

Connecting the dots – enabling Innovation 4.0!

INL: Your worldwide partner for science and innovation.

Panel 2: Boosting Innovation for EU Industry:
*the role of nanotechnologies, addressing innovation and
industrial renewal through nanotech and advanced materials
and applications*

Lars Montelius

Director General INL

www.inl.int

LM1

Overall aim of the presentation:

Three messages:

Message 1: Smart Specialisation must be seen in a holistic perspective. It is not about making a region R to be a specialist in several topics T1, T2, T3 etc and by that become a great actor in a Sector S. It is about how different regions R1, R2, R3 etc having various competencies in topics T1, T2 T3 etc can together strengthen each other and fill value chain in order for Europe to become a major player in several sectors S1, S2, S3 etc. So, a number of regions R1, R2 etc are connected in a certain sector and are filling in their respective competencies ultimately. So, it is not about that Europe must put all efforts in a few selected sectors and then let other sectors die. On the contrary it is about creating a "Europe Enterprise" that will become a major player in several sectors. So, in contrast to old paradigms (compare Ruhr belt) it is about a digitally connected Europe having large enough critical mass in certain sectors by making up a distributed eco-system.

Message 2: In addition to this showcase the importance of putting efforts onto KETs - for making it possible for Europe to stay on top and keep up the competition with other regions worldwide. This support should in order to be as efficient as possible be put on the KETs by themselves and not just spreading support to KETs through various verticals. If only support verticals the enabling character of KETs will be largely lost.

Message 3: Introduction of INL. INL is an intergovernmental research organisation, one of the three such research organisations worldwide (the other two are CERN and EMBL) and the only one in the KET-area. We are building a distributed eco-system and we are offering access to one of the most modern science and technology infrastructures worldwide having a cross-KET perspective. We are offering actors worldwide to work with us and we are also inviting states to become member states. Our vision is to become the best organisation worldwide that deploy nanotechnology for the benefit of the society.

The structure of the presentation is to start to talk about challenges ahead of us, the changes of the science & innovation landscape, the need for a holistic approach for matching the challenges, the importance of nanotechnology as a Key Enabling Technology, the need of KETs and KET support for effective diffusion of knowledge between verticals, a short presentation of INL and how INL can work as an efficient actor to support regional specialisation.

Lars Montelius; 03.04.2018

YOUR WORLDWIDE PARTNER

For Science and Innovation



The world's only **intergovernmental** institute for nanotechnology

Representation: Israel, Brussel, Scandinavia, Shanghai, HongKong, Austin, Boston, Dubai

Short facts: 47 000 dedicated sqms 100 MEuro Investment



Open to the world!

Rapid growth: In four years: From \approx 60 to 300* passionate persons from \approx 32 countries

From 10s of visitors & few events to thousands of annual visitors in \approx 50 annual events!

NanoStart Up Programme Nanoincubator INL IP Ventures Scale Travels Programme

INL Working Model:

We work with the international community integrating the worldwide best solutions to commercial needs creating societal value!

Lars Montelius, Director General INL

www.inl.int

YOUR WORLDWIDE PARTNER
for Science and Innovation

A photograph of a person in a dark wetsuit standing on a rocky beach, looking out at the ocean. The person is holding a surfboard under their arm and has their hand to their forehead, possibly shielding their eyes from the sun. The ocean is filled with white-capped waves breaking onto the shore. The sky is bright and clear.

**Need to harvest the European
R&D investments smartly and
scaleable.**

**Boost an industrial renewal in Europe
- based on innovation.**

Lars Montelius, Director General INL
www.inl.int

It is not enough to have – or create capacity!



It is needed to create *Innovations to Happen!*

An ability to adress challenges...

