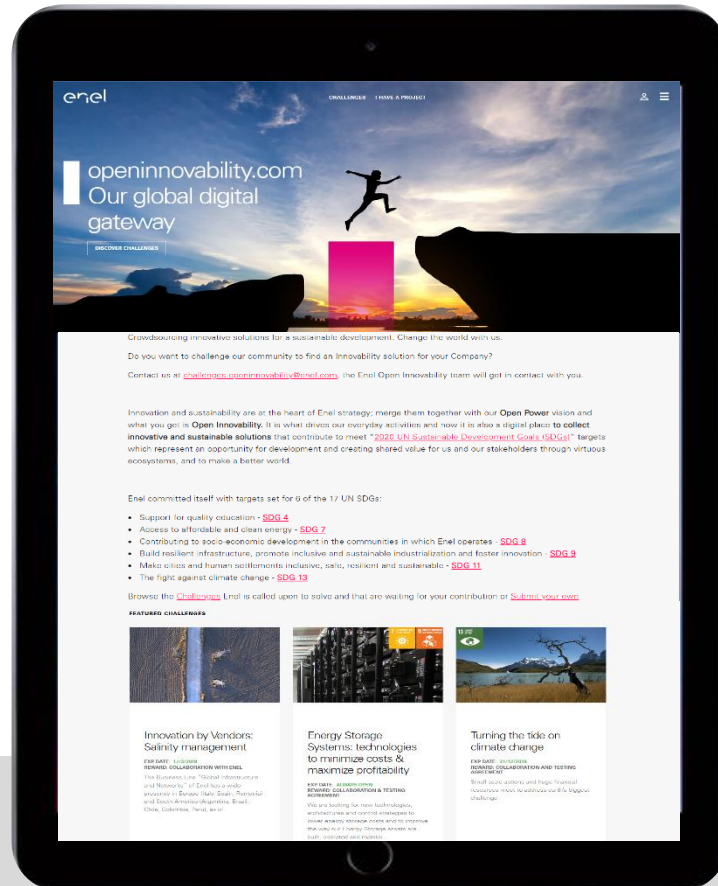


The Enel Crowdsourcing portal: a **digital open door**
to collect solutions from anyone for both a **sustainable innovation** and an **innovative sustainability**

Partnership with InnoCentive



Open Innovability

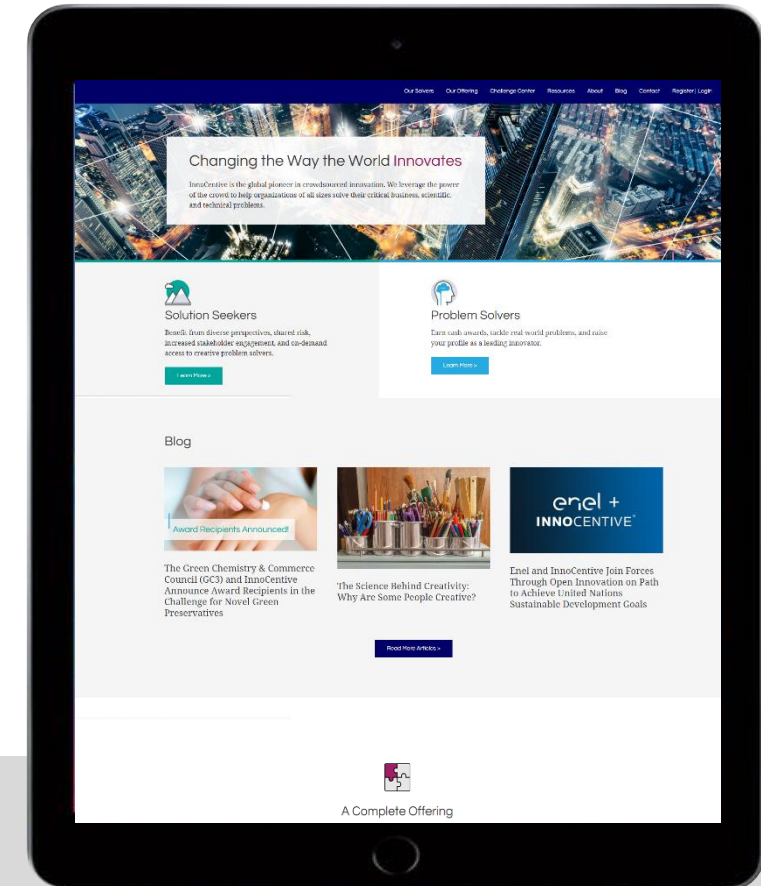


Community: ~ 13.000
Solutions submitted: ~ 1.500
from 74 countries

2018-2021
3 years agreement
.....
cross-posting on both
OpenInnovability.enel.com
& InnoCentive.com ;



