

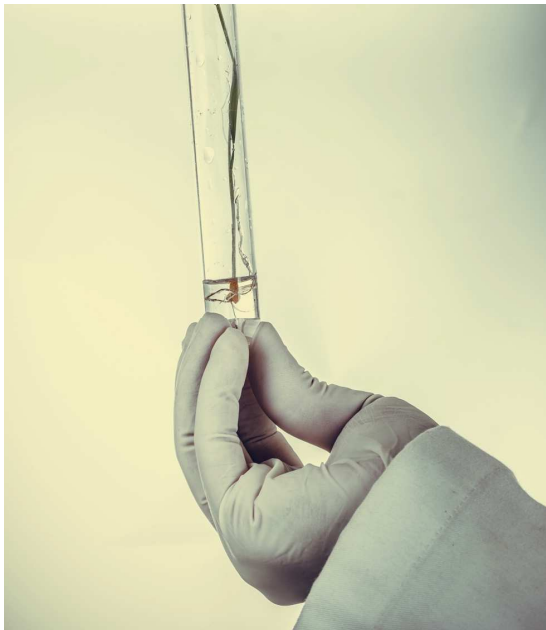


ACCELERATING INNOVATION!

Olof Sandberg

May 2017

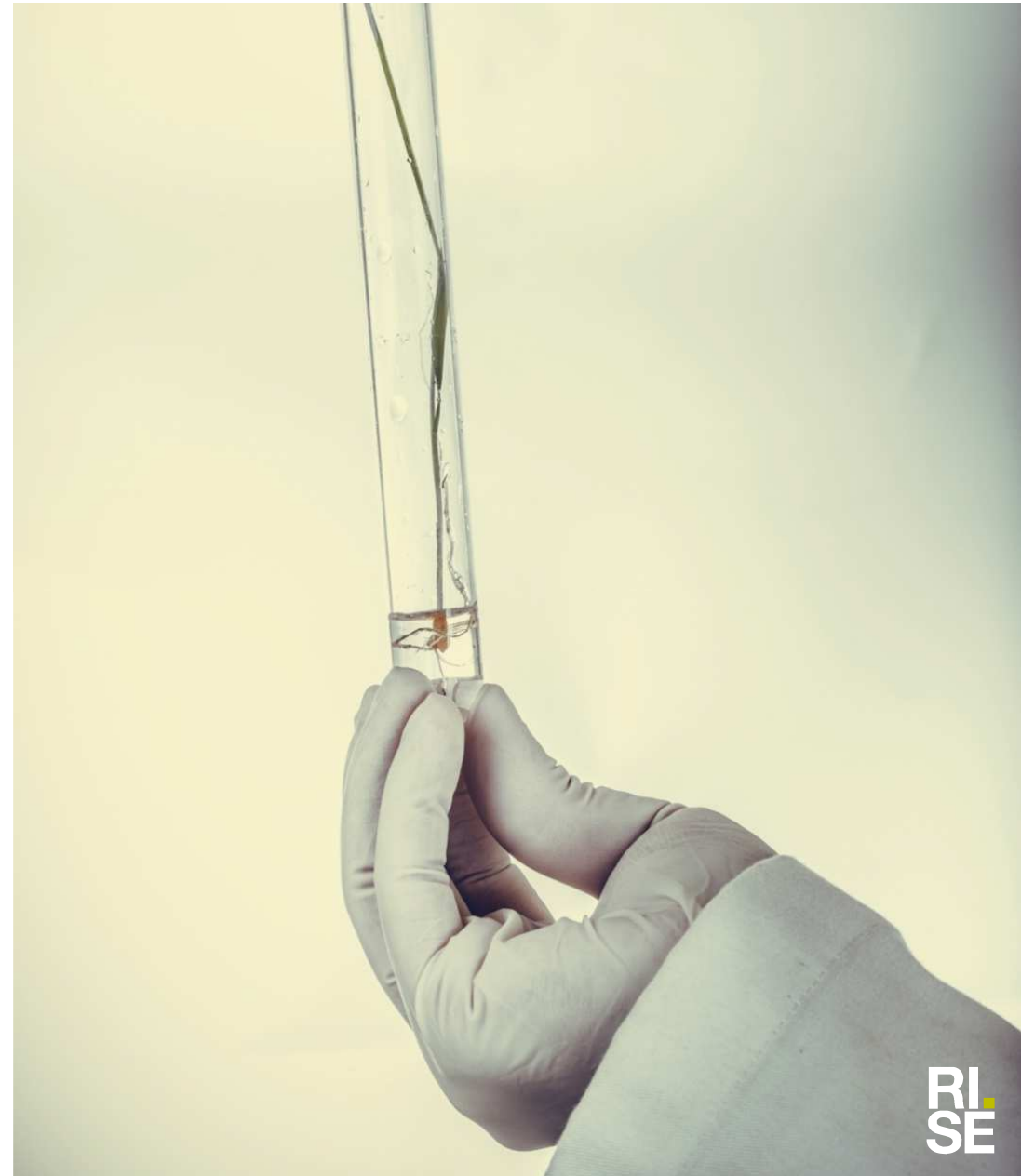
Research Institutes of Sweden
Strategy and Development



RISE Mission from the Swedish Government

- ” Develop excellence in strategic areas of importance for the transformation of industry and the business world and in close cooperation with academia and industry”
- “Develop and promote the usage of leading, dynamic environments for testing, demonstration and pilot production.”
- “Promote companies, in particular SME:s to participate and benefit from participation in EU research programmes”

Excerpts from the Research Bill 2016/17: 50 (Kunskap i samverkan).



Our combined offer

■ Applied Research and Development

- Research and Innovation
- Expert consultation
- Service design and design processes
- Innovationsupport for SME:s

