



Openinnovability.com to let anyone contribute to the UN Sustainable Development Goals

“The Role of Inducement Prizes” – National Academies of Sciences, Engineering, and Medicine
29 May - Washington, DC

29th May, 2019

Angelo Rigillo – Head of Innovation governance, intelligence and partnerships
ENEL Group



Angelo Rigillo



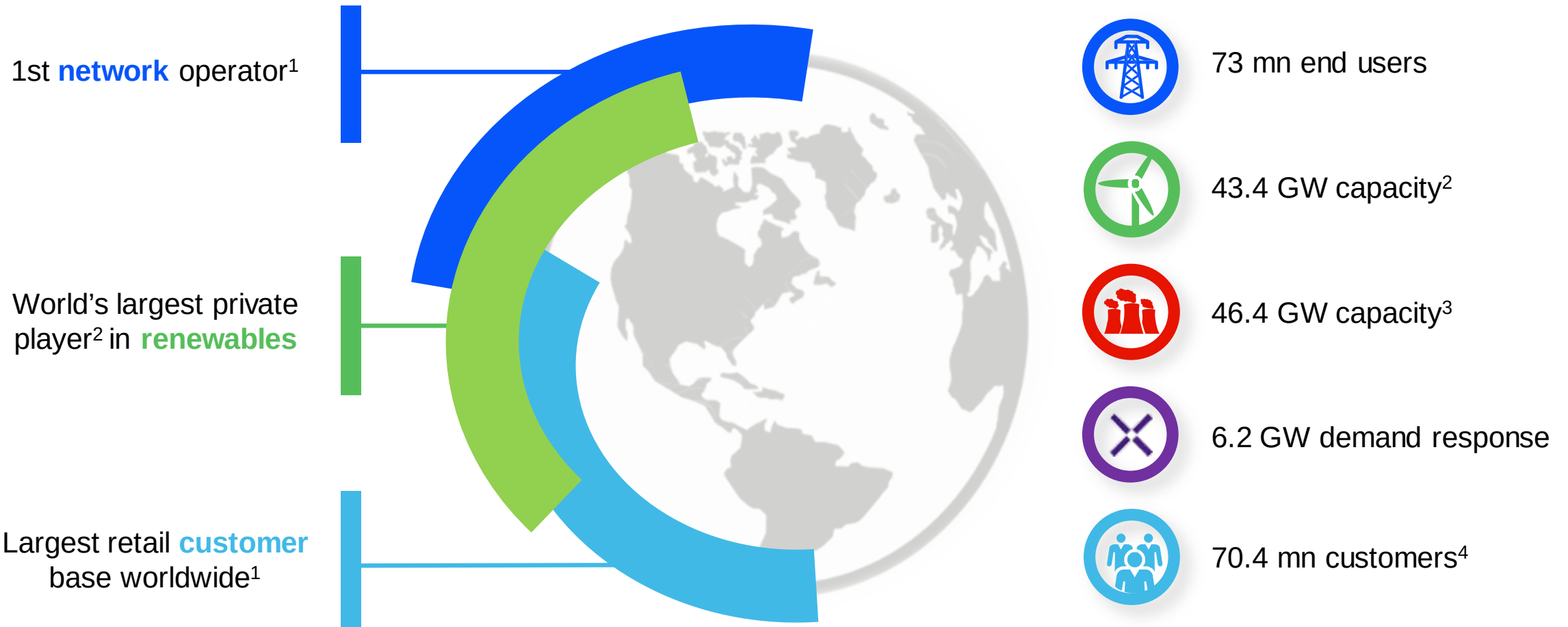
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Enel Group