InnoCentive



Community: ~ 380.000
Solutions submitted: ~ 62.000
Country: Nearly 200

Example of EGP challenges



Recycle and reuse of wind turbine blades

EXP. DATE: 17/2/2019
REWARD: \$10.000

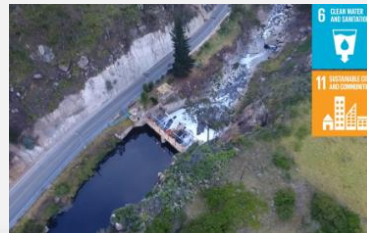
Enel Green Power is looking for the best available solutions (in terms of sustainability, effectiveness and cost) in order to **recycle and/or reuse the materials the wind turbine blades** are made up of, in order to be more and more sustainable, under a **circular economy perspective**.

Award: 10.000 \$

Exp. date: 17 February 2019

Challenge type: ideation challenge

Solution arrived as of today: 100+



Reduction of offensive odors in Muña reservoir and pumping station (Colombia)

EXPIRED
PREMIO: 5.000€

To reduce the impact of offensive odors in the **Muña reservoir** and the pumping Station in **Colombia**, Enel Green Power is looking for solutions to **reduce offensive odor emissions** due to some gases (e.g. H₂S).

Award: 5.000 €

Exp. date: 30 June 2019

Challenge type: public

Solution: 48

Award: yes



Technologies for renewable generation

Improvement of existing technologies, integration of renewable power in anthropized environments and use of **new renewable resources** experimenting with sources currently not included in Enel's generation fleet, such as marine energy. Your ideas can help us improve and enhance our renewable power generation performances: we look forward to hear all about it!

Exp. date: Always open

Challenge type: public

Solution: 47 received, 5 interesting

Award: n.a.

Innovation Lab/Hub

A global presence



Local Hub

Link to fast growing ecosystem in strategic countries for enel



International Hub

Presence in the best startup ecosystem in the world



Hub & Lab

Proximity to Enel best in class testing facilities and know how

Innovation Lab/Hub Catania

- ✔ Co-working space for start ups
- ✔ Networking with international stakeholders
- ✔ Synergie with others enel Innovation lab
- ✔ Access to the accredited lab
- ✔ Outdoor Laboratories
(PV floating test facility, Outdorr bench for PV modules performance evaluation, Bifacial modules test bench)
- ✔ Indoor laboratories
(Climatic chambers, Mechanical load test, Electroluminescence and Thermography Lab, Electrical safety tests, and more...)