■ Industrialization and Verification

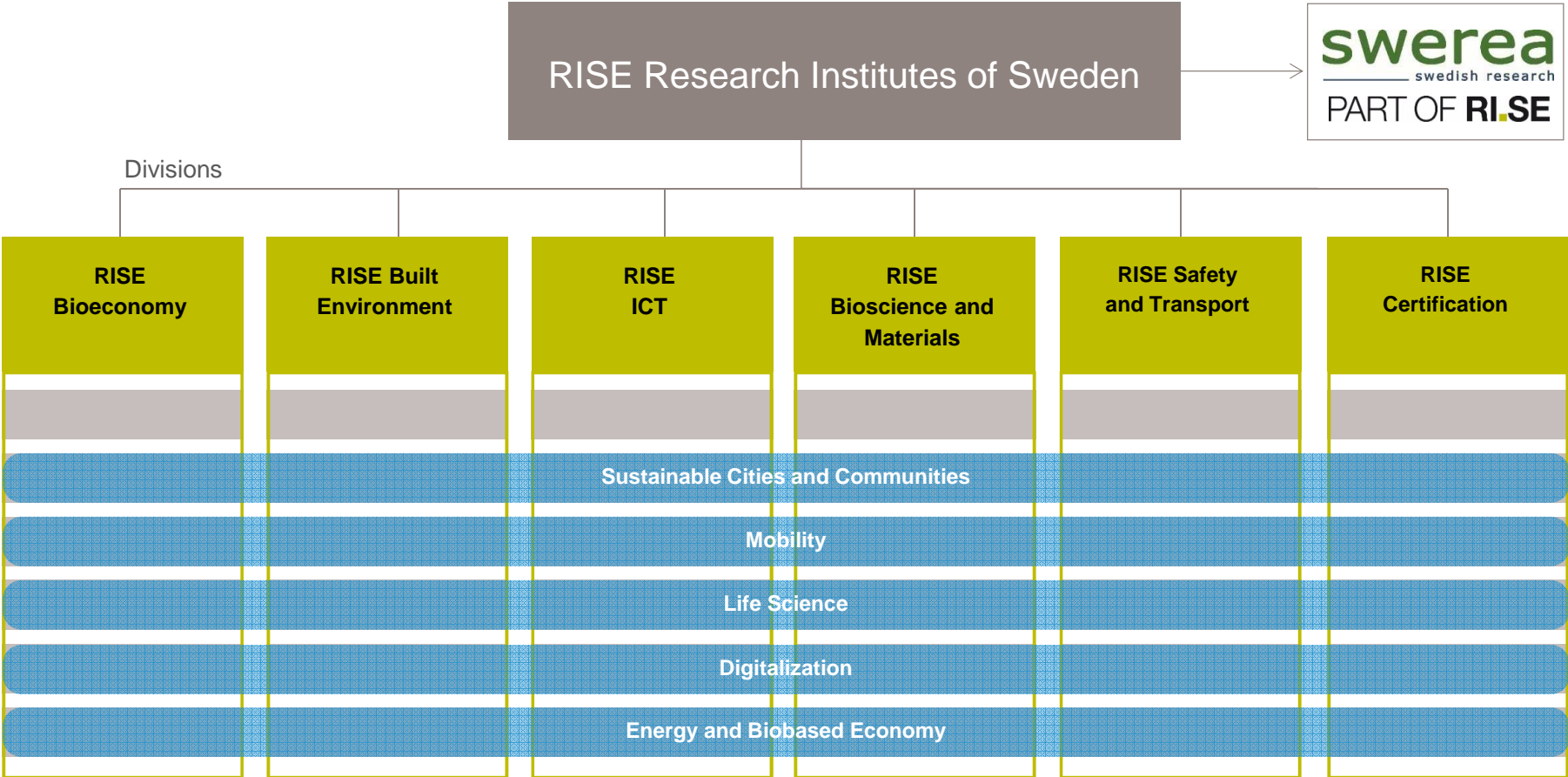
- Testbeds and demonstration facilities
- Technical assesments and verification
- Prototypes and pilot line production

■ Quality Assurance

- Certification

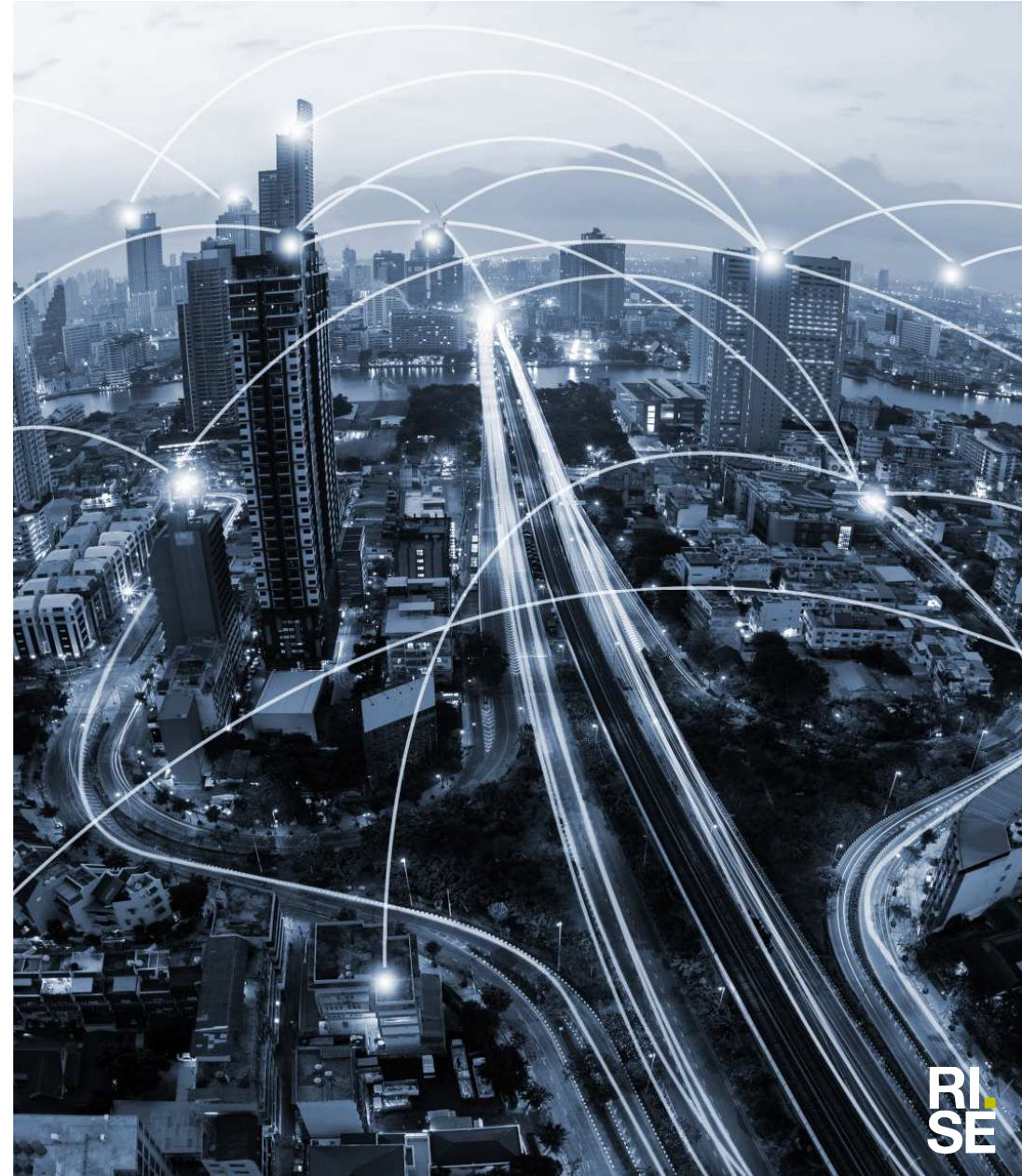


TODAY



RISE Focus Areas

- We focus our competence in 23 R & D areas; "Lighthouse initiatives"
- Criteria: Combination of national excellence with international potential, critical mass, existing customers and partner relations.
- Cover a broad spectrum of expertise areas, such as: cellulose based societies, organic electronics (BioComLab), bio fuels, the circular economy and intelligent energy systems.