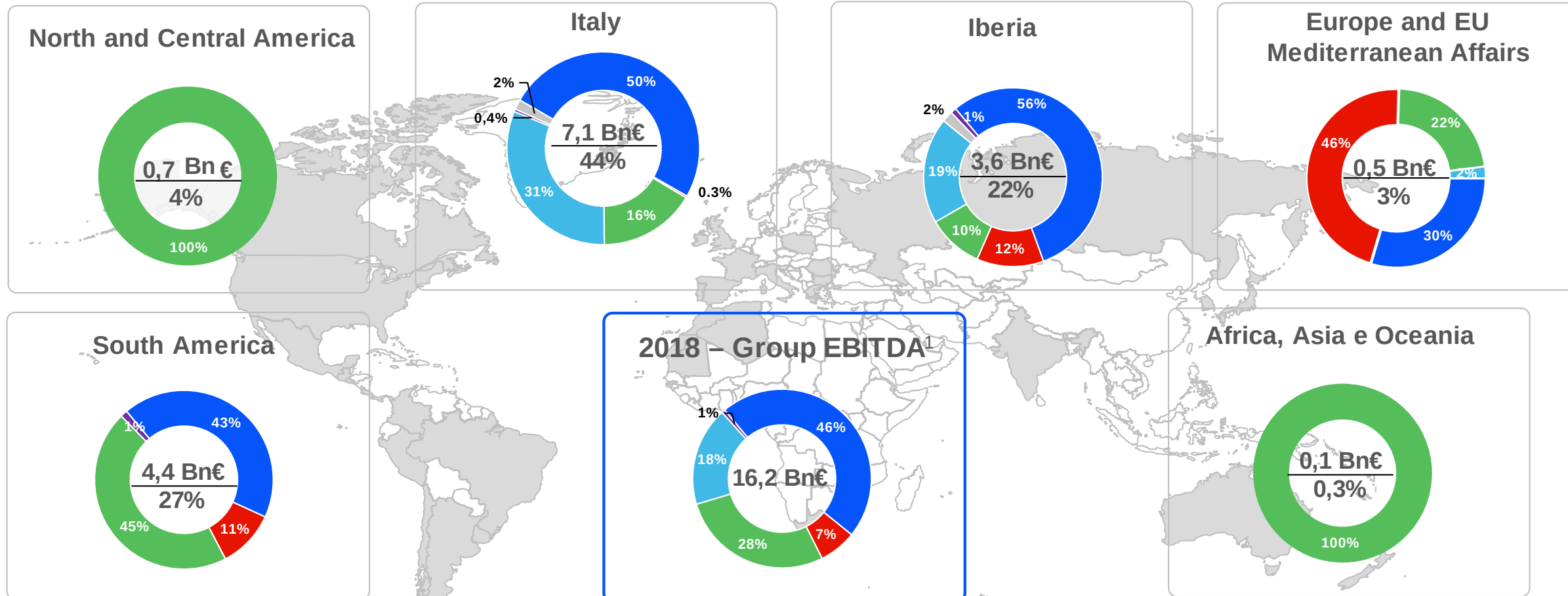


We are a leader in the new energy world



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

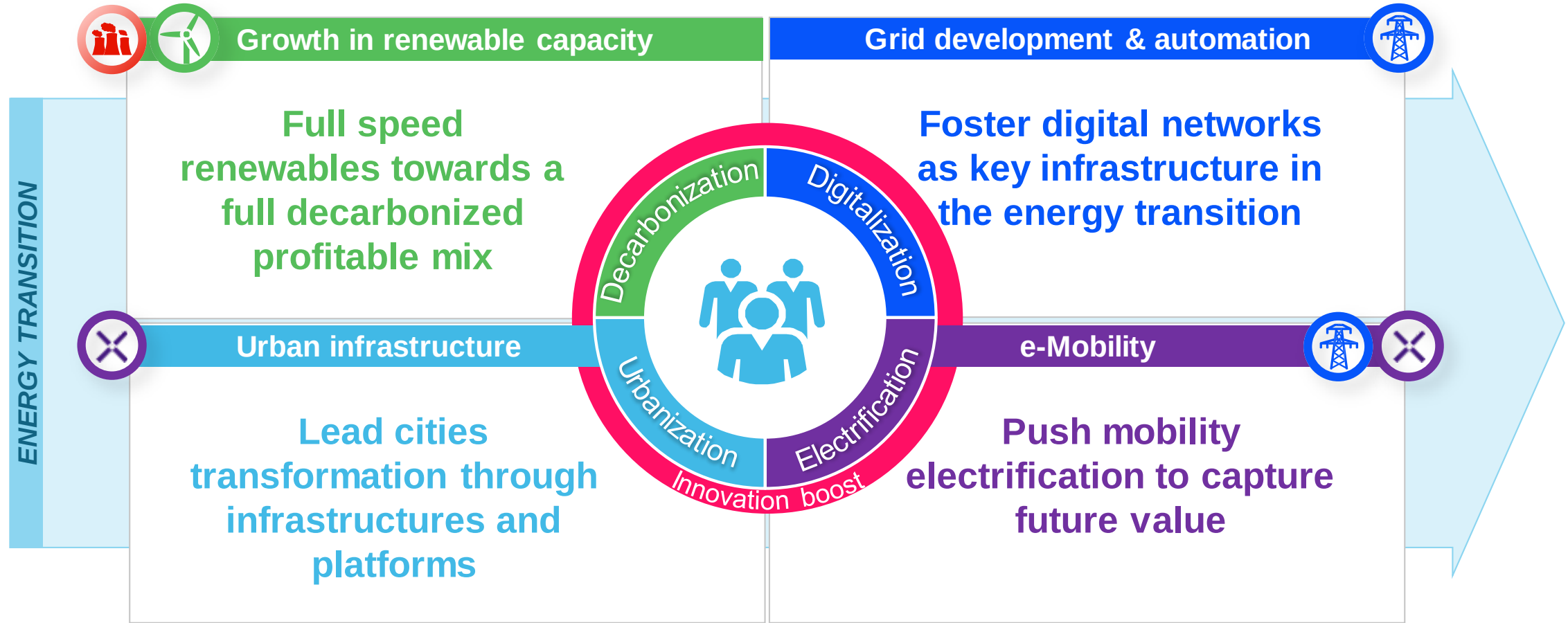
Our business model is well diversified and provides long term visibility



■ Networks ■ Thermal generation ■ Renewables ■ Retail ■ Other
■ Enel X

1. As of 2018. Breakdown includes -0.2 €bn from holding and services Presence with operating assets or through Enel X

Integrated model captures opportunities from energy transition



Strong commitment to our SDGs targets



Engaging local communities (*mn beneficiaries*)



High-quality, inclusive and fair education

2018 ¹	2020 ¹	2030 ¹
1.0	0.8add	2.5



Access to affordable and clean energy mainly in Africa, Asia and Latin America

2018 ¹	2020 ¹	2030 ¹
3.3 ²	3.0add	10



Employment and sustainable and inclusive economic growth

2018 ¹	2020 ¹	2030 ¹
1.8	3.0	8.0

Climate change



Reduction of CO₂ specific emissions
(kg/kWh_{eq})

2018	2020
0.36	<0.35

1. Cumulated figures since 2015
2. In the whole Group perimeter, 6.3 mn beneficiaries were reached



Can we do it alone?

Of course not!
OUR OPEN POWER VISION

Open Innovability for a better world, while sustaining
Enel business

«We can't be **sustainable** without **innovating**, and this is
the only way to create and share value while improving
our society»



COMPANIES



INSTITUTIONS



SOCIETY



INTERNATIONAL
NETWORKS

UNIVERSITIES

A MULTISTAKEHOLDER
ECOSYSTEM to
generate **SHARED
VALUE** and be
competitive in the long
term



CUSTOMERS

SUPPLIERS



START UPS



NGO AND SOCIAL
ENTREPRENEURS



EMPLOYEES

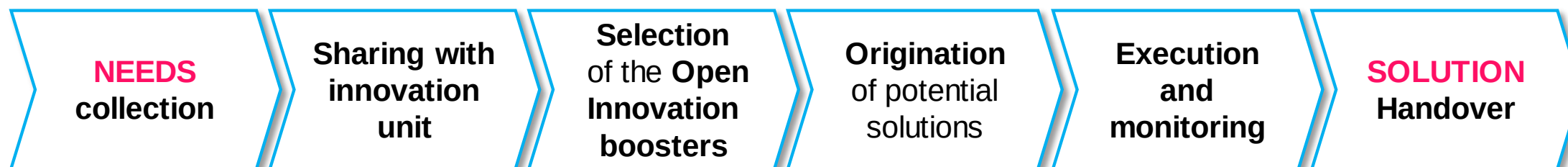
We have digitalized as much as possible the innovation journey path from needs to solutions



Crowdsourcing



Innovation Intelligence Platform

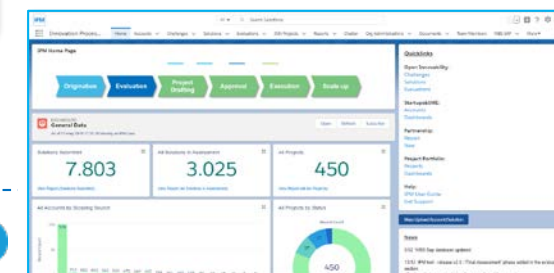


Needs collection tool

ID	Need	Status	Priority
001	AI for Business	Open	High
002	Renewable energy storage	Open	Medium
003	Grid Management	Open	Low
004	AI for energy efficiency	Open	High
005	AI for energy efficiency	Open	High
006	AI for energy efficiency	Open	High
007	AI for energy efficiency	Open	High
008	AI for energy efficiency	Open	High
009	AI for energy efficiency	Open	High
010	AI for energy efficiency	Open	High



