INDTECH2018

Innovative industries for smart growth

29-31 October, 2018

Vienna, Austria

www.indtech2018.eu
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#IndTech2018

PILLAR 1

Session 1.2

Advanced Materials for Clean Mobility

Thierry Collard

SOLVAY

30 October 2018

FFG Promoting Innovation.
Federal Ministry Republic of Austria Transport, Innovation and Technology
e2018 · at

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INDustrial TECHnologies 2018
Innovative Industries for Smart Growth

SOLVAY
asking more from chemistry®

Industrial Technologies 2018
VIENNA
Advanced Materials for Clean Mobility

Oct 30th 2018

FFG
Promoting Innovation.

Federal Ministry
Republic of Austria
Transport, Innovation
and Technology

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SOLVAY ASKING MORE FOR MORE FUTURE

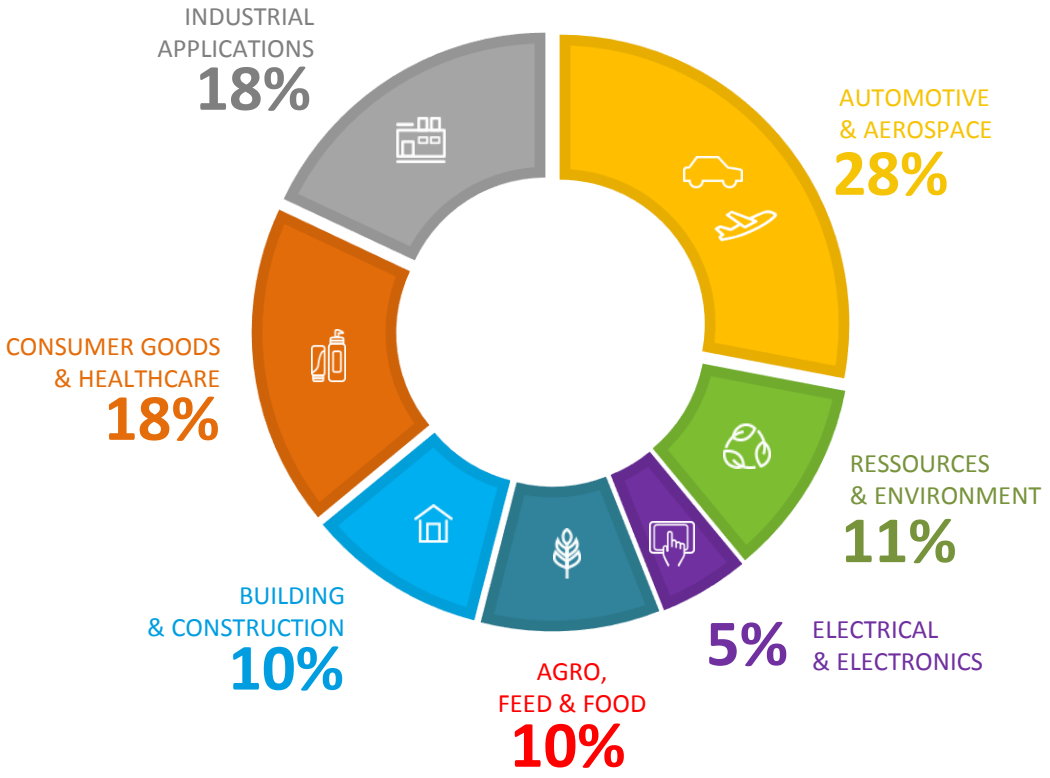
Last 6 y have lead to a STRONG RANSFORMATION OF SOLVAY from Raw Material Provider to SOLUTION PROVIDER

€10,9 bn
2016 net sales

27,000
Employees

139
Industrial sites

58
Countries



A multi-specialty chemical solutions-providers

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FROM AUTOMOTIVE TO SUSTAINABLE MOBILITY

PROVIDING SOLUTIONS

Solvay is meeting the sustainable mobility challenge through its four key fields of innovation:

LIGHTWEIGHTING

SolvaLite™
Revolutionary **thermoset prepreg resin** system

40% mass saving over aluminium design [1]
(BMW M4 Hood)