RISE Business & Innovationsareas

Mobility

Energy and Biobased Economy

Life Science

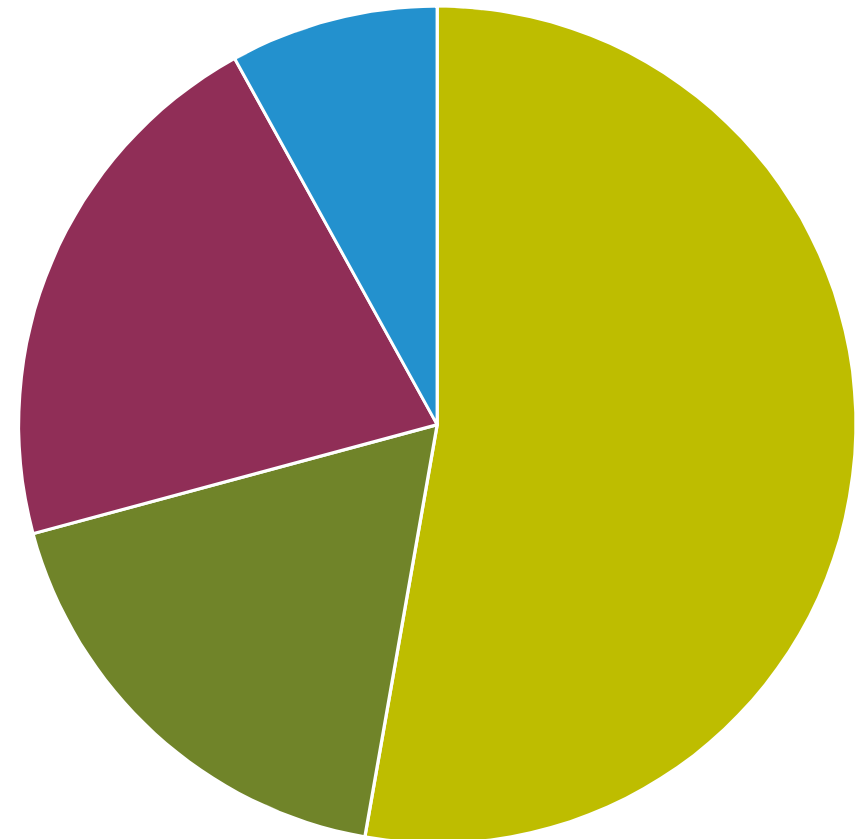
Digitalization

Sustainable Cities and Communities



RISE revenue 2016

- Total turnover 3 228 MSEK
- Basic 582 MSEK (18 %)
- Industry 1 699 MSEK (53 %)
- Public funding 681 MSEK (21 %)
- EU 259 MSEK (8 %)



■ Näringsliv 53 % ■ SK-medel 18 %
■ Forskningsfin 21 % ■ EU 8%

We are present
all over Sweden.
And a bit more...



Biobased carbon fibres from wood

Challenge

Carbon fibre is strong and light and has many applications. Today, the demand for carbon fibre is mainly limited by the high cost. Lignin from wood could be a cost-effective replacement to today's petroleum-based raw material.

Solution

Joint test bed initiative for carbon fibre production from lignin cooperation across the value chain from forest to finished product.



Biobased carbon fibres from wood

Impact

New light-weight material demonstrated in a model car with a roof and electrode materials consisting of lignin-based carbon fibre.

Partners

RISE Bioeconomy (Innventia), Swerea SICOMP, Blatraden and KTH. The project was financed by Innventia Research Programme 2015-2017 and BioInnovation.