Innovation Process Monitoring tool



Key figures of Innovation boosters portfolio



~ 400k Crowdsourcing solver community

www.openinnovanility.com a digital open door to collect solutions from anyone, true global reach thanks to the partnership with InnoCentive



5.000+ Startups scouted

Preliminary assessment

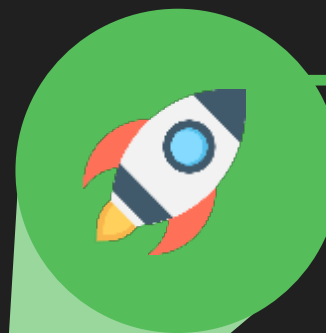
1.200+

Projects

200+

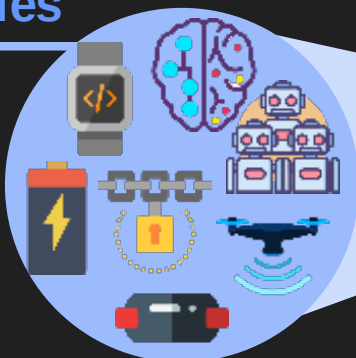
Scale-ups

50



9 tech communities

Drones, Augmented reality, Blockchain, Energy storage, 3D printing, Artificial Intelligence, Robotics, Wearables, Hydrogen



Innovability

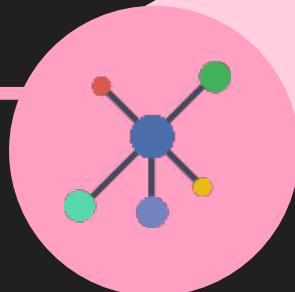
91 partnerships

Eg. Nissan, BYD, General Electric, LG



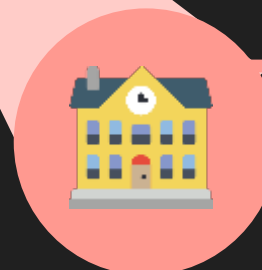
10 innovation hubs

San Francisco, Tel Aviv, Madrid, Santiago, Rio de Janeiro, Moscow, Catania, Pisa, Milan, Boston



13 academic partners

PoliMi, PoliTo, Sant'Anna, IIT, Columbia University, Bocconi, MIT, Berkeley, Comillas, Strathmore University, RSE, UniGE, LUIS



A digital open door to collect solutions from **anyone**

INSTITUTIONS

enel

COMPANIES

SOCIETY

INTERNATIONAL
NETWORKS

CUSTOMERS

[Openinnovability.com](https://openinnovability.com)

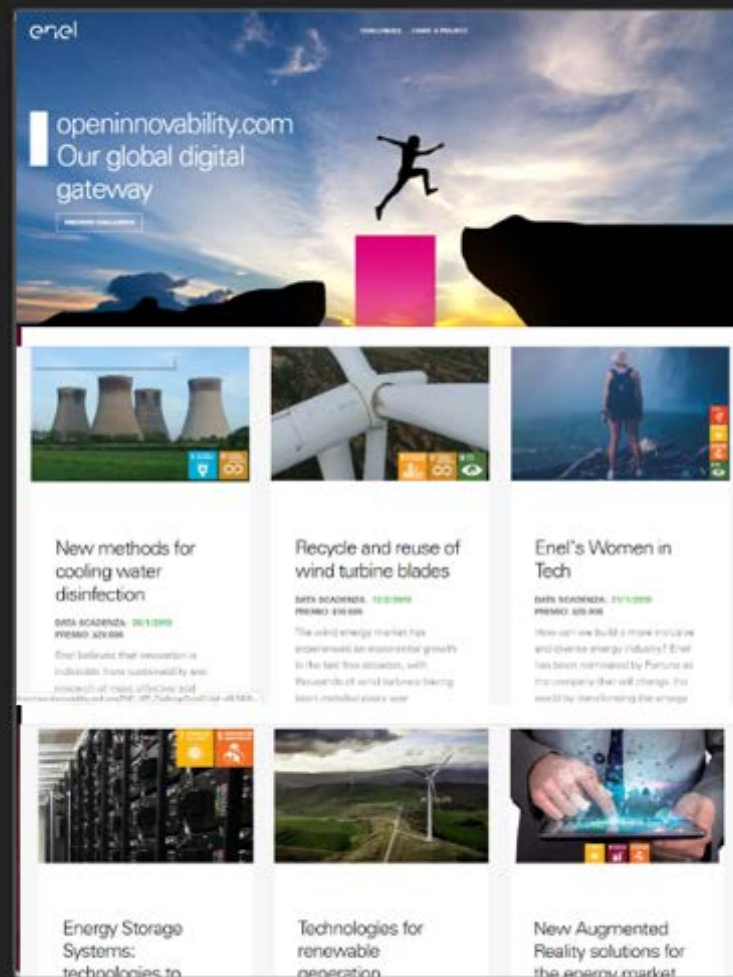
UNIVERSITIES

SUPPLIERS

START UPS

EMPLOYEES

NEW AND SOCIAL
ENTREPRENEURS



Experimenting crowdsourcing and continuous improvement



2019-2020

Leading innovation
crowdsourcing
platform for energy
sector

May 2018

cross-posting on
InnoCentive.com

2017-2018

1st stage:
openinnovability.com
for internal
challenges only

2nd stage:
openinnovability.com
also for external
challenges

2015-2018

External platforms to collect
ideas from both Enel people
and externals



External platforms to collect ideas from both Enel people and externals



InnoCentive collaboration 2015-2018

15 challenges have been posted by only Enel business lines which joined the agreement