POWERTRAIN EFFICIENCY

Ketaspire® PEEK
one of the highest performance thermoplastics for eSuperChargers

> 60 % reduction in moment of inertia resulting in faster transient response

ELECTRIFICATION

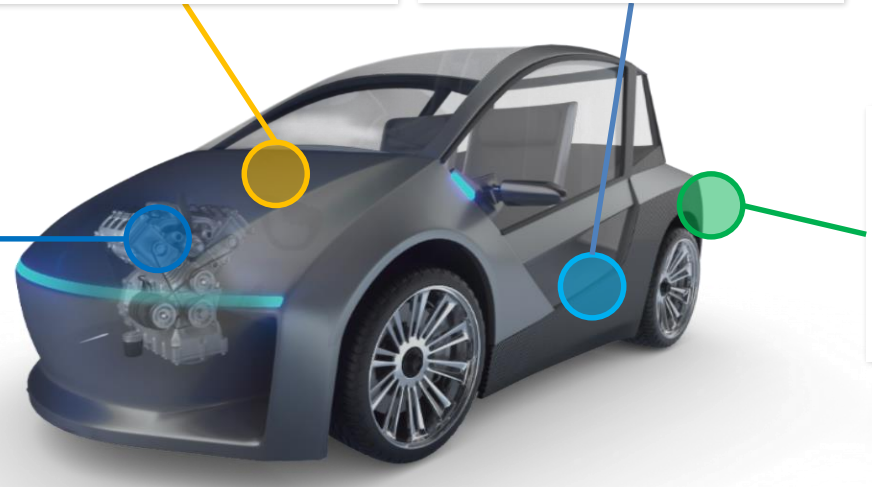
Electrolyte ingredients
enabling High Energy Density **Li-ion Batteries**

+50% Energy Density

GREEN & CLEAN TECHNOLOGIES

Eolys PowerFlex®
Reconciling diesel with Environment **Exhaust Gas Depollution**

Up to 6x faster Soot Combustion Kinetic
Or 150°C lower Inlet Temperature
=> -9 g CO2 / km



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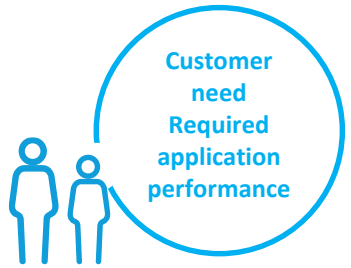
SOLVAY TECHNOLOGY PORTFOLIO

PROVIDING YOUR CUSTOMIZED LIGHTWEIGHT SOLUTIONS

As an integrated player, Solvay owns and masters the **most comprehensive portfolio** of **thermoplastic** & **thermoset lightweight solutions**



MATRIX

- ✓ Thermoset
- ✓ Thermoplastic

REINFORCEMENTS

- ✓ Short fibers
- ✓ Long fibers
- ✓ Continuous fibers
- ✓ Carbon
- ✓ Glass
- ✓ Organic
- ✓ Quartz

Tailored product to targeted application

Unreinforced resins | Compounds | Pre-pregs | Unidirectional tapes | Foams

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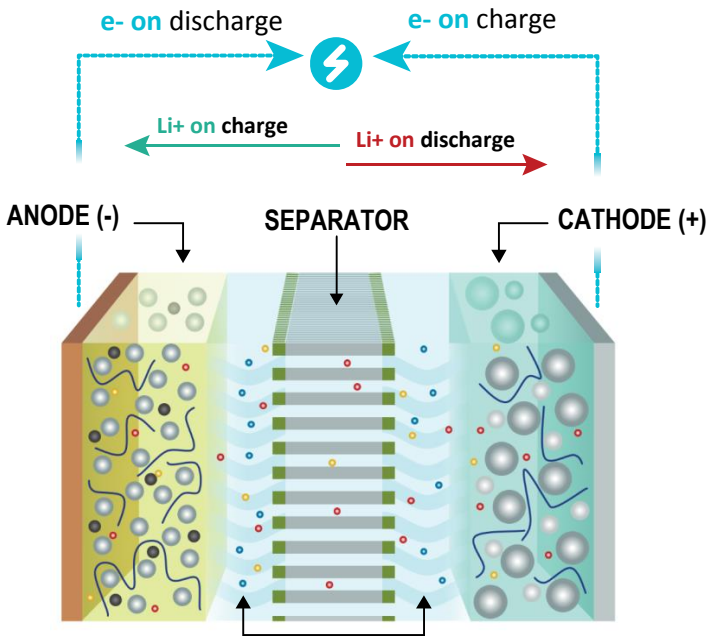
Fluor-based materials will be key in the advancement of Li-ion towards higher voltages and therefore higher energy density (mileage)