Printed electronics - Examples of applications



Biosensor for home diagnostics



Smart packaging with temperature control to reduce food waste



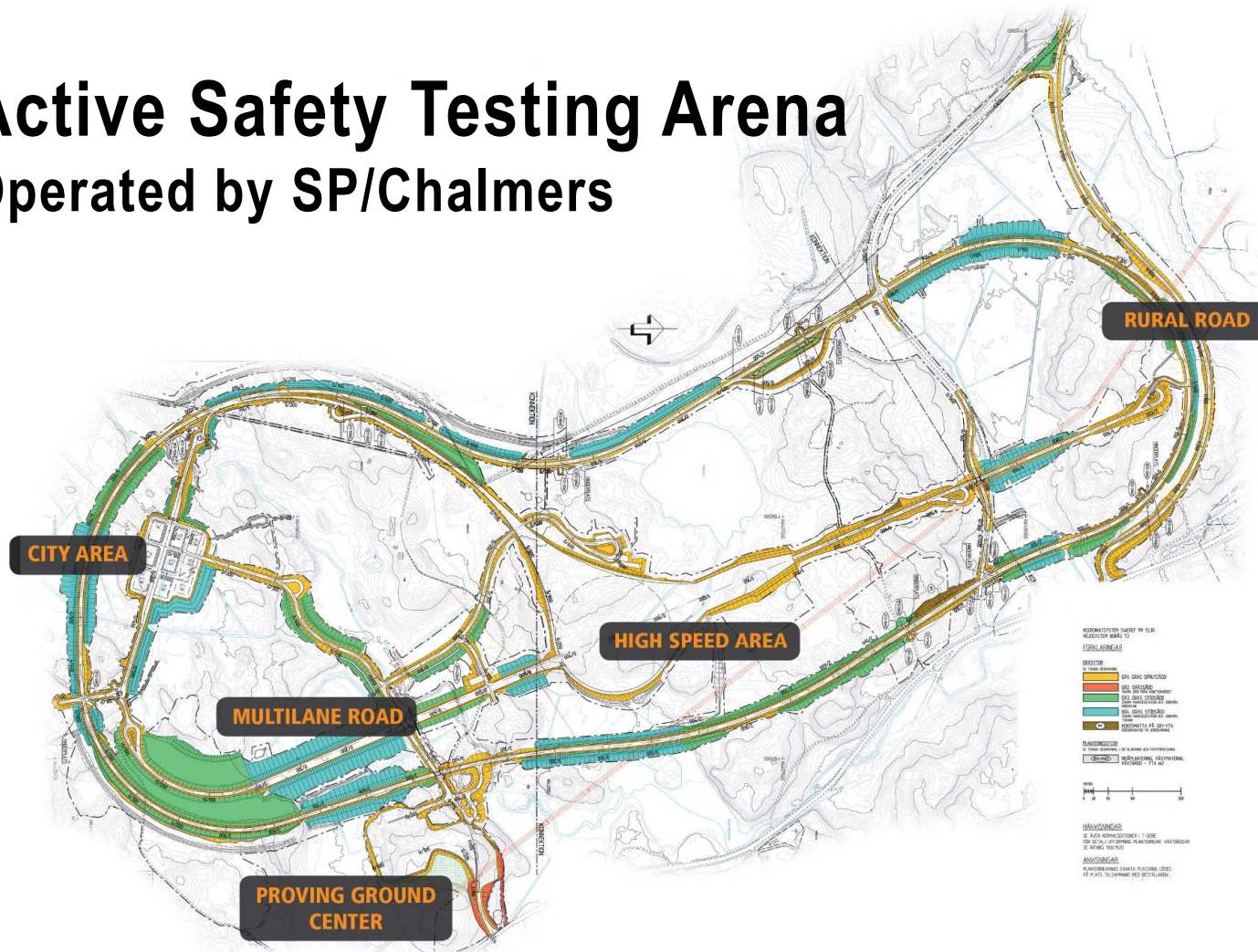
Battery testing



Smartcard with display

Active Safety Testing Arena

Operated by SP/Chalmers



Investing in your future



ASTAZERO
ACTIVE SAFETY TEST AREA

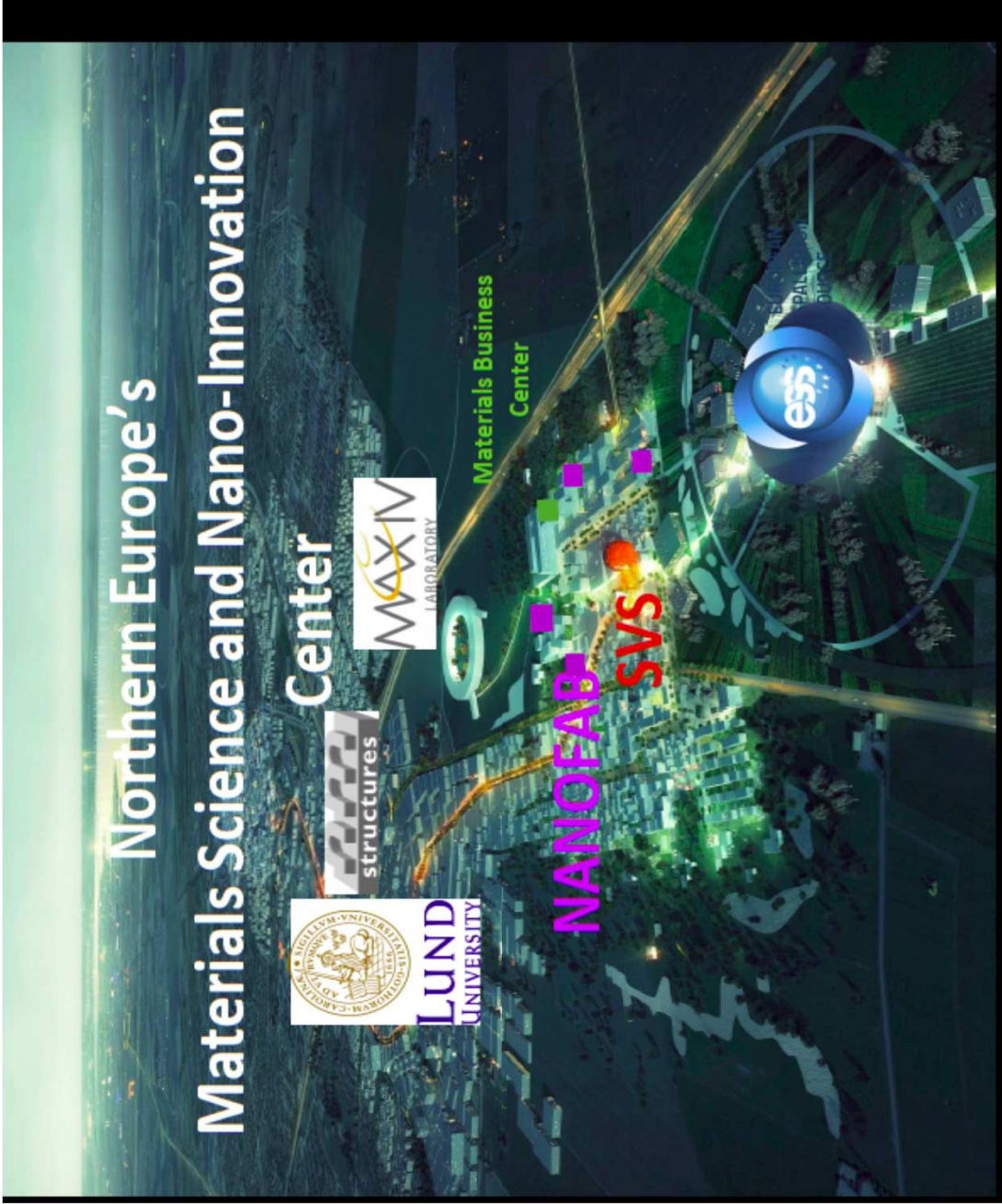
Northern Europe's Materials Science and Nano-Innovation Center