Conference space



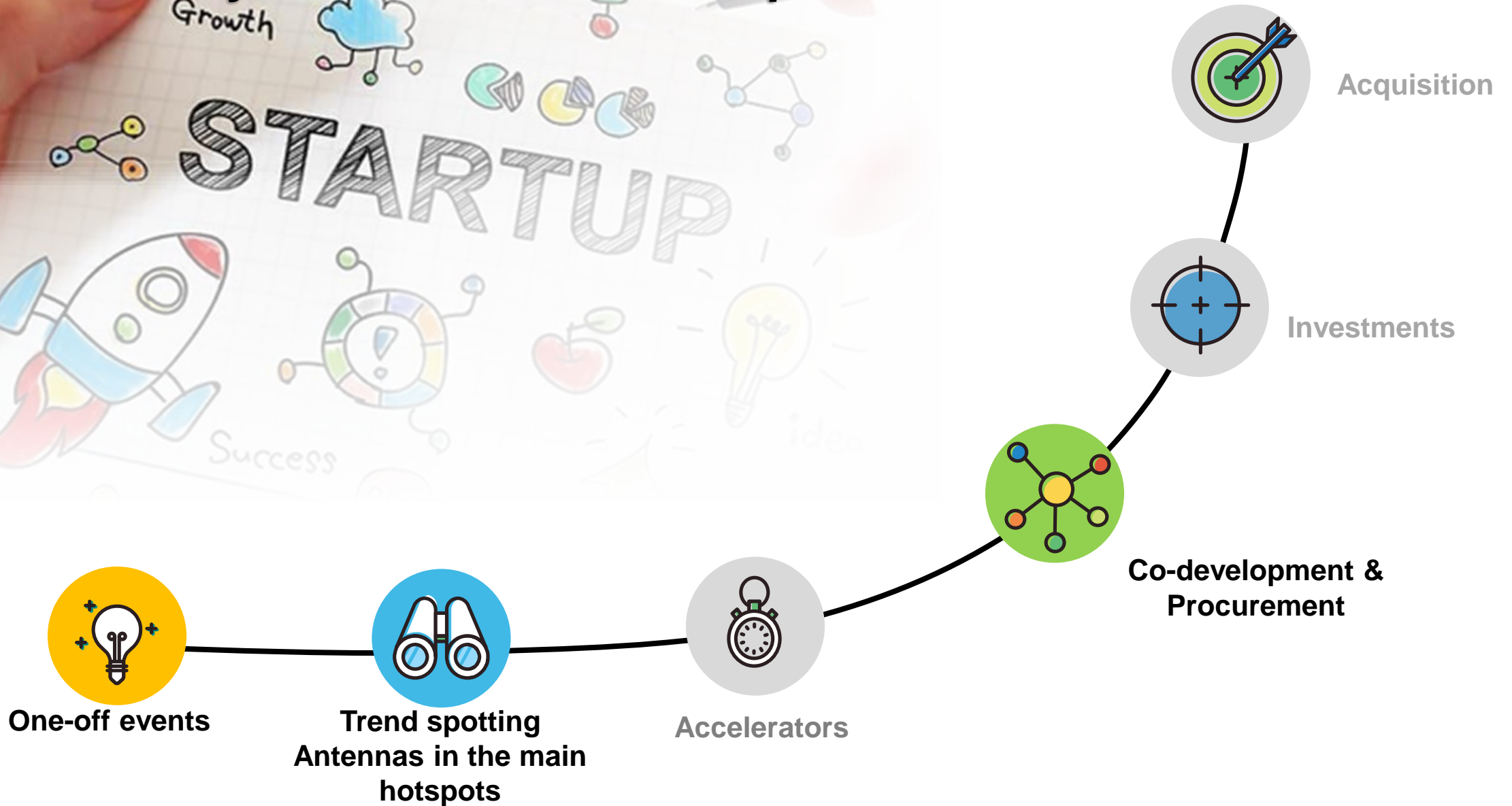
Co-working space



Indoor/Outdoor Laboratories



Different ways to work with start-ups