LI-BATTERY

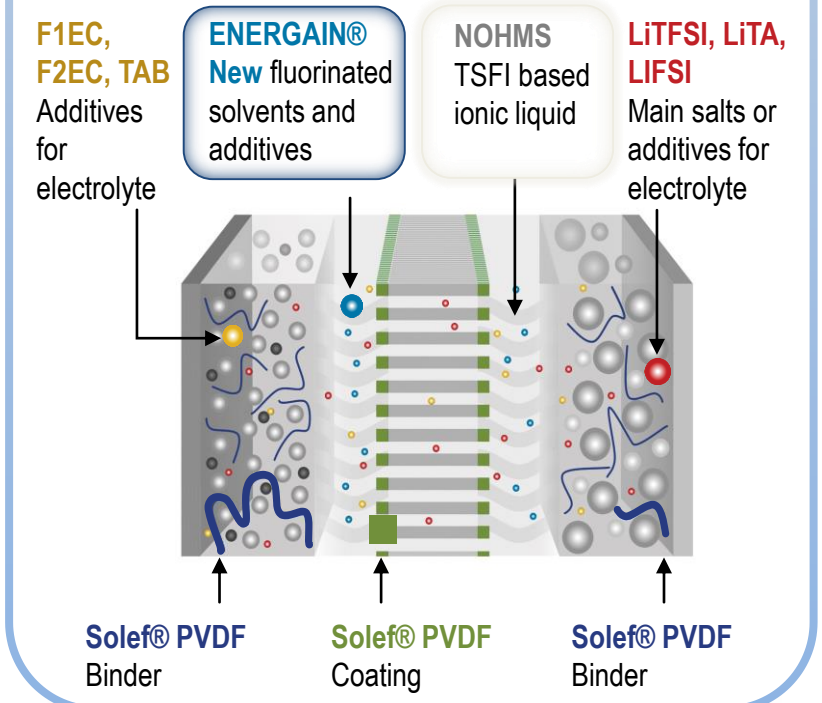
Li-battery
HOW DOES IT WORK?



ELECTROLYTE
Liquid mixture of solvents and Lithium Salt and additives. Ensures Li ion transport