Materials Business
Center

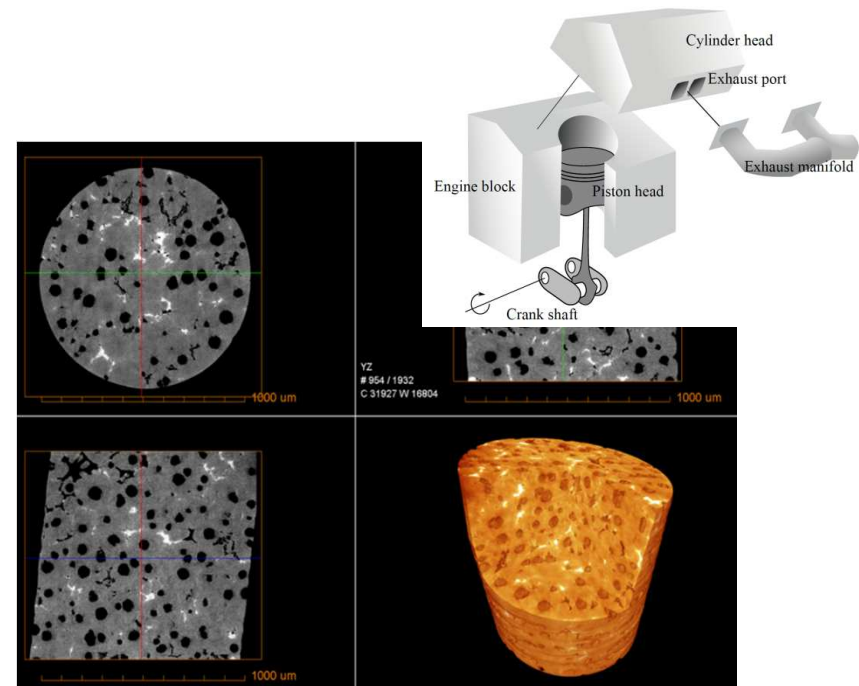
NANOFAB

SVS



Example - Development of more efficient combustion engines

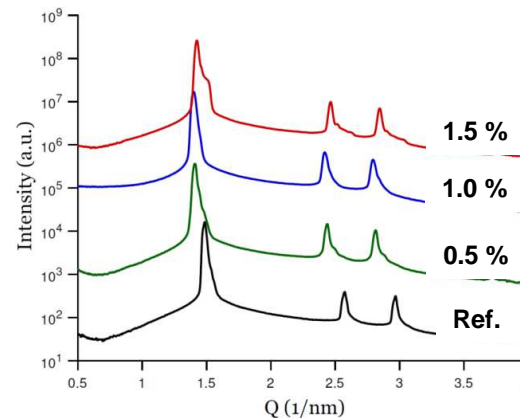
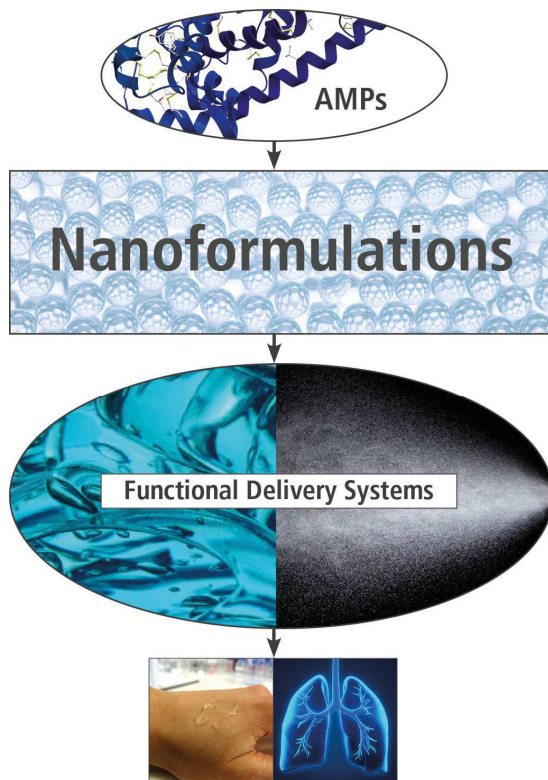
- Environmental requirements leads to higher temperature and tougher material requirements
- Understanding crack formation in cast ironLösning:
- Combine mechanical testing and structural analysis
- **Syncontron technology needed for sufficient room and time resolution**



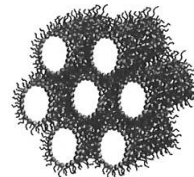
Torsten Sjögren



FORMAMP – Innovative Nanoformulation of Antimicrobial peptides (new antibiotics)



- **Hexagonal structure**

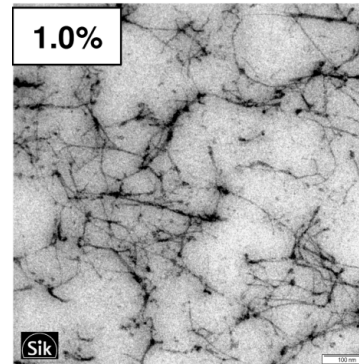


- De antimikrobiella peptiderna måste skyddas mot enzymatisk och kemisk nedbrytning tills de kommer till rätt position i kroppen.
- Detta kräver formulering och kontrollerad frisättning vilket ger kraftigt ökad effektivitet
- Lösning: skapa nanopartiklar som kan rymma peptiderna och släppa ut dem kontrollerat
- Kombinera frisättnings- och stabilitetsmätningar med strukturanalys
- **Synkrotrontechnik behövs för att få tillräcklig känslighet**

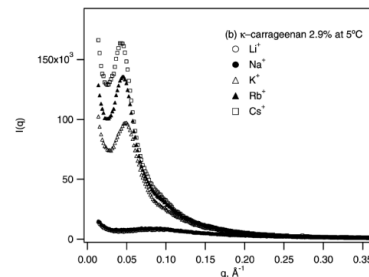
Helena Bysell

Next generation of biomaterials

- Challenge: Better knowledge on structure of biomaterial formation, moistabsorption, strength
- Exemple: Food – gel formation and structure of polysackarides to tailor make next generation of food
- Solution: measurement and consistency with structure analysis/kinetic studies
- **Syncrotrontechnology needed to measure structure of biomaterials**