Global Renewable Energies



Global Thermal Generation

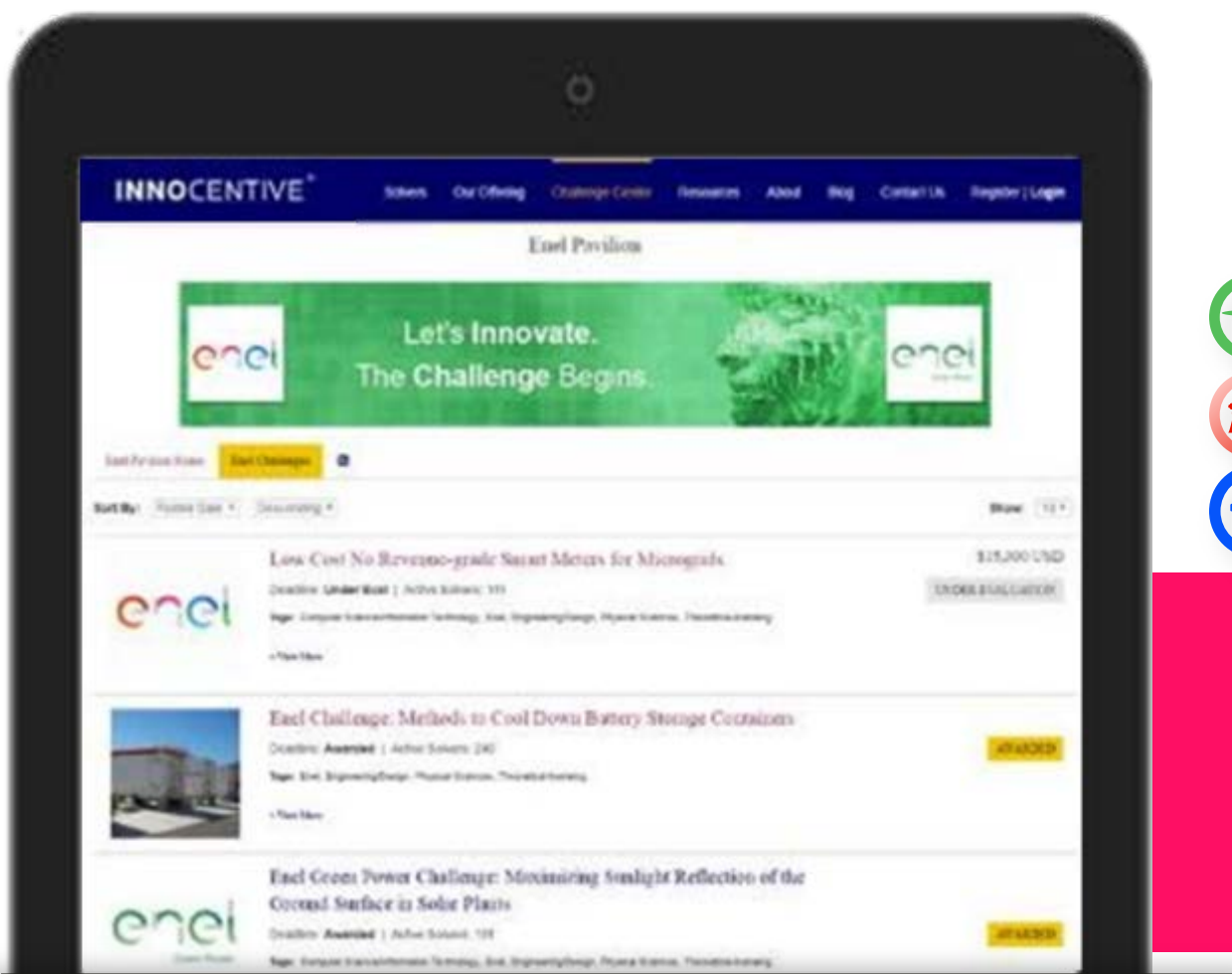


Global Infrastructure and Networks

19 out of 395 solutions awarded

12 challenges solved

\$87,000 awards



Feb 2017

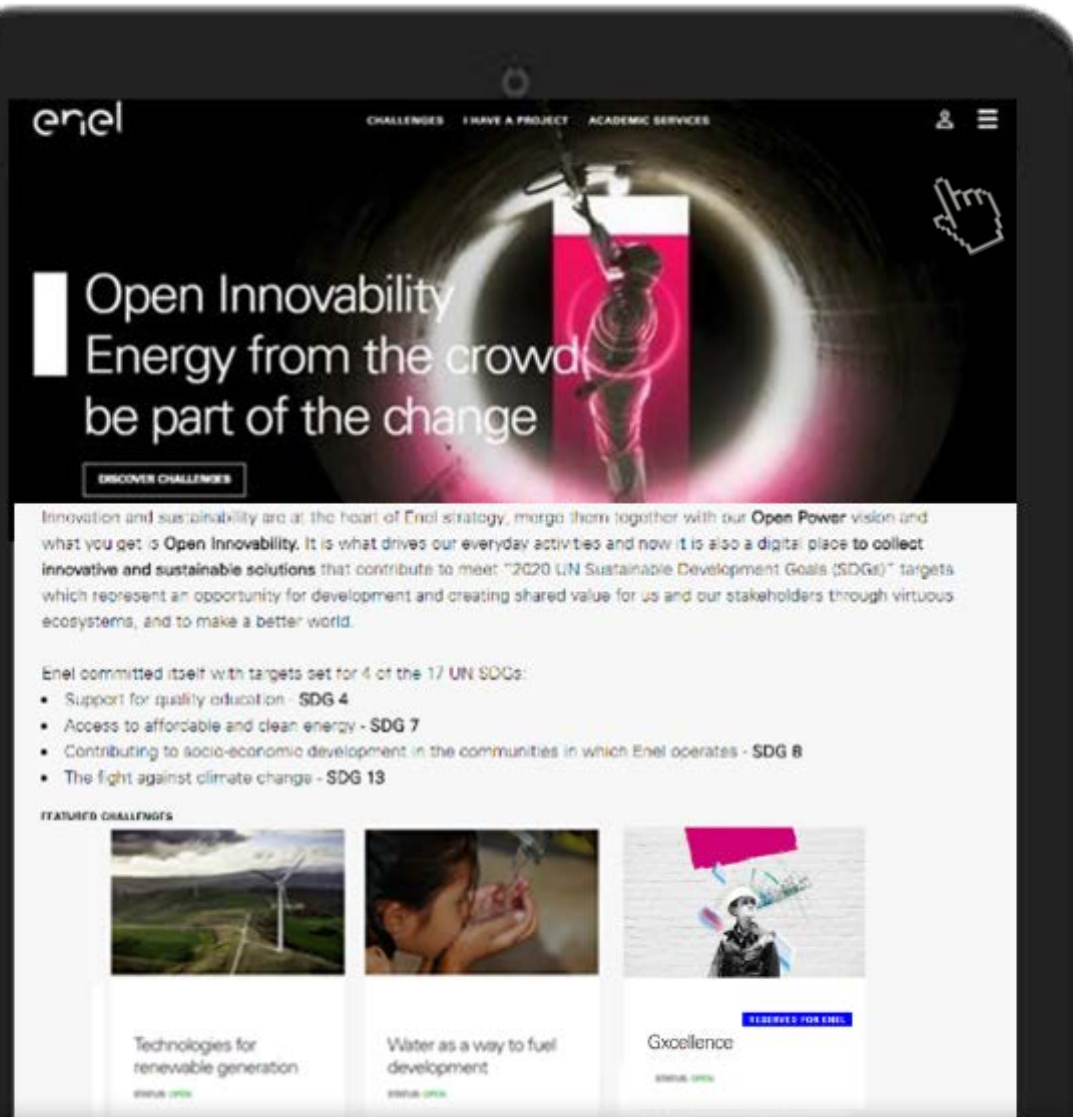
Enel Group proprietary platform to publish internal challenges