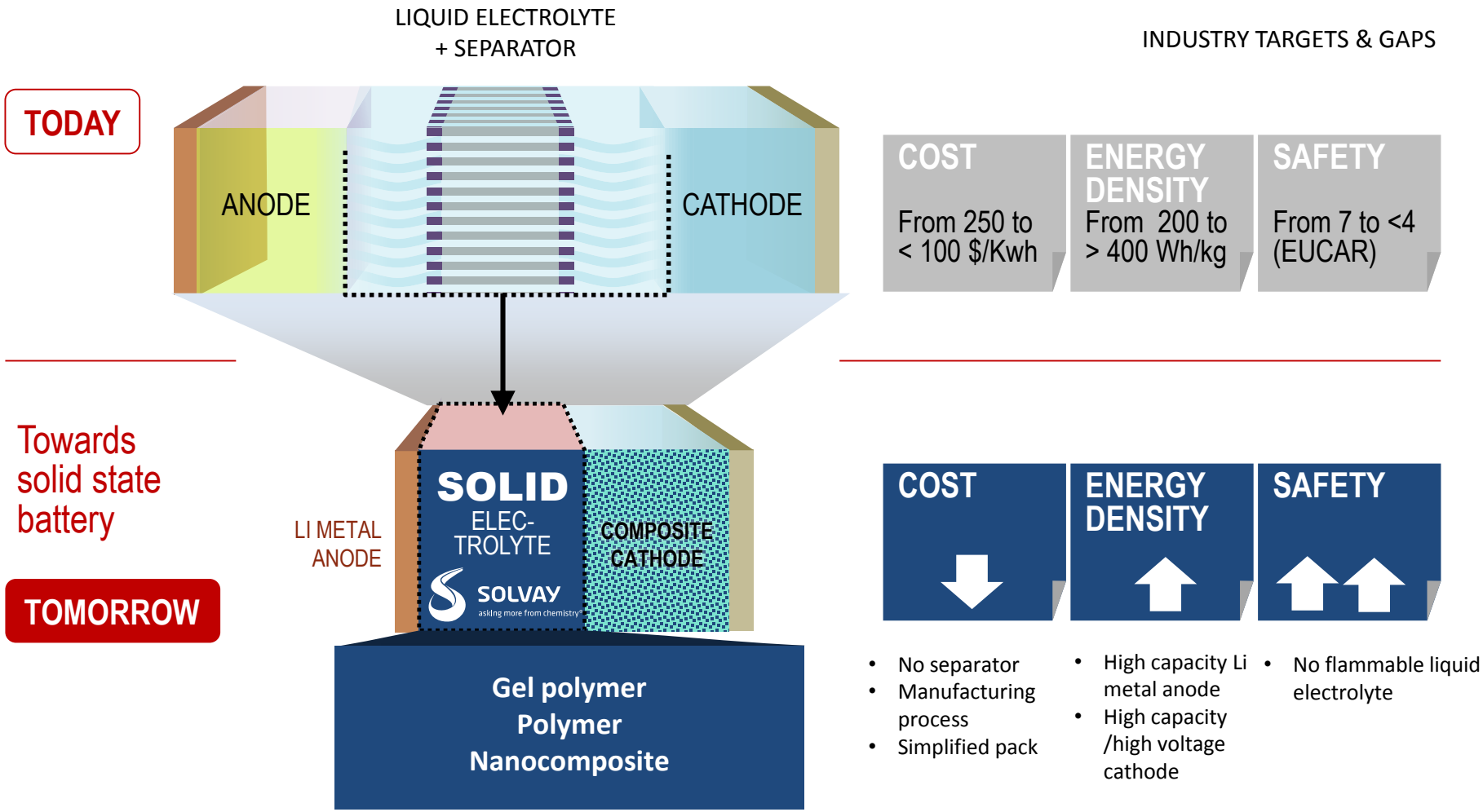
Our
PRODUCTS

Solvay's growing presence thanks to high performance FLUORINE TECHNOLOGY

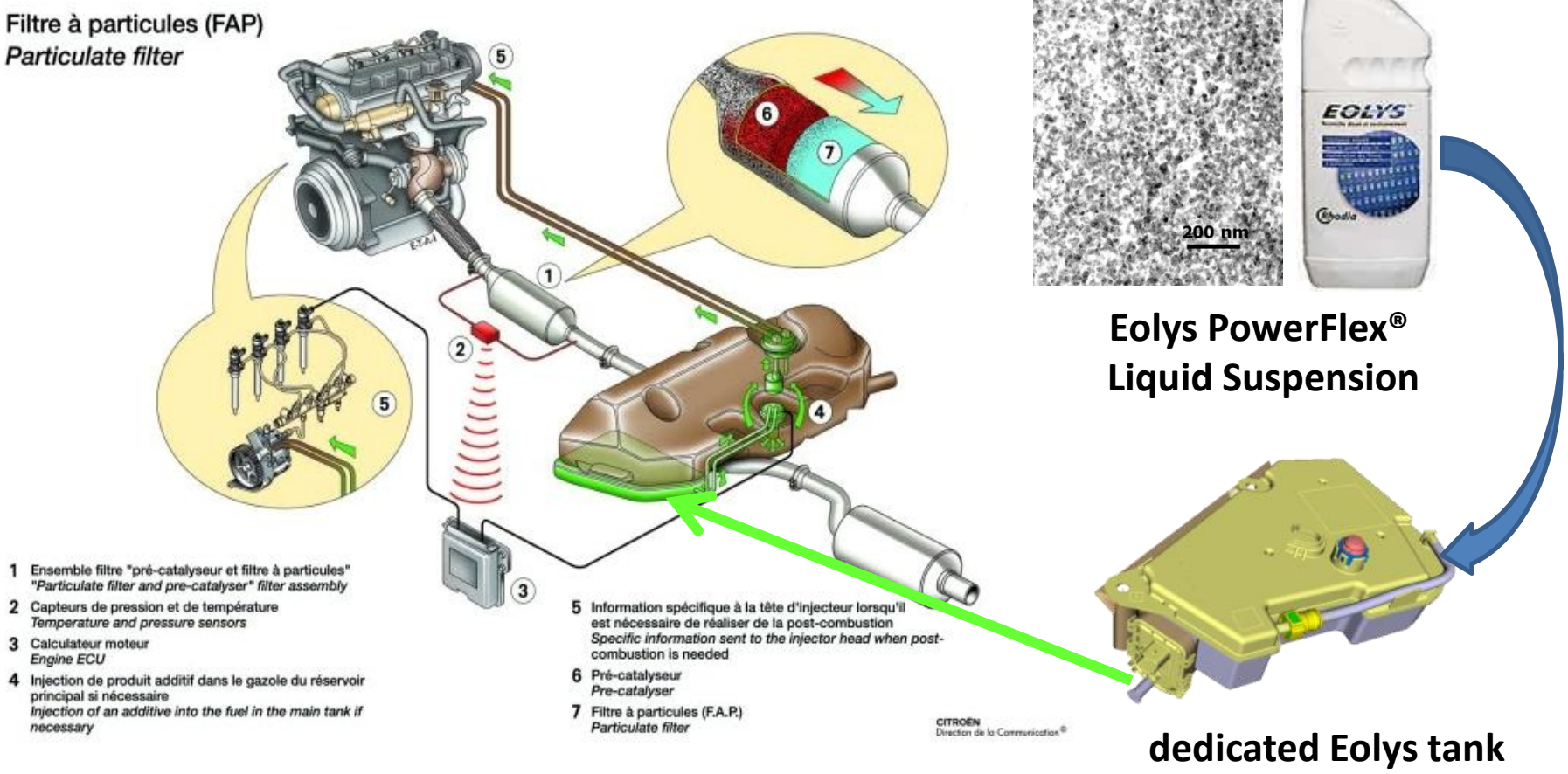


Inorganic materials, Fluor-polymers and their combination will also all enable the advancement of Solid-State batteries

LI-ION BATTERY EVOLUTION, driven by cost, energy density and safety



The Fuel-Borne Catalyst (e.g. Diesel Particulate Filter)



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INVESTING IN EUROPE IS ESSENTIAL : NEW R&I FACILITIES

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CREATE IN BRUSSELS :

ADVANCED MATERIAL DEVELOPMENT CENTER

- **Specialty Polymers & Composite Materials driven applications labs**
- Developing **new services to capture value at customers**

INCUBATORS SUPPORTING DISRUPTIVE INNOVATIONS

- Internal (Batteries, …) & External (500m², 30 staff)
- Connected with BeNeLux Innovation ecosystem

WITH KEY SUPPORT OF ENABLING CAPABILITIES

- Analytical support & digitalization ~30 staff
- Base for Peroxides & Soda Ash & Derivative ~30 staff

2018-2019

CAN BE SET UP IN EXISTING BUILDING RIGHT NOW

- Virtual Engineering
- Part Prototyping
- Digitalization
- Hybrid electrolyte
- Additive manufacturing