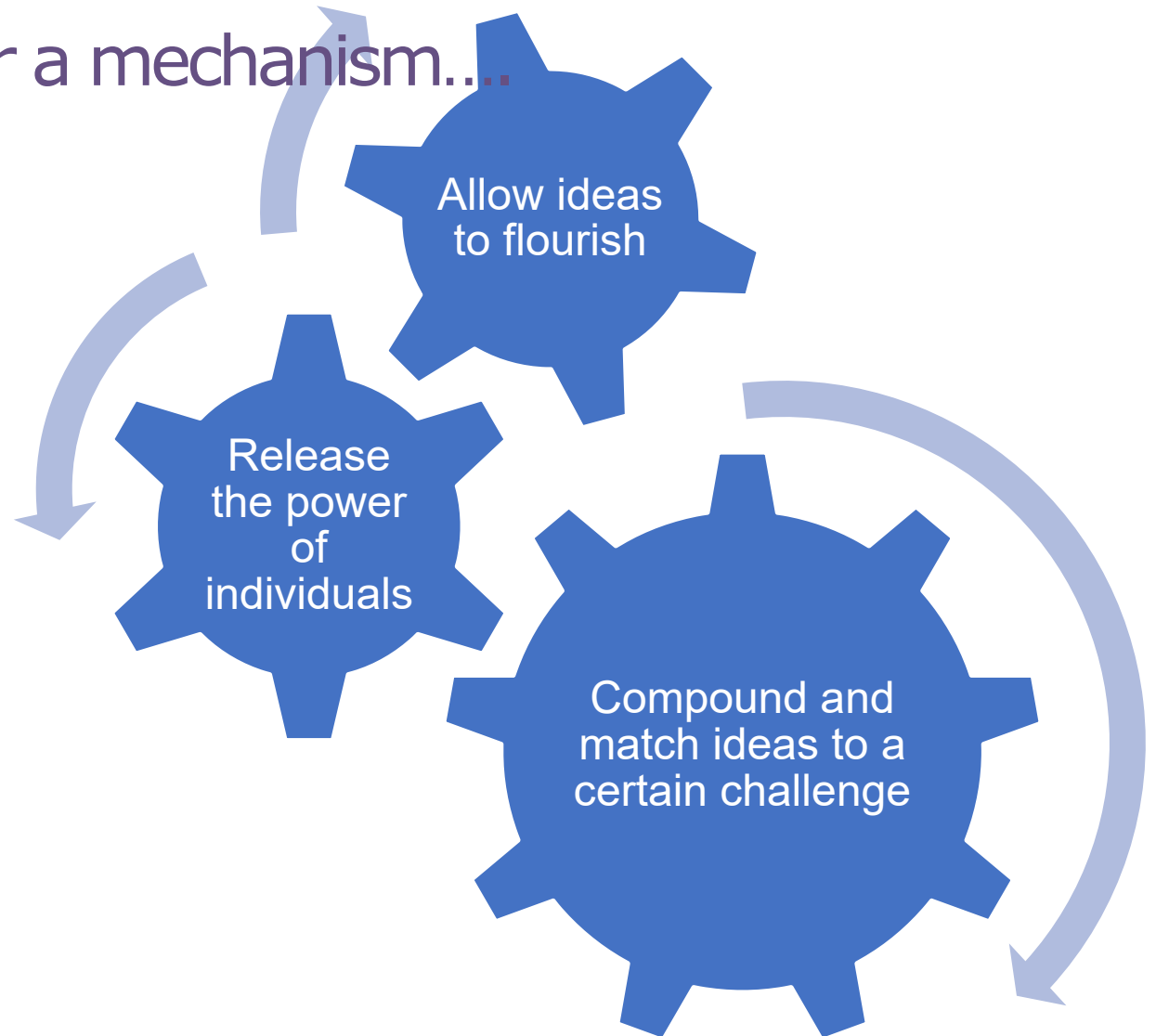


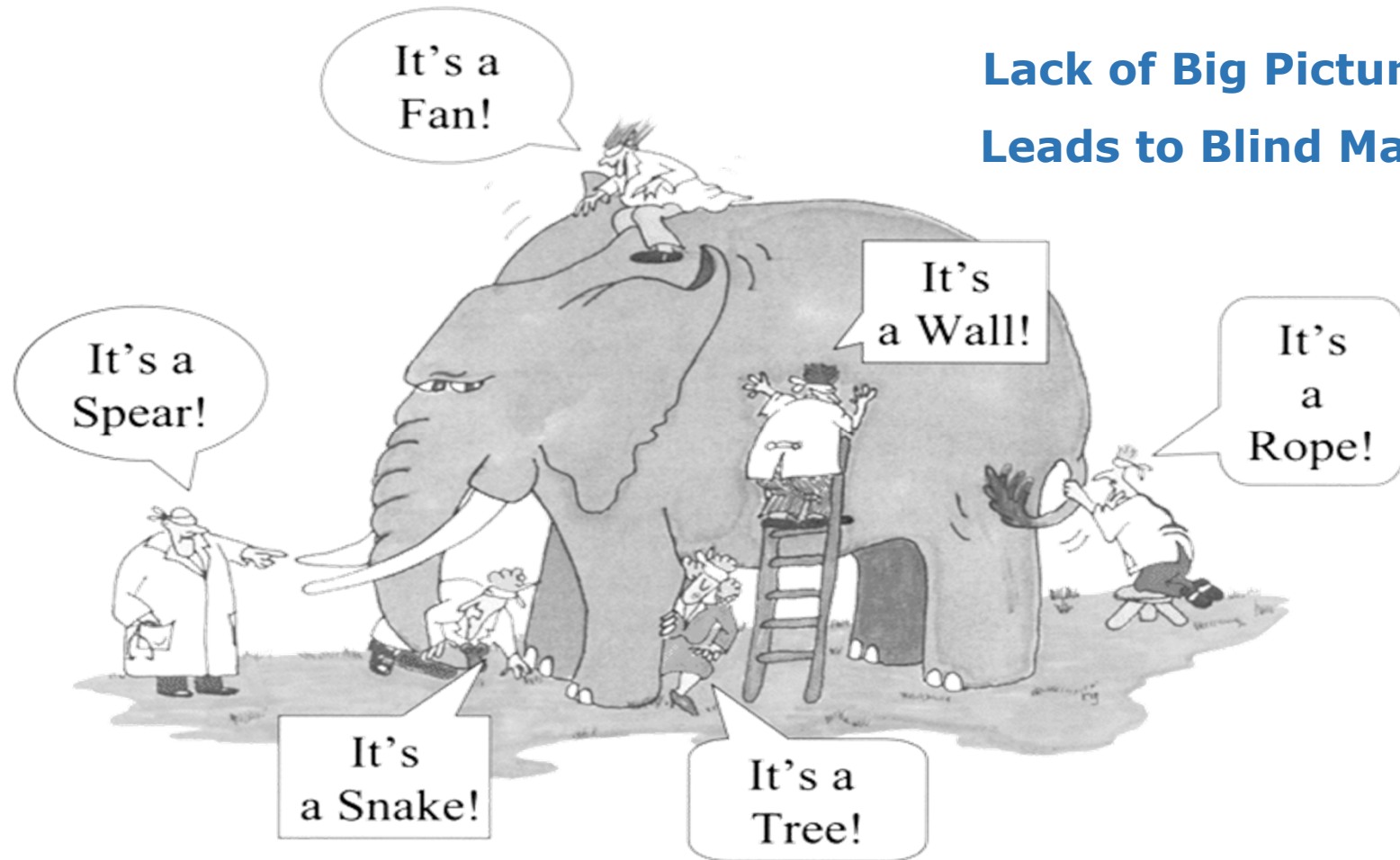
from a new perspective!

There is a need for a mechanism.....

This holds for:

- Organisations,
- Companies,
- Associations,
- Municipalities
- Countries and
- EU!





Simply speaking- it is about connecting the dots!
In a meaningful way!

Welcome EPPN today



A Digital Marketplace – connecting the dots.