Collect internal challenges to set up the system and the **experiment** a new process

Main objectives

- to be a **collecting point** for innovative solutions
- to **scout opportunities** and new businesses
- to share a **unique global platform** to manage the process



Jun 2017

June 2017: for the first time openinnovability.com has been communicated outside Enel



We **inform people about our technological priorities** and our commitment on **UN SDGs**

All the Enel Group has the platform available to launch challenges



Innovation and sustainability are at the heart of Enel strategy, merge them together with our **Open Power** vision and what you get is **Open Innovability**. It is what drives our everyday activities and now it is also a digital place to collect **innovative and sustainable solutions** that contribute to meet "2020 UN Sustainable Development Goals (SDGs)" targets which represent an opportunity for development and creating shared value for us and our stakeholders through virtuous ecosystems, and to make a better world.

Enel committed itself with targets set for 4 of the 17 UN SDGs:

- Support for quality education - **SDG 4**
- Access to affordable and clean energy - **SDG 7**
- Contributing to socio-economic development in the communities in which Enel operates - **SDG 8**
- The fight against climate change - **SDG 13**

FEATURED CHALLENGES



Enel's Women in Tech

EXP DATE: 30/10/2019
REWARD: \$20,000

How can we build a more inclusive and diverse energy industry? What has been



New Augmented Reality solutions for the energy market

EXP DATE: 30/10/2019
REWARD: \$20,000



Vegetation growth estimation

EXP DATE: 30/10/2019
REWARD: COLLABORATION AND TESTING AGREEMENT

2.500+ solutions collected

from 86 Countries

+60 challenges managed, of which 42 expired and

28 solved

Nearly 350.000€ awards

Together with InnoCentive for Sustainable Development Goals

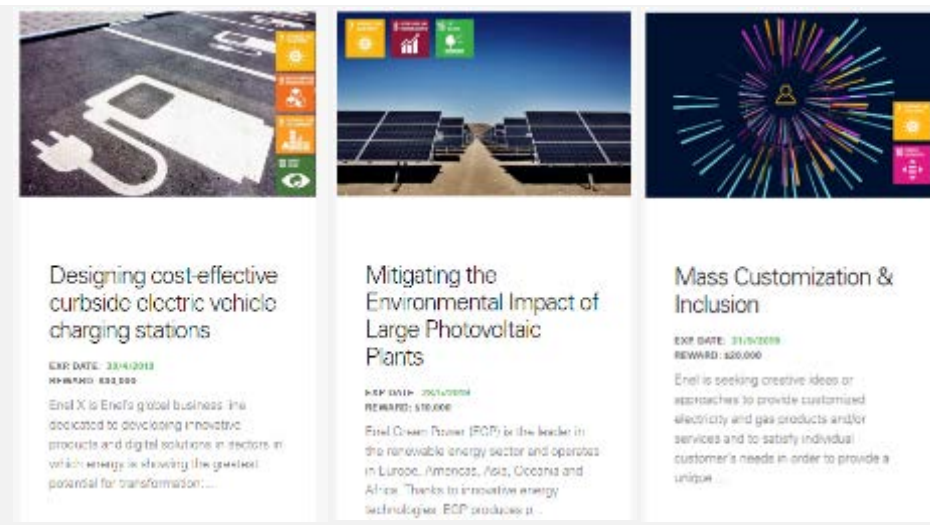


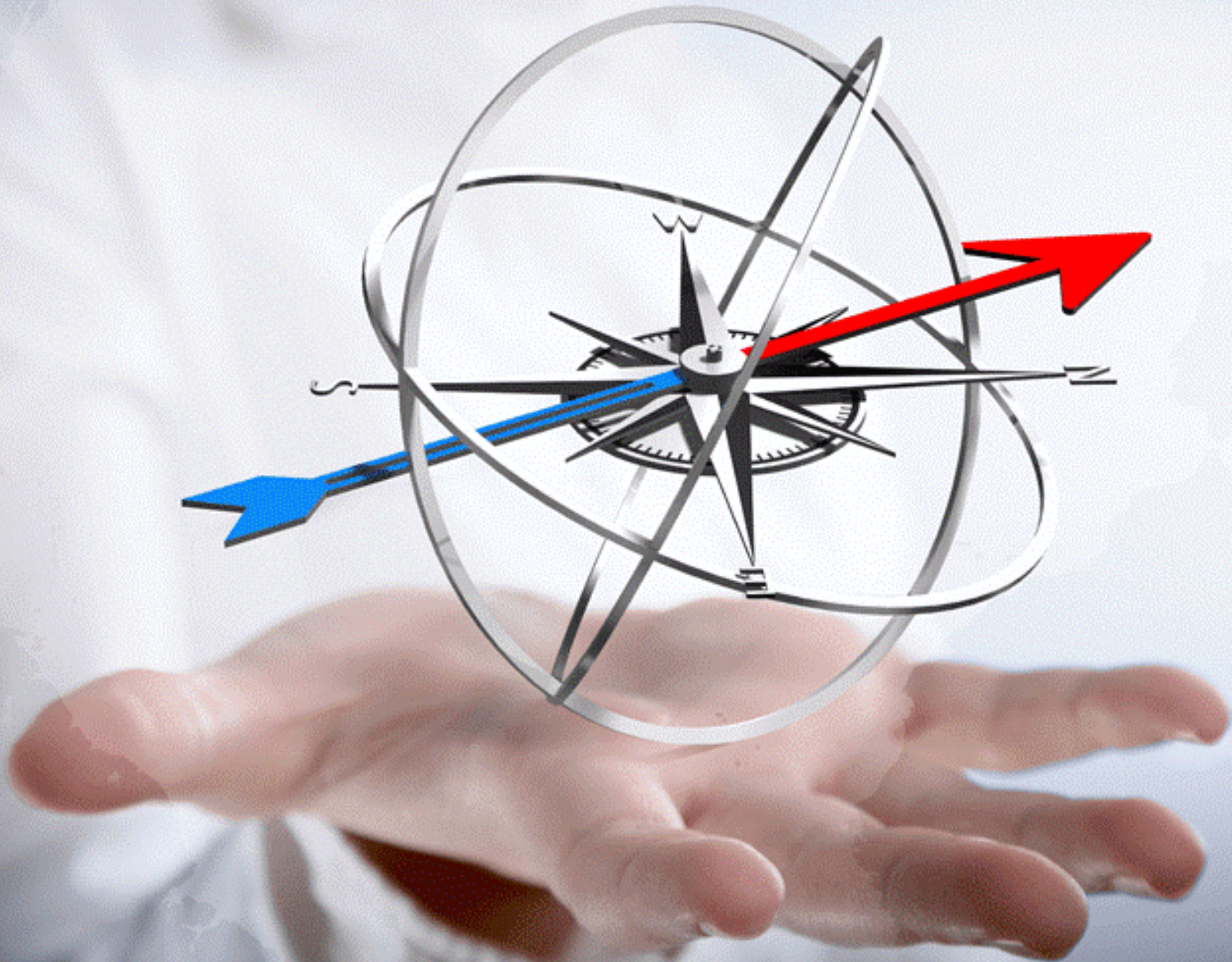
2018-21 Agreement for 50 challenges

- InnoCentive strategic partner for Enel
- to provide expertise in **designing challenges**
- **cross-posting** on both openinnovability.com and InnoCentive.com
- **marketing** and communication activities directed to the InnoCentive Solvers
- reporting and winners **awarding**

Learning from the best

- 400k solvers community
- 162.000+ solutions from nearly 200 countries
- Clients: Enel, NASA, Ford, ...
- **36 Challenges published for Enel, since 2015**





How to deliver effectively



Crowdsourcing process starts from a specific business **need** shared by the relevant Business

Internal policy	Challenge type	Regulations	Award
Defining roles, responsibilities and activities: 1. Challenge set-up 2. Publication 3. Cross-posting 4. Communications and promotion 5. Solutions management	Identifying a set of challenge types in order to get the right solution for the challenge (e.g. ideas, call for collaborations, prototyping).	Having a set of standard and clear regulations, which vary on the challenge type: • Acceptance; • License to Use and transfer; • Solution IP; • Exclusivity period; • Payments.	Defining a set of awards related to the challenge type and complexity (e.g. monetary, collaboration, job position, benefits/gadgets).