2020-2021

CAN BE PARTIALLY SET UP WITHOUT FULL NEW LAB

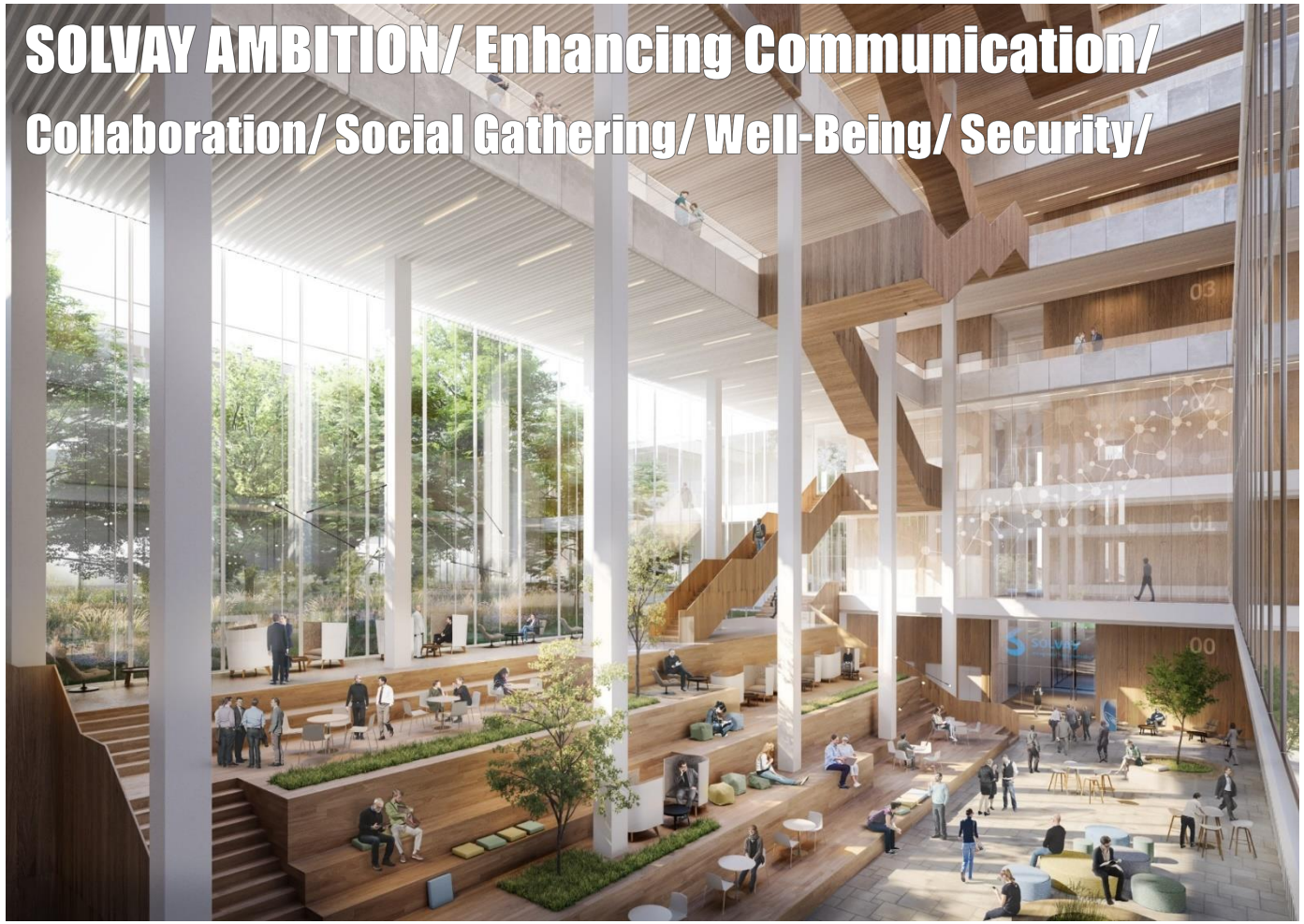
- New structural applications area
- New capabilities (tribology, aging...)
- Active ecosystem & 1st incubator

>2021

NEEDS NEW BUILDING TO BE READY TO RECEIVE NEW TEAMS

- New Solvay activities in Material Science
- Additional space for Incubation

FROM **120 SCIENTISTS** TO **170** IN 2022



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CREATE IN LYON

THE SOLVAY LARGEST INNOVATION AND TECHNOLOGY CENTER

#Transformation of the current RICLyon site into a unique world-class Center to create Linked In novative solutions with Customers

Laureate project from Comex jury 23/07/2018

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ONE CAMPUS DEDICATED TO INNOVATION

Designed to cultivate collaboration, interaction and a sense of community

A compact and organic layout

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Open thoughts to EU Members & Policy Makers

- HORIZON EUROPE should address value chains and align calls related to Innovation and Key enabling Technologies on these topics (Advanced Materials, Batteries, Clean tech, Digitalization of knowledge, … for Aero, Auto, Industrial value chains).
- EU R&I investments need to go up to maintain global competitiveness. EU invests 2% of GDP in R&I, similar to China (but raising) and below US (3%), Korea and Japan (3+%).
- Promote the creation Efficient Ecosystem with all stakeholders along the value chain from Raw materials to OEMs. Review projects in less administrative way but in a more Milestones Oriented way. R&D or Innovation managers from big EU industry may help.
- Go beyond sponsoring of Proof of Concept and enable the best ideas to become new Businesses (Start-Up, Spin Offs, …). Promote TRL6 and above.
- Industry may take a bigger role and should become a decisive partner in the EU R&I ecosystem. Public Private Partnerships are a unique element of the EU R&I Policy and a unique opportunity of innovation with stakeholders of "common interest“.
- Innovation Incubators from different EU region/state should act as a network rather than independent entities that may compete between each others which dilutes return on investment. Complementarity instead of competitiveness !!!