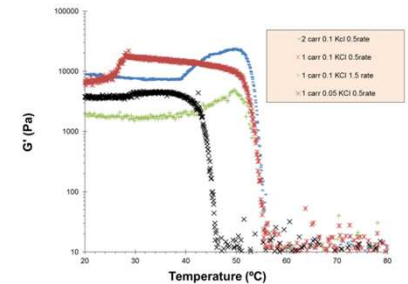
Elektronmikroskopi



SAXS



Karrageenan alger



Konsistens

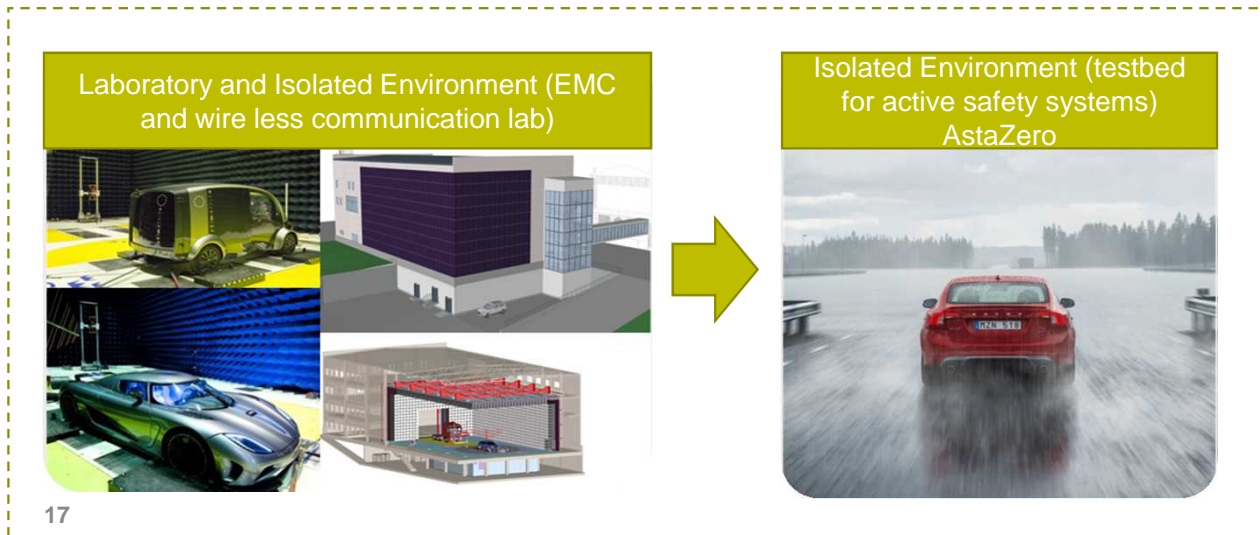


Smaktest

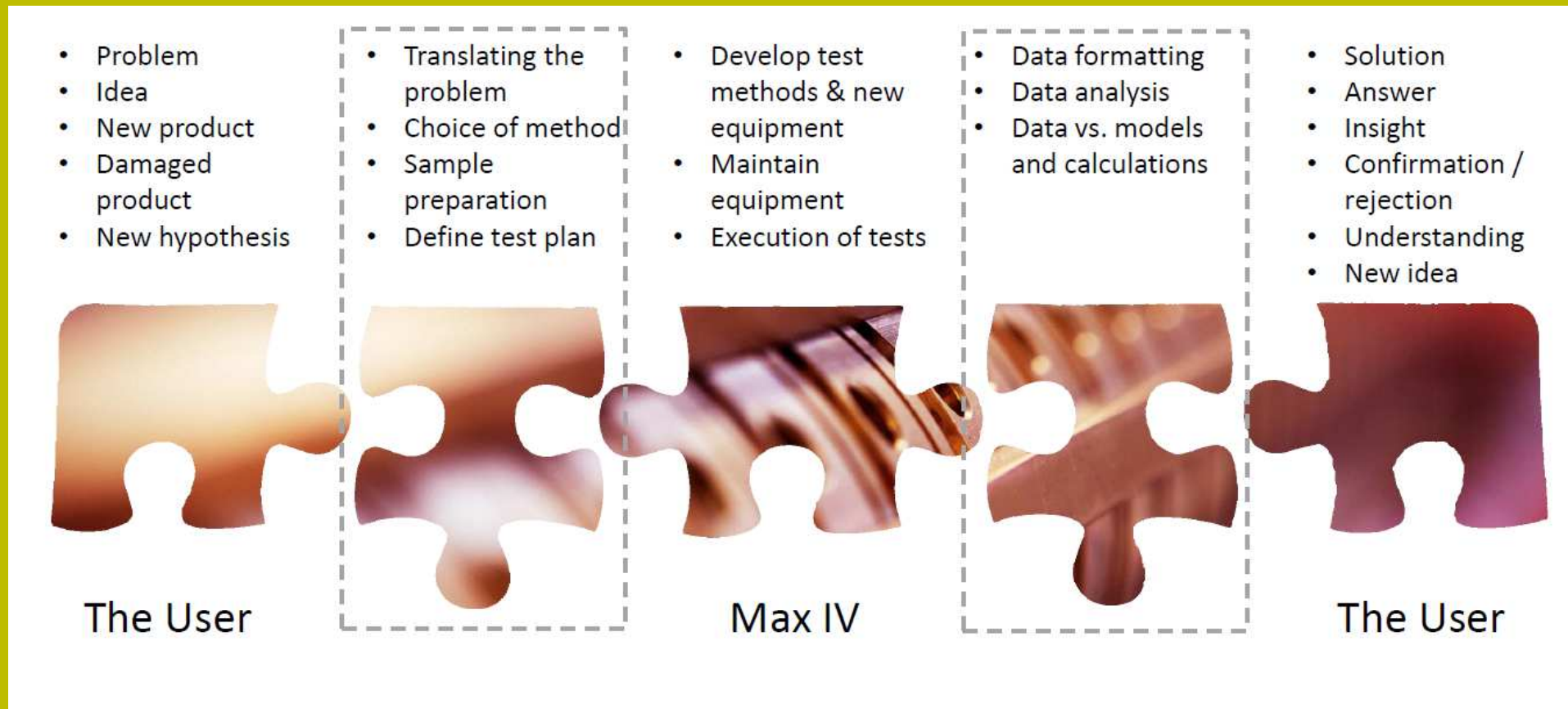
”Chain of T&D”

- RISE and customers identify together future needs and innovation infrastructures

- Exampel: joint research projects and competence environments for methods and product development and verifications before tests in real life environments