“Crowdsourcing works to find solutions quickly ”

How to gain in transparency



Each challenge has a clear definition of all the information needed by the Solver

Evaluation	Judges	IP Rights	Feedback
Basic key drivers for the evaluation: • Technical and economic feasibility • Business potential for Enel • Innovation level • Presentation of the proposal	Identified during the challenge definition phase, they evaluate the solution requirement according to the key drivers. The evaluation process is supported and tracked by a back office tool	IP Rights are clearly defined in the challenge regulation. Depending on the challenge type: • Non-exclusive license to use • Exclusive license to use • IP transfer	All solvers receive a feedback • Positive: verification and awarding • Rejection: depending on the challenge type, the feedback could be more constructive

“A failure could happen if the problem isn’t clearly defined”

Focus on IP Rights: in practice



IP Rights

IP Rights are clearly defined in the challenge regulation. Depending on the challenge type:

- Non-exclusive license to use
- Exclusive license to use
- IP transfer

1 Looking for a partner?

- Collaboration award
- No IP licensing or transferring

2 Looking for inspiration or a good idea?

- Medium-low award
- Non-exclusive license to use

3 Technical solution needed?

- Medium award
- Non-exclusive/ Exclusive license to use
- Exclusivity period

4 Do you want to prototype a new product for a competitive advantage?

- Higher award
- IP transfer or Exclusive license to use

Challenge setup and publication within 4 weeks

Referent, activity, estimated time



	Activities	Who is involved?	Estimated time
Challenge definition	Challenge building: description, background information, project deliverables, online period	• Seeker • Innovability holding (platform manager and sustainability) • Third parties (if required by the challenge type)	2-4 weeks 
Regulation	Rules regarding the participation to the challenge	• Seeker • LCA Seeker's company • PO • LCA holding	2-3 weeks 
Communication	Images check and copies for the challenge communication plan	• Communication Seeker's company • Internal communication • Innovability holding (platform manager)	2-3 weeks 
Publication	Set up all the information and documents for online publication	• Innovability holding (platform manager) • Third parties (if required by the challenge type)	1 working day 

Crowdsourcing unlocks a massive brains potential



Open challenges gives to the Challenge owner the opportunity to **benefit by valuable relationships** with **external people** (individual or legal entities) who could be **able to solve or contribute to the solution**