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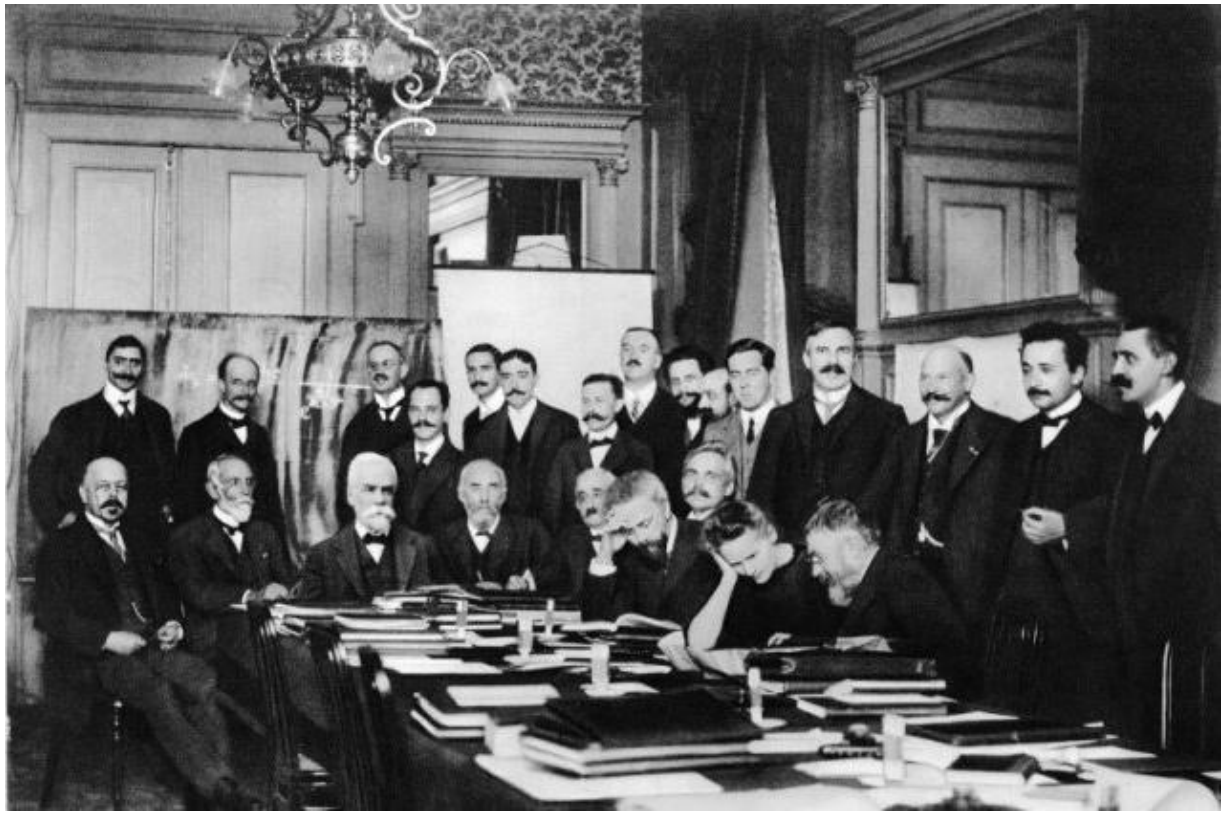
First solvay conference
Brussels, 1911



Standing left to right: Goldschmidt, Planck, Rubens, Sommerfeld, Lindemann, de Broglie, Knudsen, Hasenöhrl, Hostelet, Herzen, Jeans, Rutherford, Onnes, Einstein, Langevin
Seated left to right: Nernst, Brillouin, Solvay, Lorentz, Warburg, Perrin, Wien, Curie, Poincaré

"I have always sought to serve science, because I love science and see it as a promise of progress for humanity." Ernest Solvay, Brussels, December 14, 1893

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