EPPN Platform

The Overview

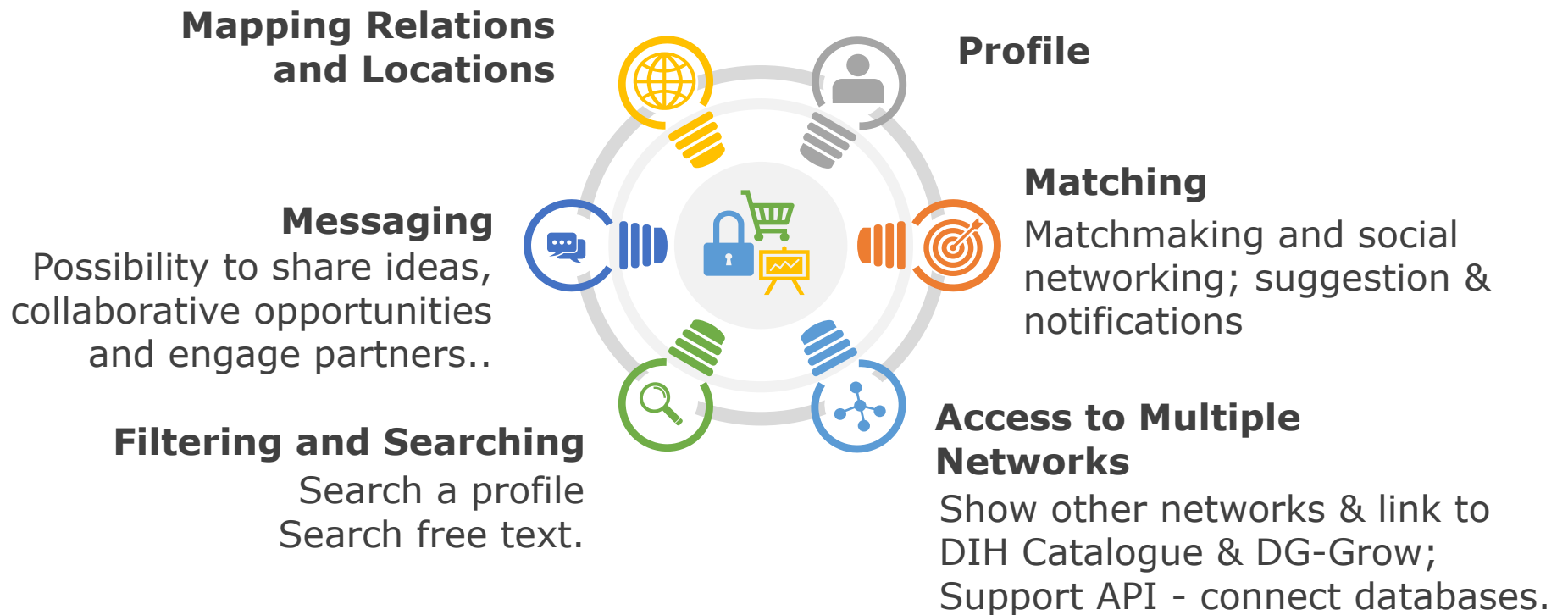


Extensible and secure architecture
Designed as a modular platform
Open, easily integrate and deploy with us!



EPPN Platform

Main Functionalities



EPPN Today A Screen Shot

Interactive Platform

- +160 pilot plants
- Over 300 active members
- Fully developed data model
- Standardised taxonomies
- EPPN helpdesk

Interoperability with other Networks

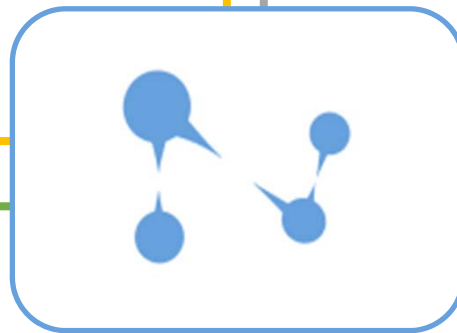
- KET Centers (DG GROW)
- Digital Innovation Hubs
- Catalogue (S3 platform)
- CORDIS (EU)

Dissemination

- 2 networking workshops
- 6 demonstration webinars
- Participation in over 18 events for dissemination