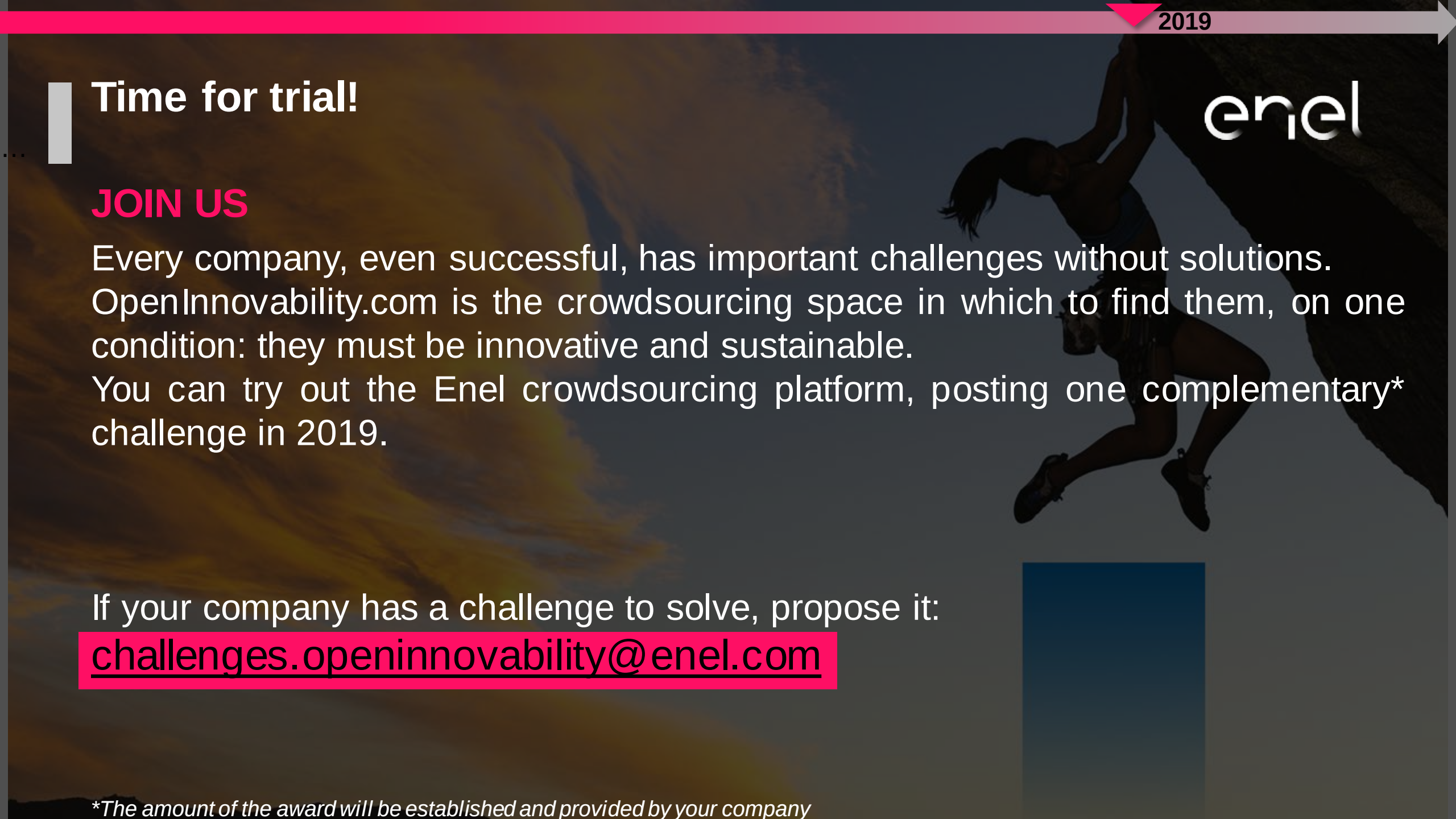


● **Challenge:** Enel Green Power is searching for innovative solutions that can **reduce the emission of hydrogen sulfide** in geothermal plants, without using soda.

● **Solution:** The winning idea involved a change in the last stage of the AMIS cycle, where soda is used to regulate the level of acidity in the liquid solution coming from the H₂S reduction process. Specifically, the change involves halving the entry of soda in the scrubber and introducing a dosing system that allows for the optimisation of the quantity of soda consumed for different sections.

● **Award:** 15.000€

Time for trial!

The background of the slide features a silhouette of a person in mid-air, jumping over a hurdle. The scene is set against a sunset sky with warm orange and yellow hues. The Enel logo is positioned in the upper right corner.

enel

JOIN US

Every company, even successful, has important challenges without solutions. OpenInnovability.com is the crowdsourcing space in which to find them, on one condition: they must be innovative and sustainable. You can try out the Enel crowdsourcing platform, posting one complementary* challenge in 2019.

If your company has a challenge to solve, propose it:

challenges.openinnovability@enel.com

**The amount of the award will be established and provided by your company*



BACK UP

Focus on IP Rights in details: open Innovability exclusive challenges



IP Rights per challenge type	DESCRIPTION
General terms of use of openinnovability.com	Terms set conditions of the use of the platform and contains a generic IP Rights discipline . Usually these rules are integrated in each challenge by detailed rules of the specific regulations.
openinnovability.com regulations for internal challenges (reserved for Enel employees)	A company of the Enel Group asks innovative solutions to its employees for an internal problem. The relevant IP Rights management will be subject to the applicable national law about IP developed by employees .
Make it happen! – Corporate entrepreneurship	Enel SpA may (i) use the Intellectual Property developed in the context of the “MAKE IT HAPPEN!” Programme without any restrictions or partial limitations, utilising any instrument or tool for an indefinite period; (ii) modify the content comprising the Intellectual Property, transfer it or utilise it together with other ideas, even if the employment relationship with the participant concerned is terminated, suspended or interrupted. A company of the Enel Group asks innovative solutions to its employees for an internal problem. The relevant IP Rights management will be subject to the applicable national law about IP developed by employees.

Focus on IP Rights in details: challenges cross-posted on InnoCentive



IP Rights per challenge type	DESCRIPTION
Ideation Challenge Specific Agreement	All intellectual property rights, if any, in the idea will remain with the solver . By submitting a proposed solution to a challenge, each solver agrees to grant to the seeker a royalty free, non-exclusive license in respect of all such intellectual property rights, if any, for the purposes of commercial exploitation of the idea or concept demonstrated by the proposed solution. Notwithstanding granting the seeker a perpetual, non-exclusive license for the proposed solution, the solver retains ownership of the proposed solution.
Theoretical (Non-Exclusive License) Challenge Specific Agreement	The seeker is searching for a new technology. The winning solver will grant to Enel a non-exclusive licence of the IP Rights against the obtaining of a specific reward in order to allow the free and non-exclusive use of the new technology.
Theoretical (IP Rights transfer) Challenge Specific Agreement	The seeker is searching for a new technology the winning solver will grant to Enel the ownership of the IP Rights against the obtaining of a specific reward.
Reduce To Practice (Non-Exclusive License) Challenge Specific Agreement	The solver can't grant away any rights in the Work Product developing ("Potential Solution IP"), or do anything else that would prevent you from granting the Option for the Exclusivity Period ; reveal to any third party, except on terms of strict confidentiality, any information that relates to Potential Solution IP or do anything else likely to impair any of the Potential Solution IP; do anything that would cause the failure of your Guarantee.
Request for proposal Challenge Specific Agreement	Unless differently specified by the relevant agreement, all intellectual property rights, if any, in the idea or concept demonstrated by the Proposed Solution will remain with the Solver.

Main figures



	2017	2018	2019	Total
Total registered users	5.292	9.223	5.397	19.912
Enel people	4.746	7.408	4.425	16.579
External users	546	1.815	972	3.333
Users with at least one solution sent	562	1.138	740	2.440
Enel people with at least one solution sent	316	392	301	1.009
External users with at least one solution sent	246	746	438	1.430
Total publications (challenge driven)	21	27	13	61
No-cross posted challenges (Openinnovability.com only)	21	11	9	41
Open no-cross posted challenges	1	2	8	11
Closed no-cross posted challenges	20	9	1	30
Cross-posted and anonymous challenges (InnoCentive.com and other third parties platforms)	-	16	4	20
Open cross-posted and anonymous challenges	-	-	3	3
Closed cross-posted and anonymous challenges	-	16	1	17
Total proposals (challenge driven and not)	573	1.147	757	2.477
Proposals by Enel people (challenge driven and not)	324	396	317	1.037
Proposals to challenge driven initiatives	252	265	262	779
Proposals to not challenge driven initiatives	72	131	55	258
Proposals by External users (challenge driven and not)	249	751	440	1.440
Proposals to challenge driven initiatives	191	590	372	1.153
Proposals to not challenge driven initiatives	58	161	68	287
Total proposals (challenge driven and not) identified as "interesting"	100	54	7	161
Total proposals (challenge driven and not) in "under evaluation"	120	308	604	1.032
Total countries from which at least one solution has been sent				86