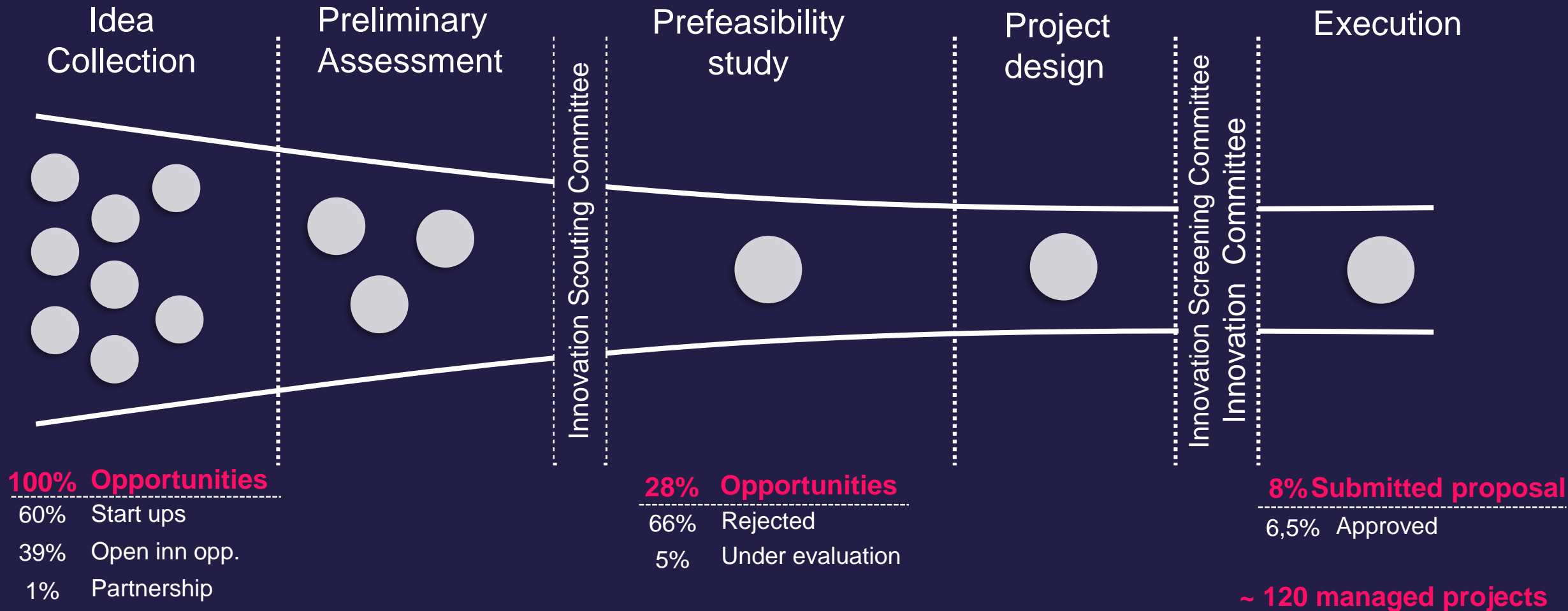




WE NEED...

A PROCESS

Innovation process

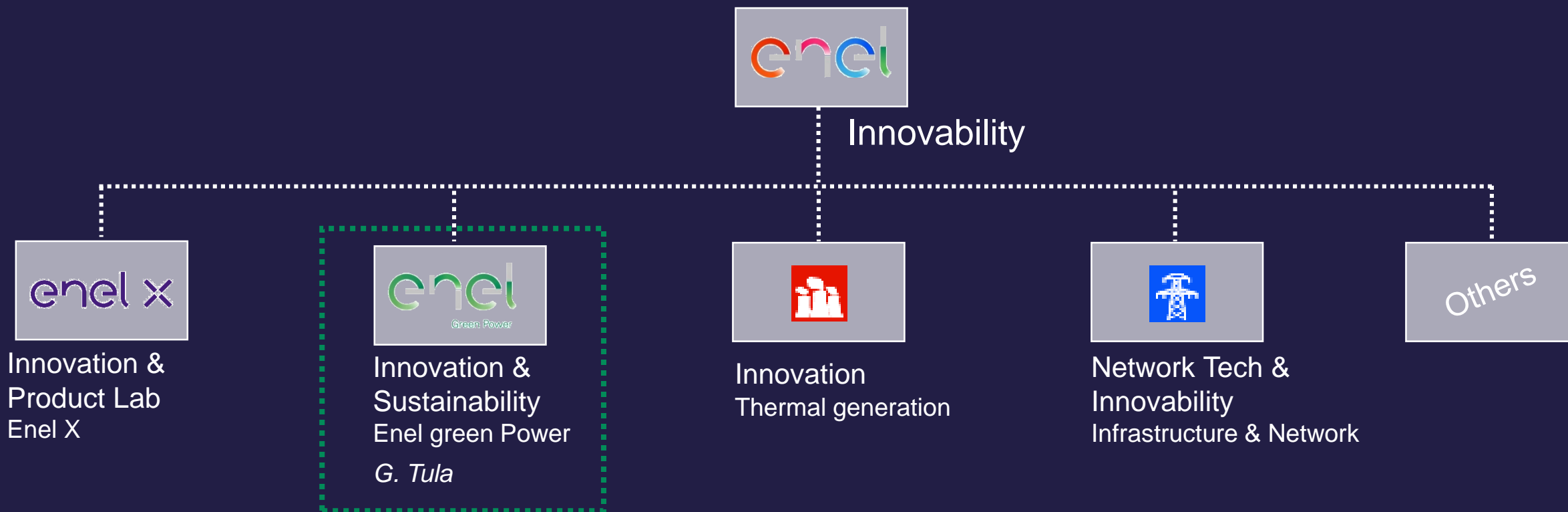




WE NEED...