EPPN Strategic Advisory Board EPPN Working Groups

- Technical Collaboration & Dissemination
- Finance & Market
- Policy & Regions



EPPN Platform A Screenshot

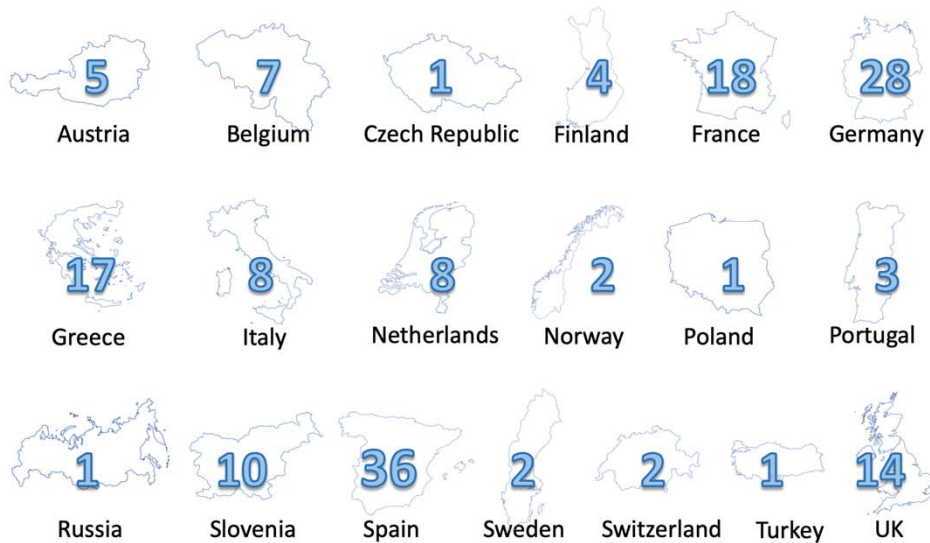


DISTRIBUTION OF ACTIVE MEMBERS OF EPPN PLATFORM BY COUNTRY

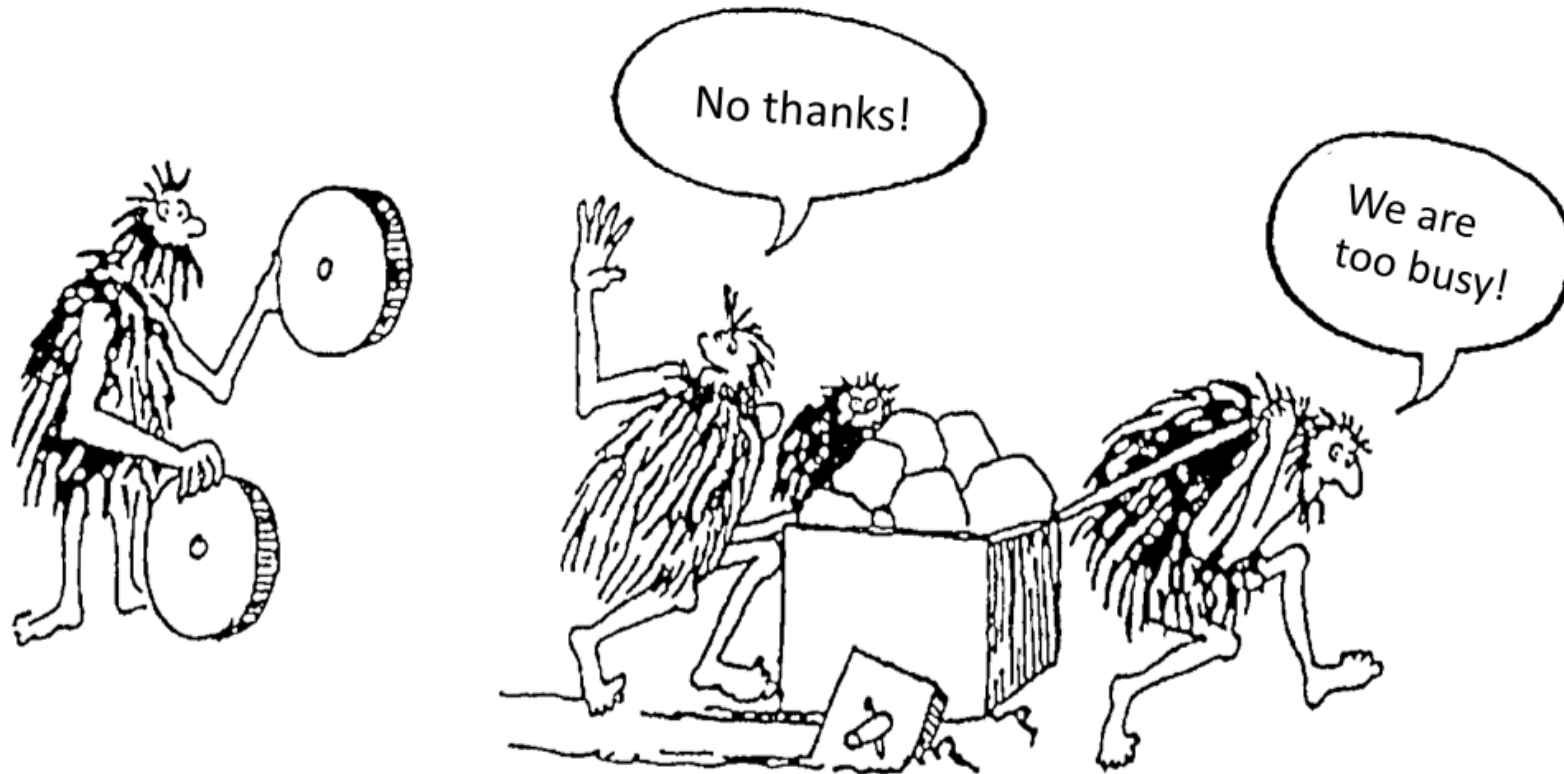
— Last Update: 02 June 2019 —

NUMBER OF PILOT PLANTS BY COUNTRIES

168



EPPN

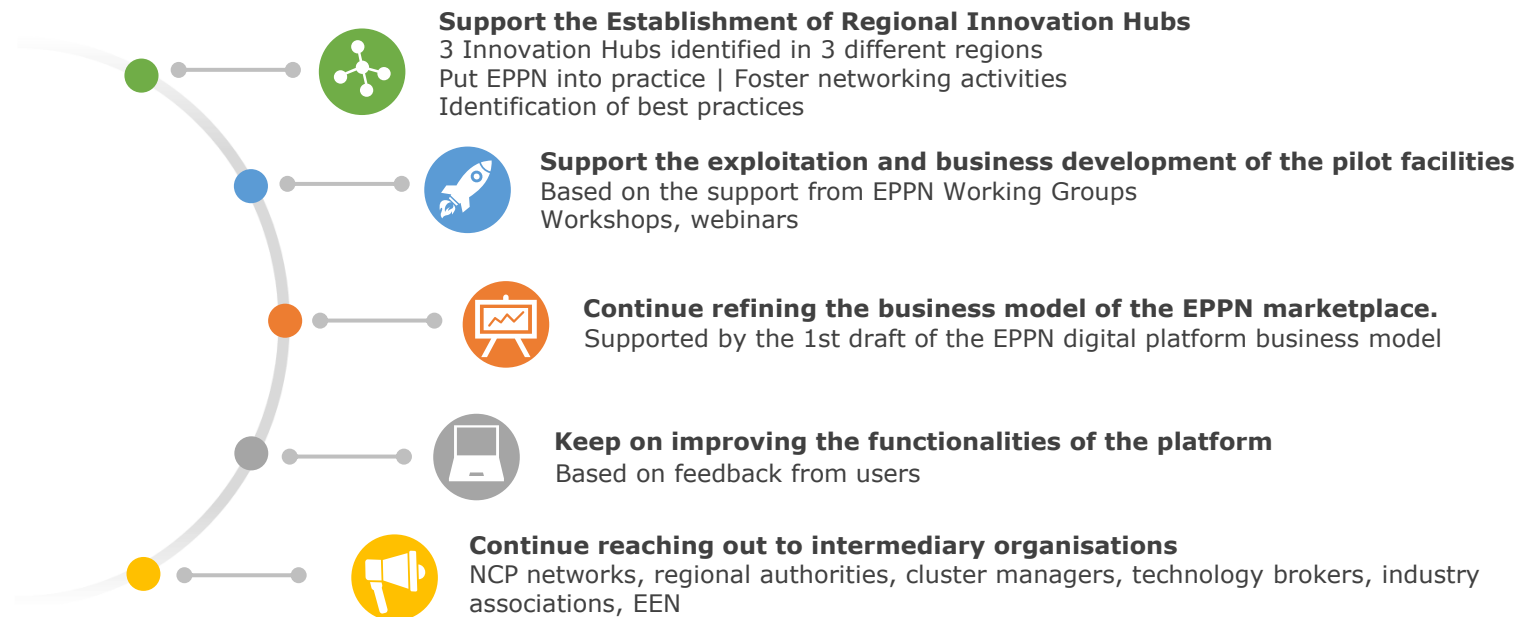


it could be the start of the next big thing



EPPN Roll Out

The EPPN marketplace is now entering its full roll-out. There will be 5 main aims during the next 12 month period:



EPPN Working Groups Follow-up

Technical collaboration Training Dissemination

Mapping needs and developing collaboration related to:

- Sharing of facilities
- Characterisation equipment
- Safety
- Standards
- Modelling

Market Finance intelligence

- Improve understanding of different financing options
- Improve access to finance through direct interaction (Public and private)
- Understand relevant market needs and entry obstacles
- Support business planning, development and sustainability.
- Increase cooperation with pilot facilities, especially among SMEs

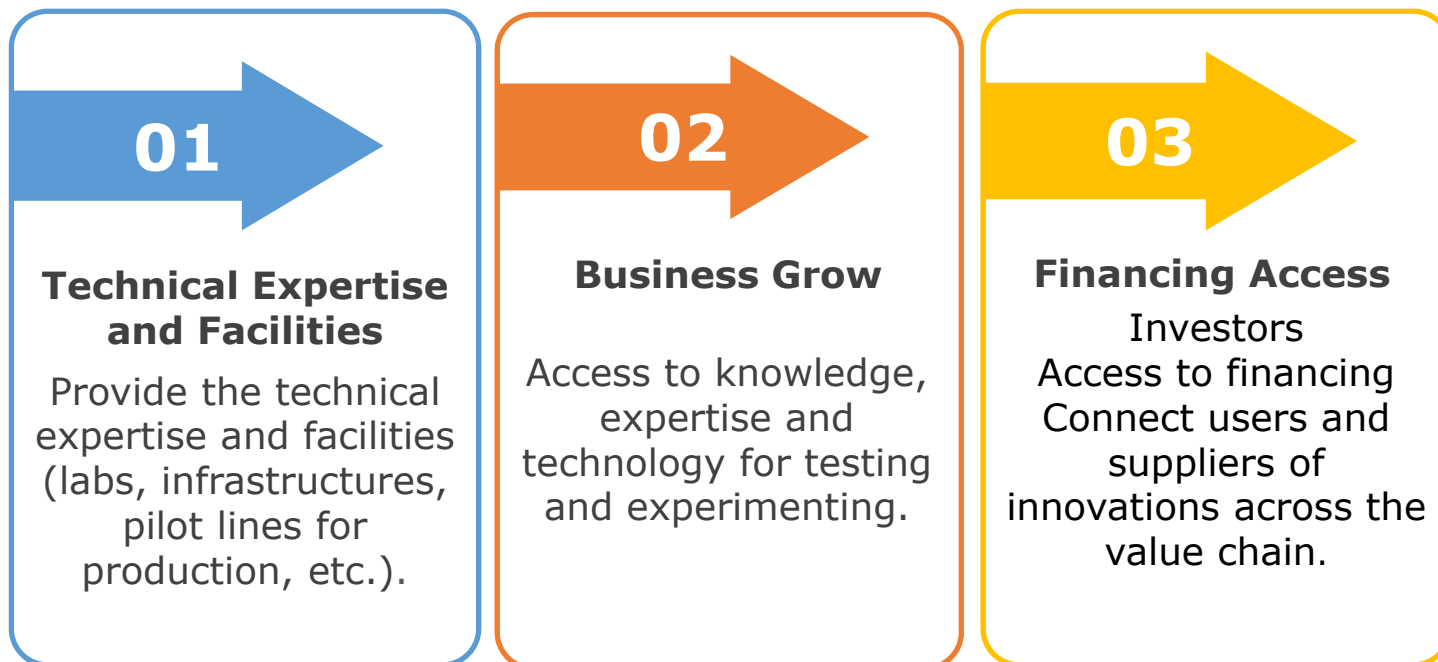
Policy & Regions

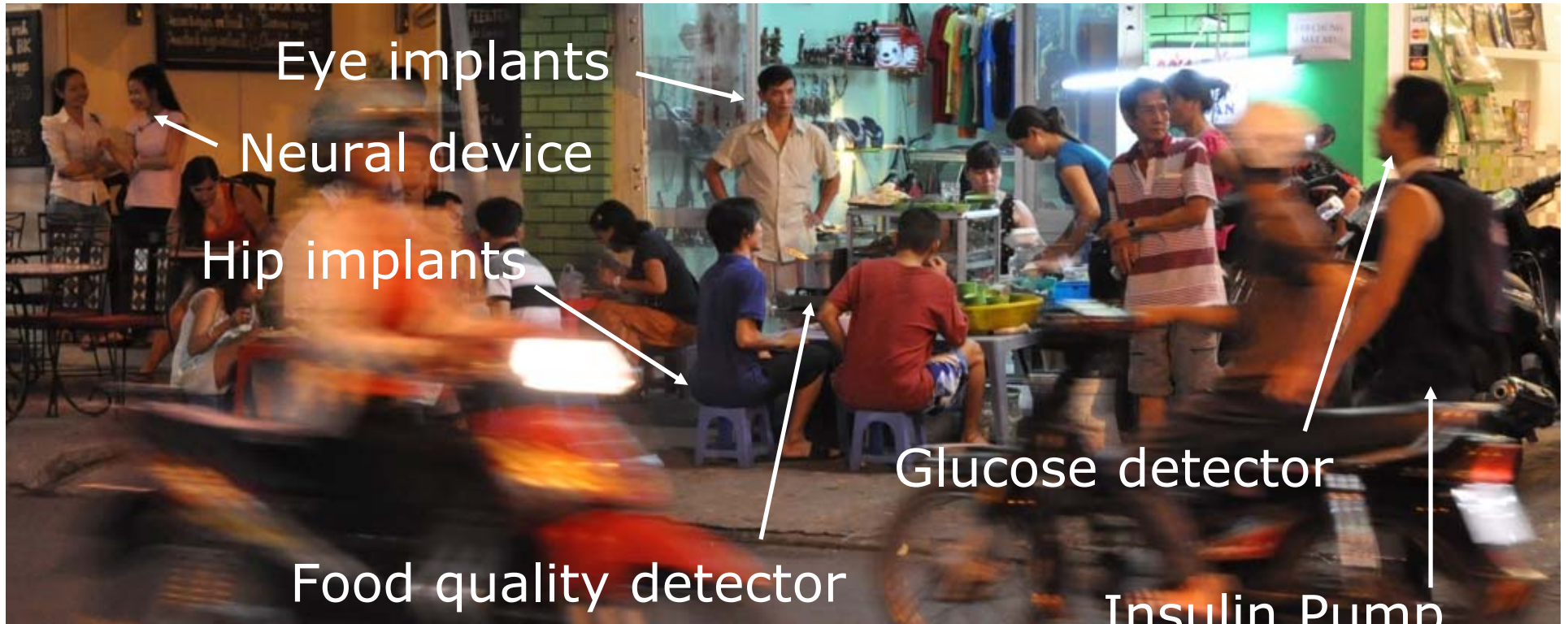
- Establish national and regional contacts that have interest to work with the EPPN
- Identify Value Chain needs related to pilot plants and support further integration
- Establish contacts and monitor best international practices
- Coordinate input to future research policy and innovation directions.
- Explore Synergies with national, regional initiatives.