Community raise and solutions found



Challenge cross-posted (or anonymous) + extra marketing = **21**

Potential solutions found = **14** | Unsolved challenge = **1**

Solutions awarded = **19**

Awards = **+300k\$**

Solvers registered from IC = **1.100** and proposals by IC users = **568**
(6% of the total SB) (24% of all the solutions collected)

The overall community has increased **+40%** and also solutions collected

Challenge type



25/07/2019

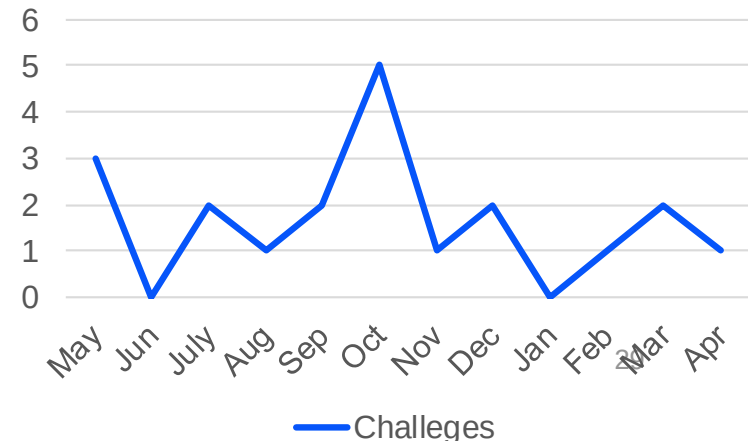
■ Ideation ■ Theoretical ■ RTP ■ eRFP

Seekers



■ Enel X ■ GDS ■ GI&N ■ GRE ■ GTGX ■ I&S

Time schedule



Q&A



Q&A



1. What needs to be done to ensure a prize can be used by your company – are there any best practices that you’ve found in offering these competitions to help you get the desired innovation? What work is involved in making a prize solution useful to your organization? (the focus is on the competition design phase)

Crowdsourcing process starts from a specific business need which is shared by the relevant Business Line (BL). The BL proposes the tool to which address the “scouting”.

The feedbacks given by the challenges owners define the crowdsourcing as a useful tool to find interesting solutions in fast way.

The Challenge driven **crowdsourcing process** is structured in the following phases:

1. Challenge set-up and publication;
2. Third party activities (if required by the challenge type);
3. Communications and promotion activities;
4. Solutions management.

During the challenge building phase process, we involve several **actors**:

- **Challenge owner** who is the BL technical expert seeking a solution to solve the challenge;

- **Legal** department to select and update the regulations;
- **Communication** department to set up the communication plan;
- **Third parties**, which help the challenge owner in the definition of the challenge key messages.

Some **best practices** that can make easier to get a challenge ready in a short period of time are:

- Internal policies which aim at defining roles, responsibilities and activities for the Crowdsourcing management;
- Defining a set of challenge type (e.g. Ideation, call for collaborations, Prototyping);
- Standard regulations;
- Defining a set of awards related to the challenge type and complexity (e.g. Monetary, Collaboration, Job position, Benefits/Gadgets).

What we offer to the challenge owner

- Guidance for structure challenge;
- Visibility on openinnovability.com crowdsourcing platform;
- Advice for communication campaigns on digital platforms;
- Access to personalized Challenge Area in the back office;
- Advice regarding relevant regulations;
- Mentorship for processing and managing solution proposals.

2. *How do you set prize rules or determine the technical parameters of prizes? How does judging work? Do internal experts evaluate concepts or are the solutions tested?*

Enel evaluates the proposal using the following **criteria**:

- Overall scientific and technical feasibility of the proposed solution;
- Economic potential of concept;
- Business potential for Enel;
- Novelty and non-obviousness;
- Potential for proprietary position (i.e., is the technology novel or protectable);
- User's capabilities and related experience;
- Realism of the proposed solution;
- Maturity level of the proposal.

In case the reward includes "Collaboration and testing agreement", once suitable solution/s are identified, Enel reserve the opportunity to start a collaboration, by way of example, all or part of the following activities:

- Test execution;
- Supply of prototypes (if an equipment);
- Installation and site tests;
- Follow up and monitoring of the proposed idea behavior.

In case of Prototyping challenge, the shortlist of interesting proposals are invited to send the prototype in order to test the functionalities.

In the other cases, the documents submitted by the platform are generally enough to evaluate and select the winner.

Technical challenges may have precise **solution requirements/project deliverables** to guide the solvers in what we expect to receive as a solution.

The **judges** are internally elected by the challenge owners during the challenge building phase. They can assess the solutions online, using a back office tool, to track and save the evaluations.

The evaluation phase starts usually during the challenge online period. This determines a long list of potential interesting solutions.

Clear regulations for the challenges are used to define the rules regarding:

- Acceptance of Proposed Solution;
- License to Use and transfer;
- Solution IP;
- Exclusivity period;
- Payments;
- General conditions and privacy policy.

3. *How do you determine success or failure? What metrics do you use to assess inducement prizes?*

A failure could happen when we don't clearly define the problem and we receive proposals that are not in line with the real challenge: this is why we spend the most of the time discussing and reviewing the challenge description.

In collecting solutions, failures don't really exist: every solution which is not viable for a specific challenge or in a specific period of time or in a specific business model, could be useful in the future.

It is important to find solutions in line with the challenge requirements, even to get as much solutions as possible, in order to stimulate creativity in the proposal of new business models and products.

Thanks to this tool, we have the opportunity to benefit of valuable relationships with somebody new (individual or legal entities), who send the solutions for the challenge.

It is important to set the expectations of the Challenge owner, depending on the challenge type and award offered: this drives the level of the solutions collected.

The prize/award is defined based on the type of challenge and therefore the type of solution required by the user. For instance, the amount of a

monetary award, vary by the complexity of the solutions.

Generally we offer monetary prizes, collaborations, training courses and other benefits for internal challenges:

- Ideation: lower monetary prizes
- Prototype: higher monetary prizes
- Collaboration: the value is defined in a negotiation phase that starts also during the challenge online period.

3. *What has been your experience with prize competitions compared to contracts with individuals? What are the advantages of each of these mechanisms to your organization?*

The crowdsourcing grants an open ecosystem and a more flexible use of the solution compared to contracts with specific and already known individuals or companies.

In addition, using a solution coming from the crowdsourcing, we have the advantage to improve it or modify it based on the needs, while a single contract, for something that is experimental, could not be very efficient.

The crowdsourcing of innovative solutions doesn't exclude contracts, it can be used as a preliminary scouting, to get to the contacts for possible future collaborators, in fact, we run call for startups, recruiting campaigns, call for spot collaborations.

Advantages of contracts with individuals:

- Traditional Procurement process
- Feedbacks and benchmarking by other functions