MAX IV has a challenge to reach industry

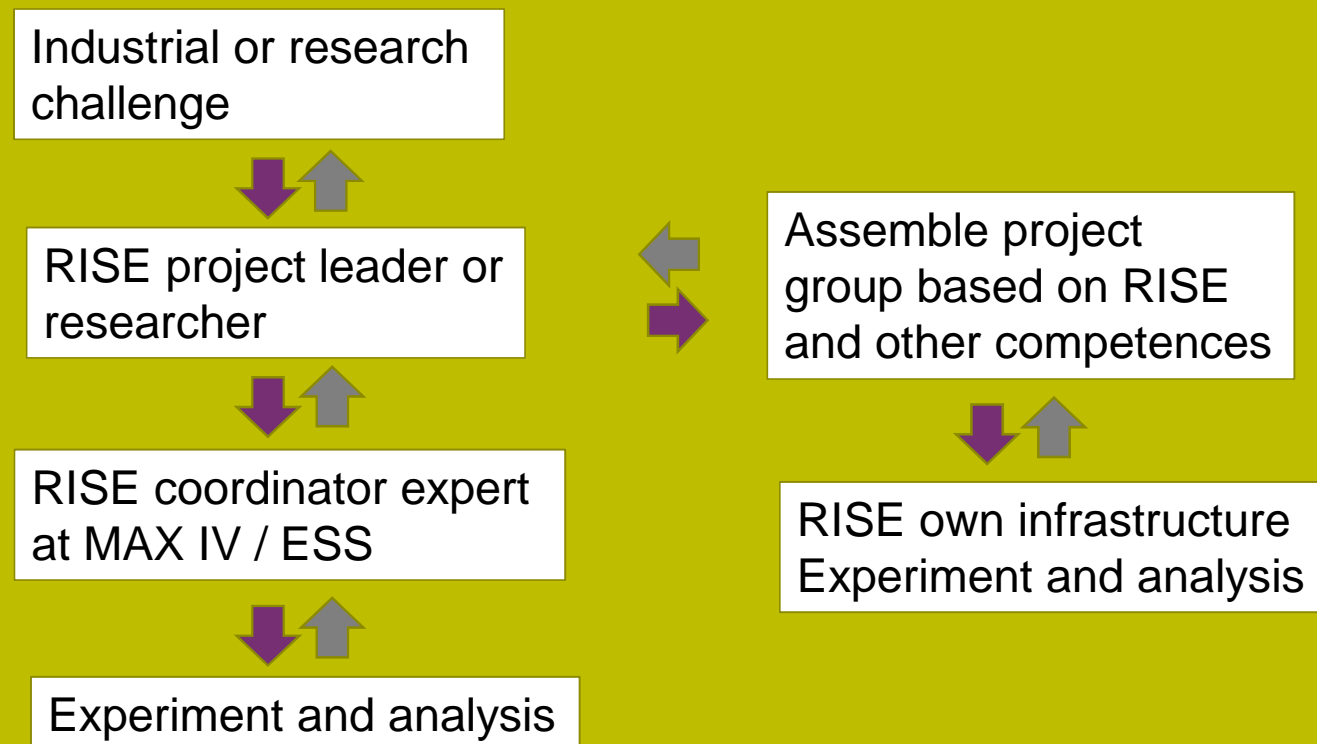


Vad can RISE add?

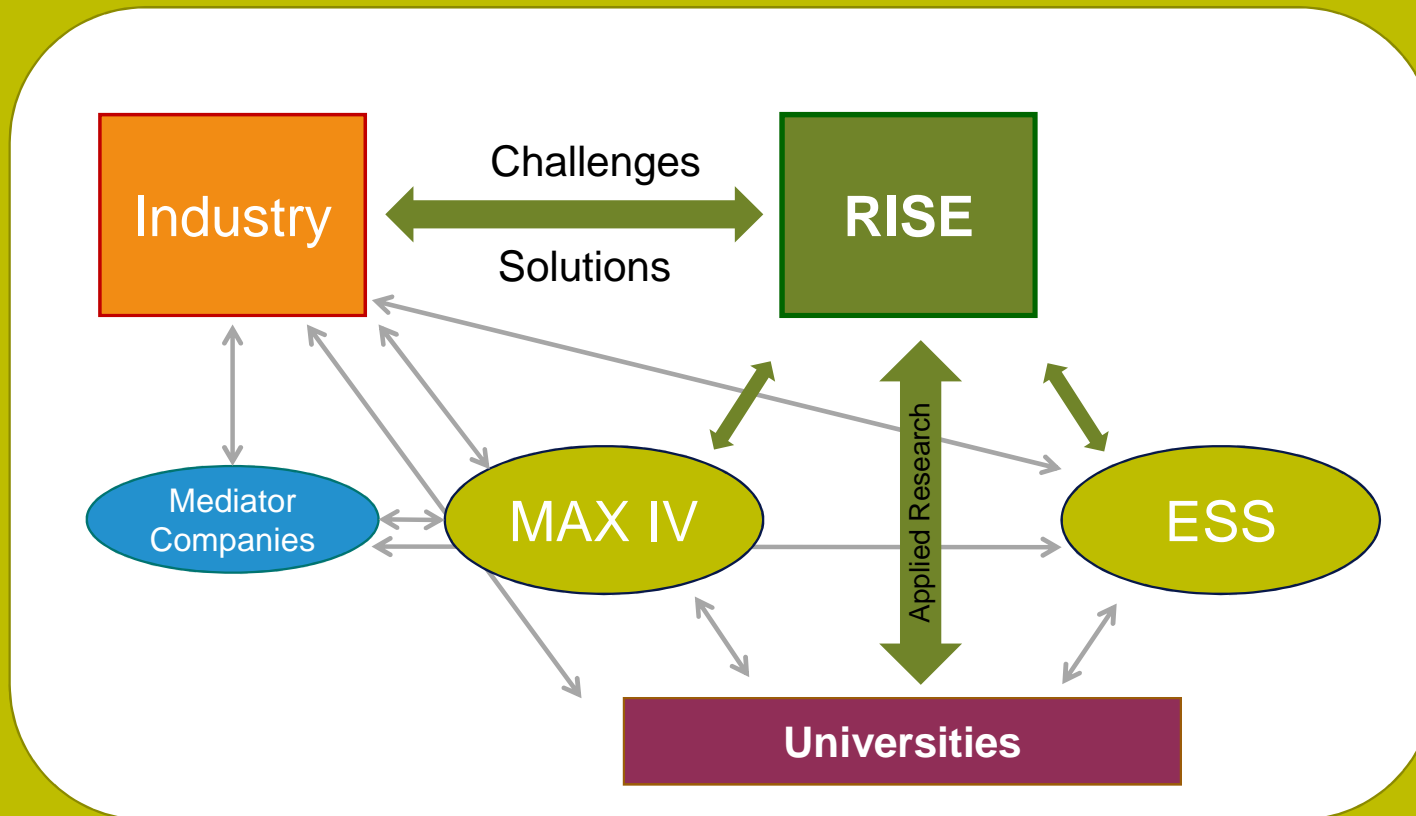


- RISE will give MAX IV and ESS a greater visibility in the Industry community
- RISE can give greater industrial interest in use of MAX IV/ ESS by providing a context
- Exploring industrial use of MAX IV/ ESS by RISE will contribute to new applications
- MAX IV/ESS will become an important element in the RISE Tool box

How could RISE work with MAX IV and ESS?