We are looking for Hubs: - Criteria:

The criteria for these hubs is that they must join resources and competencies to:





Technology is all around us...
and it is immersive...with radical changes!
40% Forbes 500 - will be replaced in 10 years-
by companies we do not yet know about!

Grand Challenges – Big Picture

Global warming/ Energy	Energy efficiency, energy storage, solar energy and fuel cells
Water Supply	Purification, desalination, minimise use, reduce overconsumption
Food Supply	Packaging, antibacterial surfaces
Public Health/ Ageing societies	Medication, implantation, devices, earlier and more adequate diagnoses, personalised medicine
Pandemics	Rapid access to vaccinations, vehicles, systems for rapid response from society,
Security	Identification, more safe credit cards

LM4

LM4

Showing the global challenges - and some pieces of the puzzle that nanotech can bring!

Lars Montelius; 03.04.2018

So, - what do Nanotechnology offer?

LM5

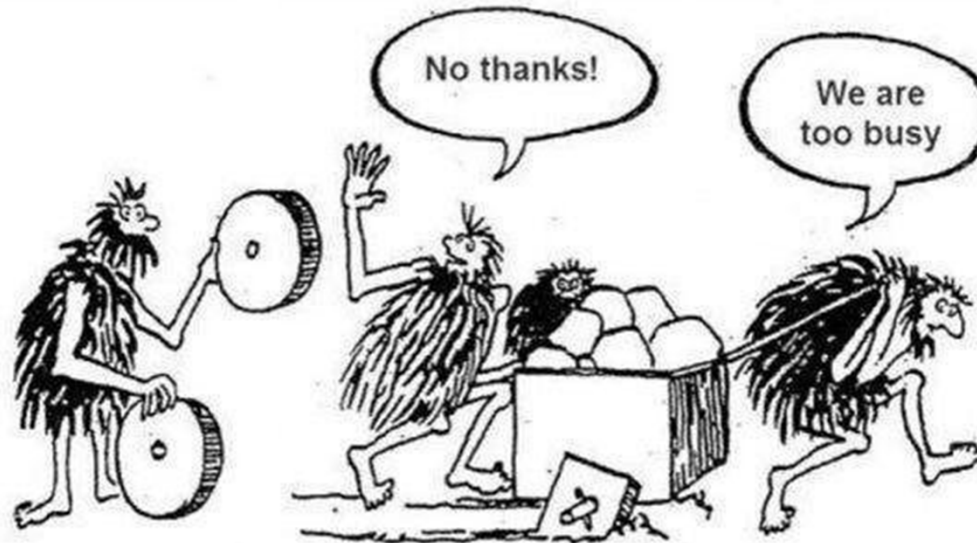
Energy!

Water!

Health!

LM6

IonT!



Robotics!

Textiles!

Surfaces!

Fabrics!

Aeronautics! Sea! Space! Construction! Electronics!

Factories of the Future! Added Value Manufacturing!

Environment! Green Tech!

Is it a blessing ... or a problem?

Slide 19

LM6 Showing the wealth of applications where Nanotech can help! The question is if this is a blessing or a problem? Many persons do not understand the significance of a strong nanotech research effort. Without it, the deployment of nanotech and advanced materials solutions in the different "vertical sectors" will not happen - at least not in Europe that has a tendency to put all efforts into sectors.

Lars Montelius; 03.04.2018

LM5 This picture illustrates that the actors in the sectors do not really understand the importance of nanotech - just because they have not understood it. Nanotech is the continuation of advanced materials and the ability to manipulate matter at the atomic scale reproducible in order to achieve properties that are beyond present state of the art. And in order to fully make this effective and possible, it is a vast if nanotech are introduced in each sector becoming very specialised in a certain sector. Then the KET potential is lost!

Lars Montelius; 03.04.2018

MegaTrends!

IoT.
Big Data.
AI - AR - VR
Deep Learning.
Sharing Economy.
Ageing Population.
Urbanisation. Resilience.
Are You Quantum ready?

Emotional!



Meaningful!

The importance of Articulation!

What are you doing ?



I am
cutting
stone!

What are you doing ?

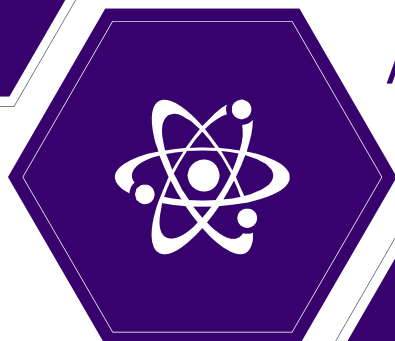


I am
building a
cathedral!

What does **INL** offer?



Excellent **Research** enabling **Contracted** R&T&D&I!



A worldwide **connectivity!**



A **unique** model for innovation!