AN ORGANIZATION

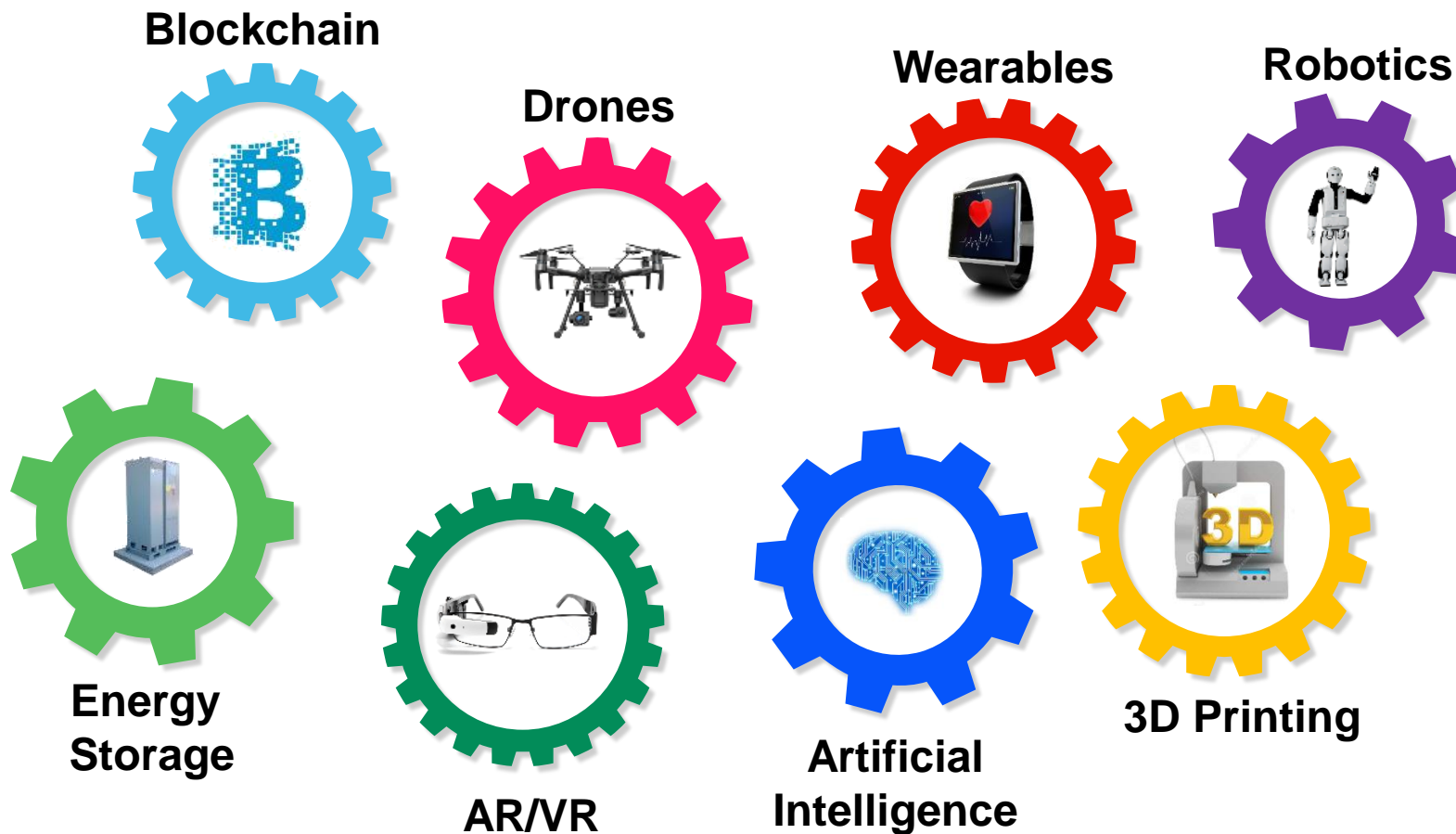
Innovation Organization



Innovation Communities

Innovation Community

Cross business lines team built on common interests and knowledge





WE NEED...