Eco system



Building a road map for MAX IV/ESS

- Competence
 - Inventory of RISE competence
 - Training of key personel and project leaders
 - Create user community
 - Work in projects with synchrotron/neutron applications
 - Build RISE infrastucture
 - Recruit key personel
 - Collaboration with universities
- Collaboration with MAX IV and ESS
 - Presence at installations
 - Identify support functions – e.g. data processing (discussion ongoing)
 - Utred RISE experimentella behov
 - Secure RISE / industrial access to beam time - possible RISE participation in deciding committees?
- Communication with Industry
 - Present MAX IV / ESS collaboration (e.g. RISE homepage)
 - Arrange workshops and training for industrial R&D personel
 - Publish case studies



ForMAX beamline – Forest Industries “own” beamline

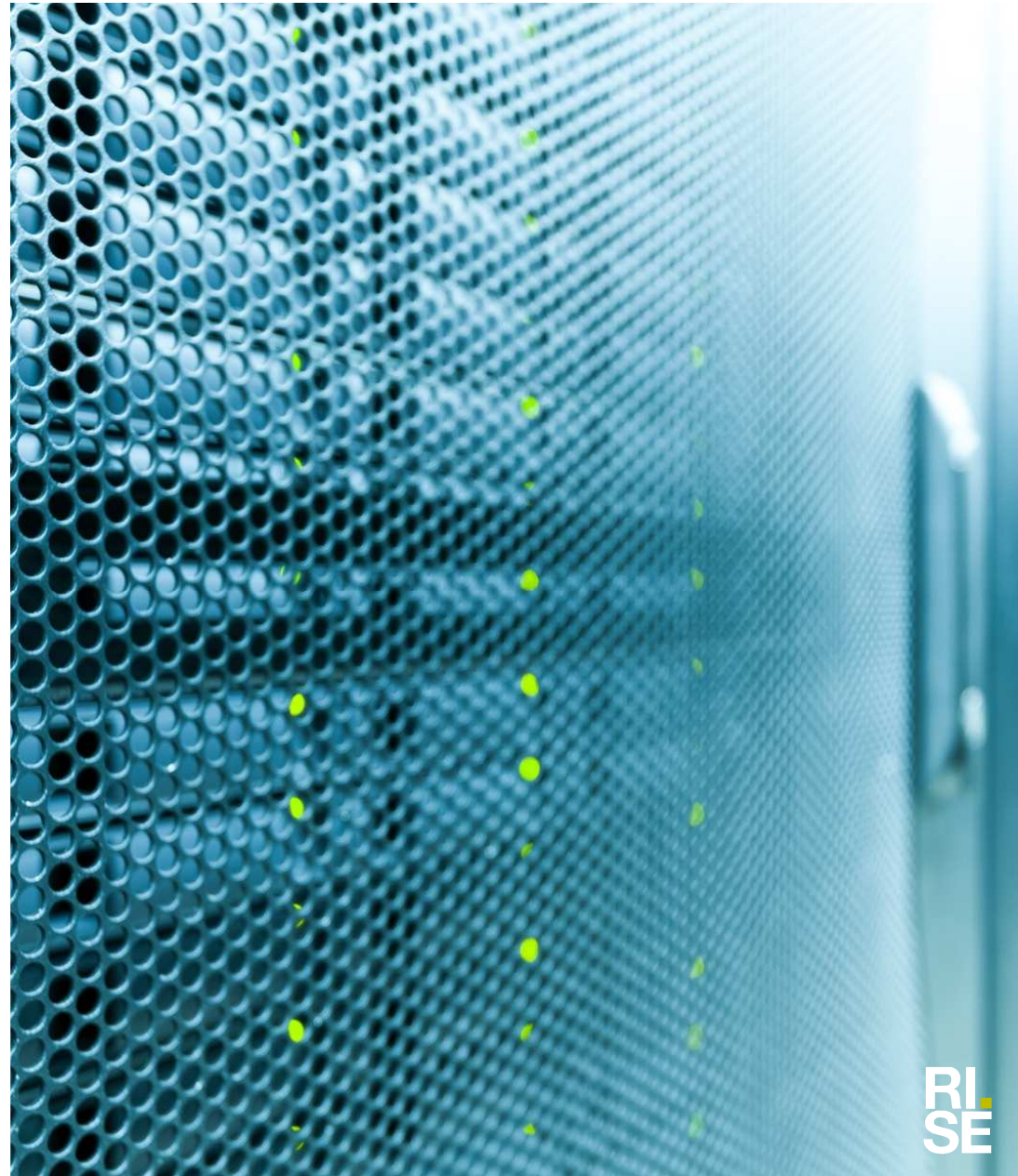


(Illustration by MAX-LAB)

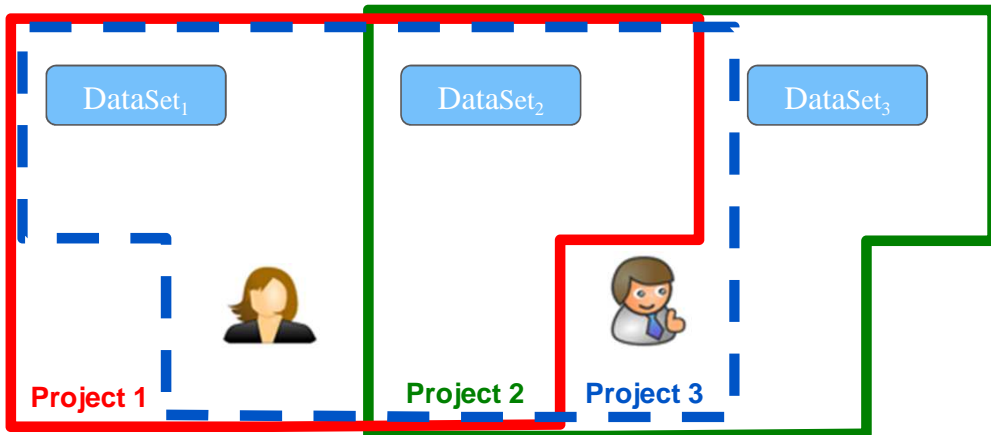
RISE

Data Science

- National initiative for data driven innovation in Sweden
- Brings together all relevant expertise within RISE
- Common activities and R&D&I projects
- Goal: To reinstate Sweden as the leading digital nation



Hadoop-as-a-Service - HOPS



› Storage and processing of data

› www.hops.site

› Hopsworks

– In-Place Data Sharing - no Copying!

– No Cross-Linking DataSets across Projects!

› Project-Specific Roles for Users

– Data owner

– Data scientist

A Swedish – German perspective



Swedish-German testbed for smart production initiative

Initiated at 2017-01-31

GERMAN SWEDISH
TECH FORUM



Enter IPT: Stefan Kusler & Kristian Bek/Besinningsberedning

Next meeting



Venue: Fraunhofer IPT, Aachen

Date: March/April 2017

Subject: Concept for a Swedish-German testbed for smart production

Interested Partners



IN COLLABORATION WITH:





THANK YOU

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Research Institutes of Sweden

STRATEGY &

DEVELOPMENT