We deliver a unique compounded **knowledge!**

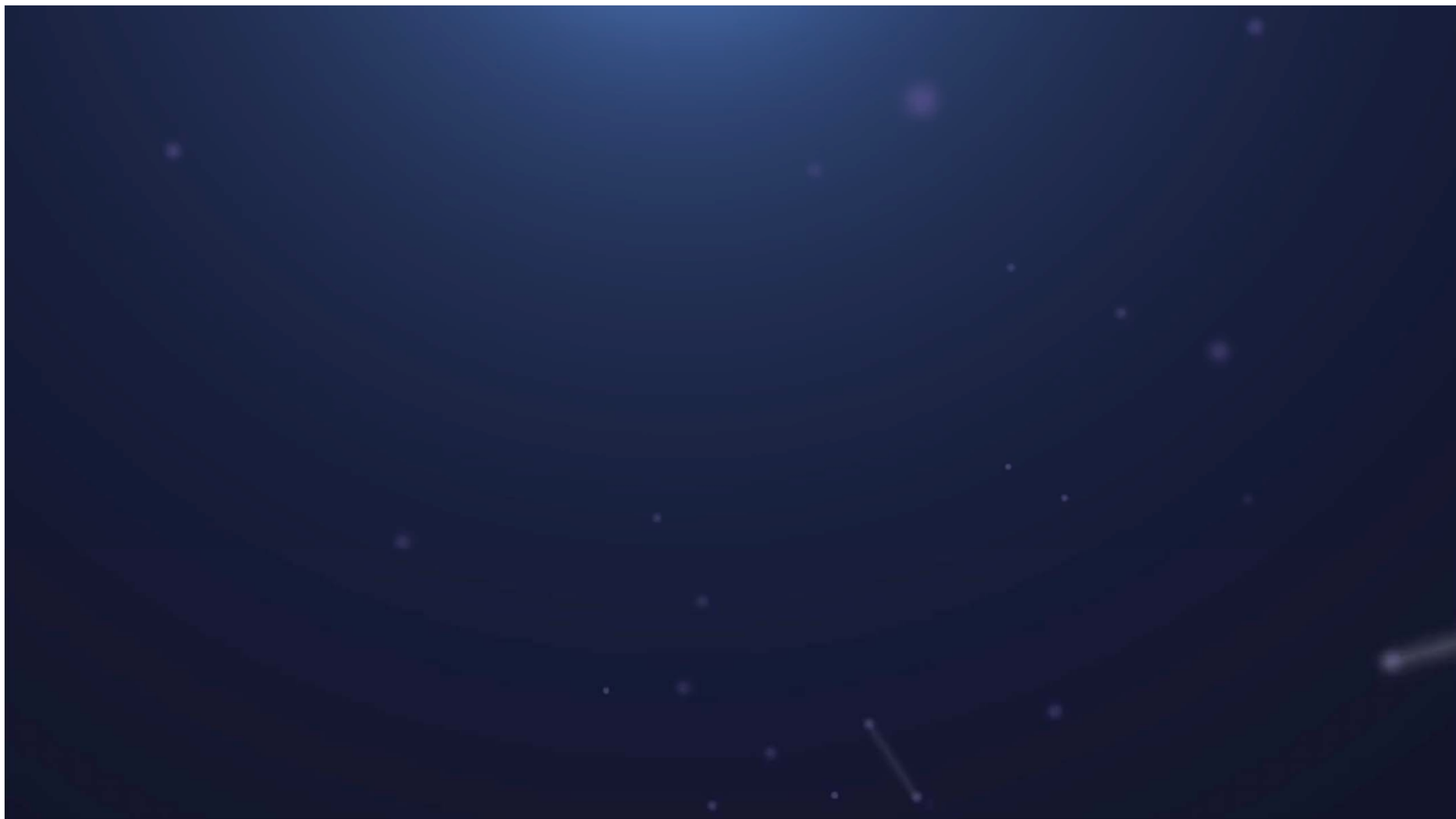
INL Core Operations!

1. User Facility!
2. Competitive Research!
3. Contracted RTDI!
4. Rapid Prototyping!
5. Higher Education!
6. Start-Up / Incubation!
7. INL IP Ventures!
8. Networks!

INL Funding!



YOUR WORLDWIDE PARTNER
For Science and Innovation



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For Science and Innovation



Photo: Brussels Airport

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For Science and Innovation



Welcome to INL!
Thank You for listening!

Rapid prototyping; 200 mm wafer fab
High resolution electron microscopy and spectroscopy
Nanophotonics & NEMS/MEMS & Electronics & Energy & Quantum Materials
Food Science & Environmental & Medical Devices & Sensors!