A CULTURE

Innovation Culture dissemination

No More excuses



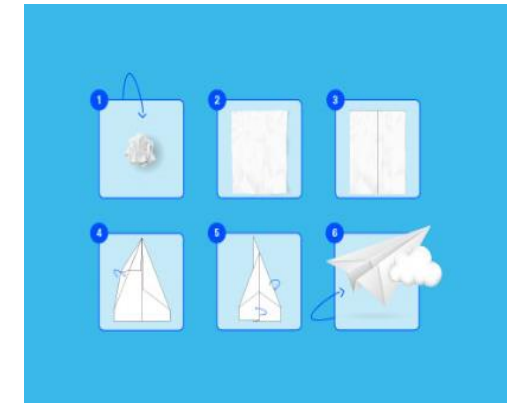
The “noes” which stop us growing

Enel Innovation World Cup



To give you the chance to test your entrepreneurial spirit

My Best Failure



To never be discouraged in front of obstacles

Creativity Lab



Creative Space

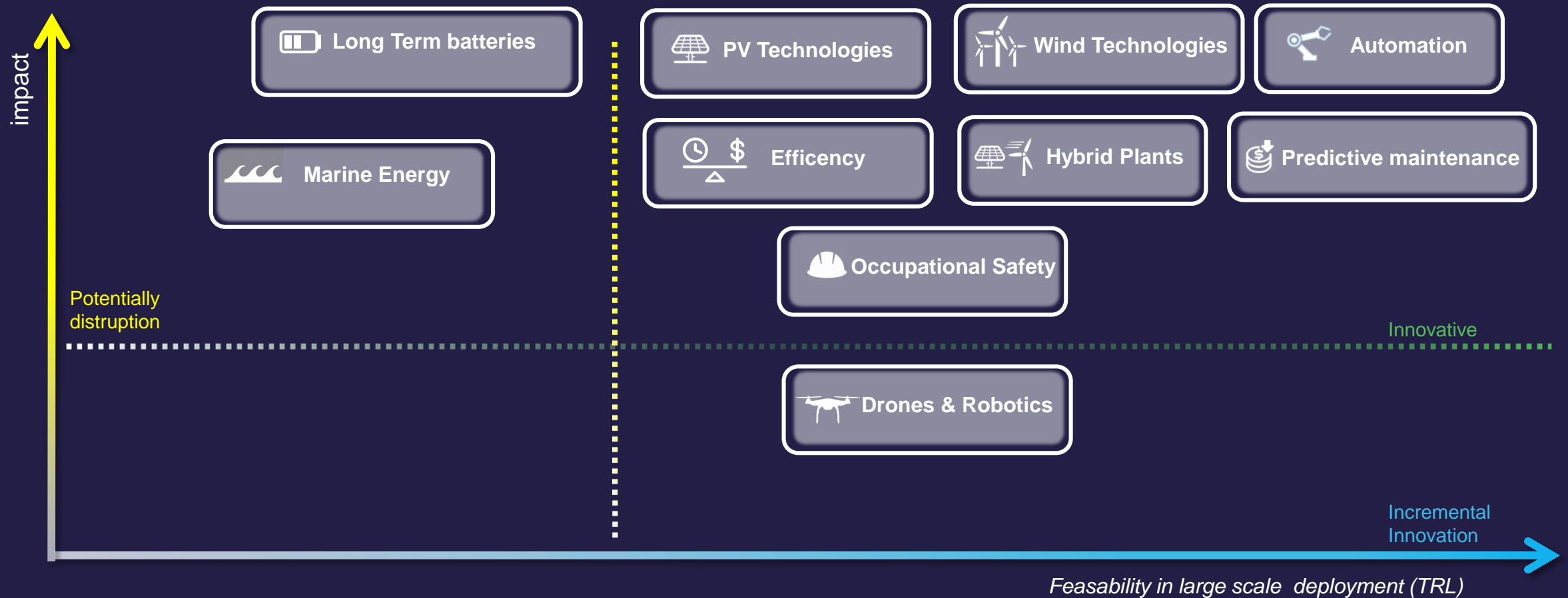
To teach colleagues to think out of the box



Innovation Accademy

Eventually We Innovate...

EGP Innovation matrix





Thank you