Welcome EPPN today



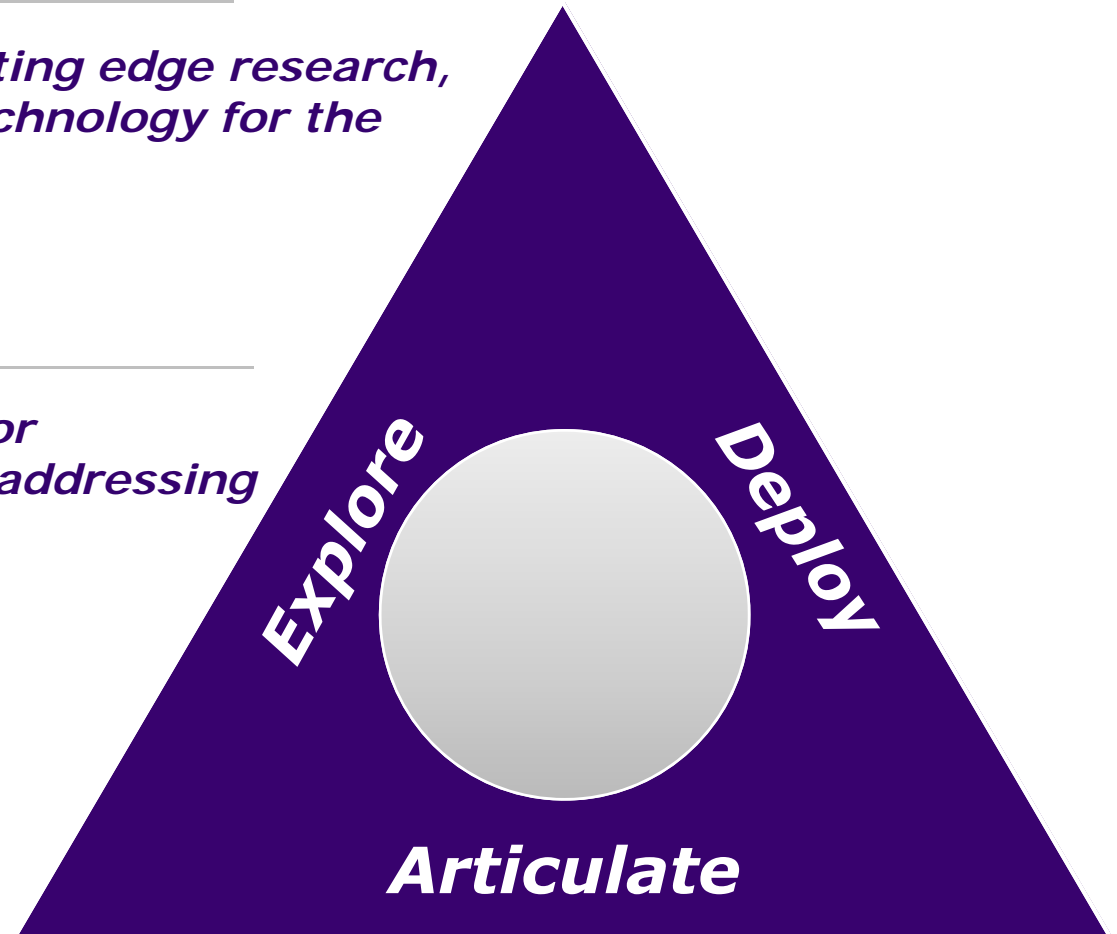
A Digital Marketplace – connecting the dots.

Mission

Perform interdisciplinary cutting edge research, deploy and articulate nanotechnology for the benefit of Society.

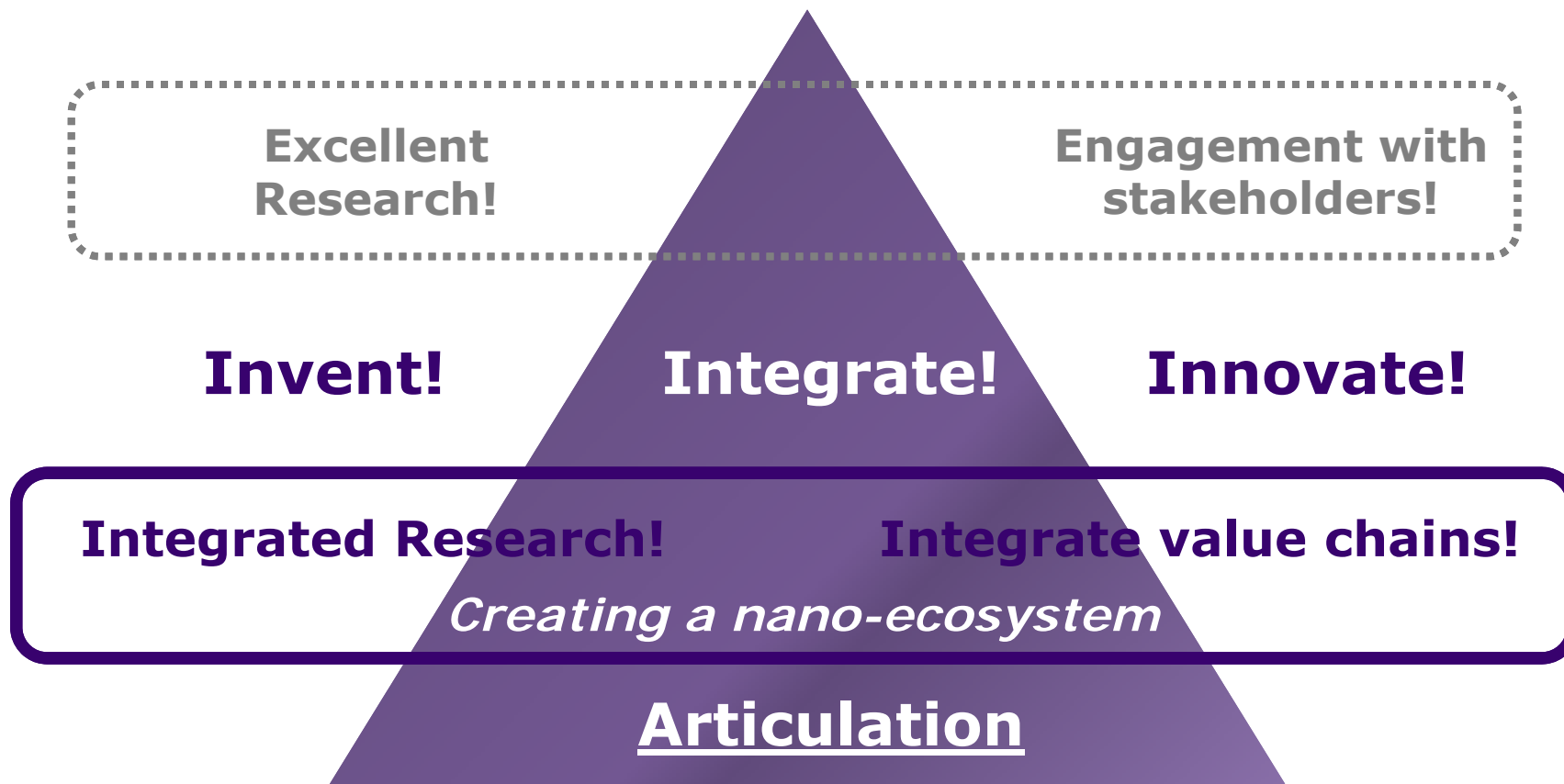
Vision

Become the worldwide hub for nanotechnology deployment addressing society's grand challenges.



INL I3 MODEL

We are committed to translate knowledge into solutions to a better world!



We set the stage for accelerated innovation leading to increased competitiveness, attractive services & products, and by creating meaningful jobs!