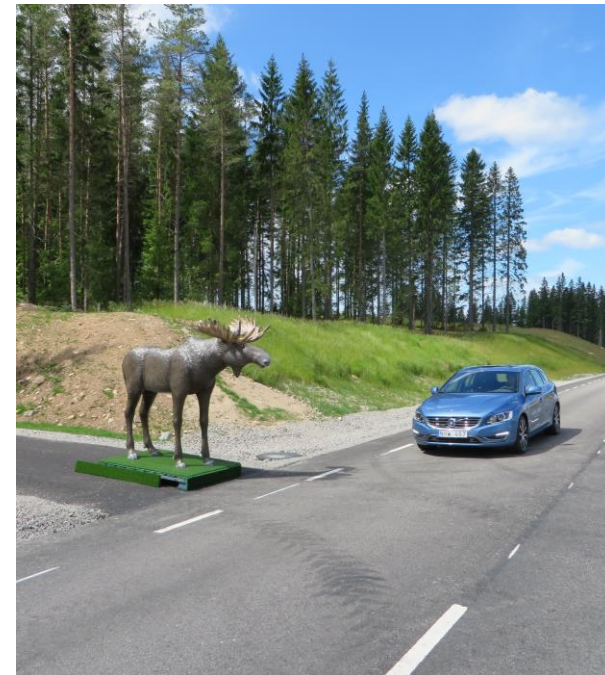


# RISE – HOST OF SWEDISH NMI

Jan Johansson (NMI Director)

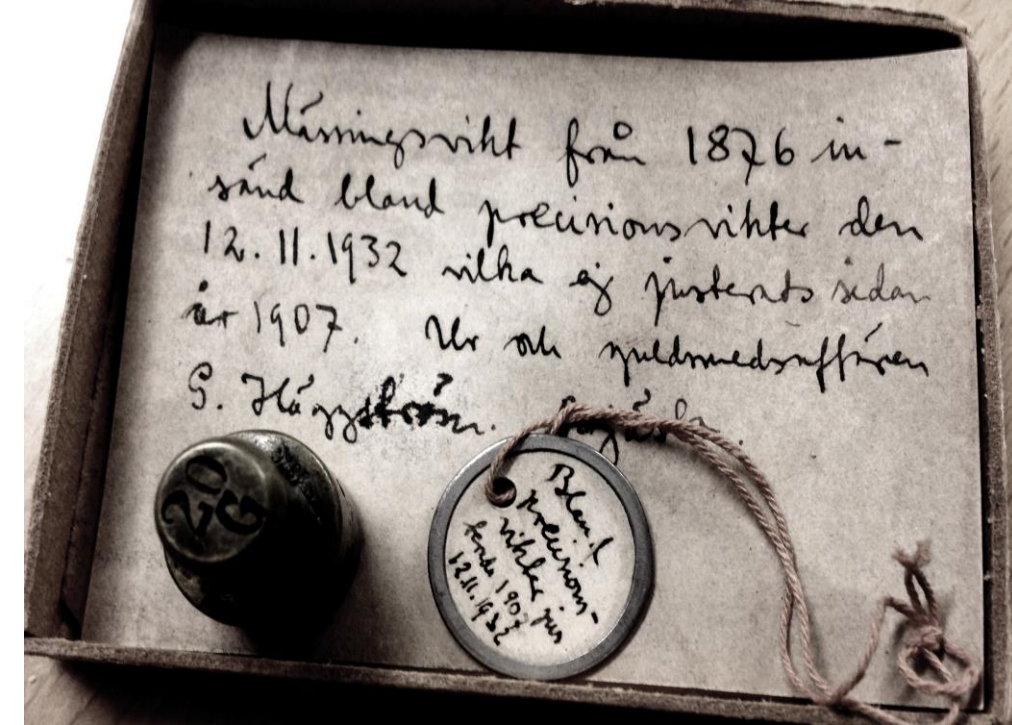
Leslie Pendrill (EURAMET Delegate, Head of Research)

Research Institutes of Sweden  
Safety & Transport  
Measurement Science & Technology



# History in short

- 1665 Weights & measures ordinance
- 1831 Swedish royal control and testing
- 1875 Jernkontoret testing institute
- 1920 **Statens Provningsanstalt (SP)** was founded in Stockholm
- 1993 **SP Swedish National Testing and Research Institute**
  - SP is converted from authority to company owned by the Ministry of Enterprise.
- 2007 **SP Technical Research Institute of Sweden**
  - A holding company called RISE is formed, owning SP and other technical institutes
- 2017 **RISE Research Institutes of Sweden**



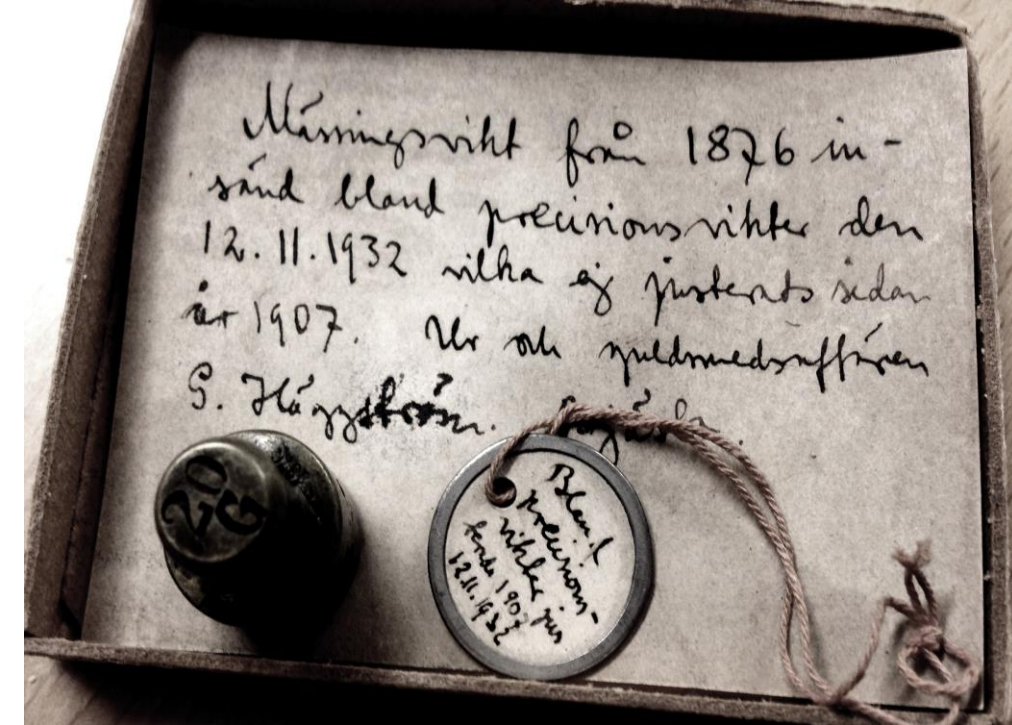
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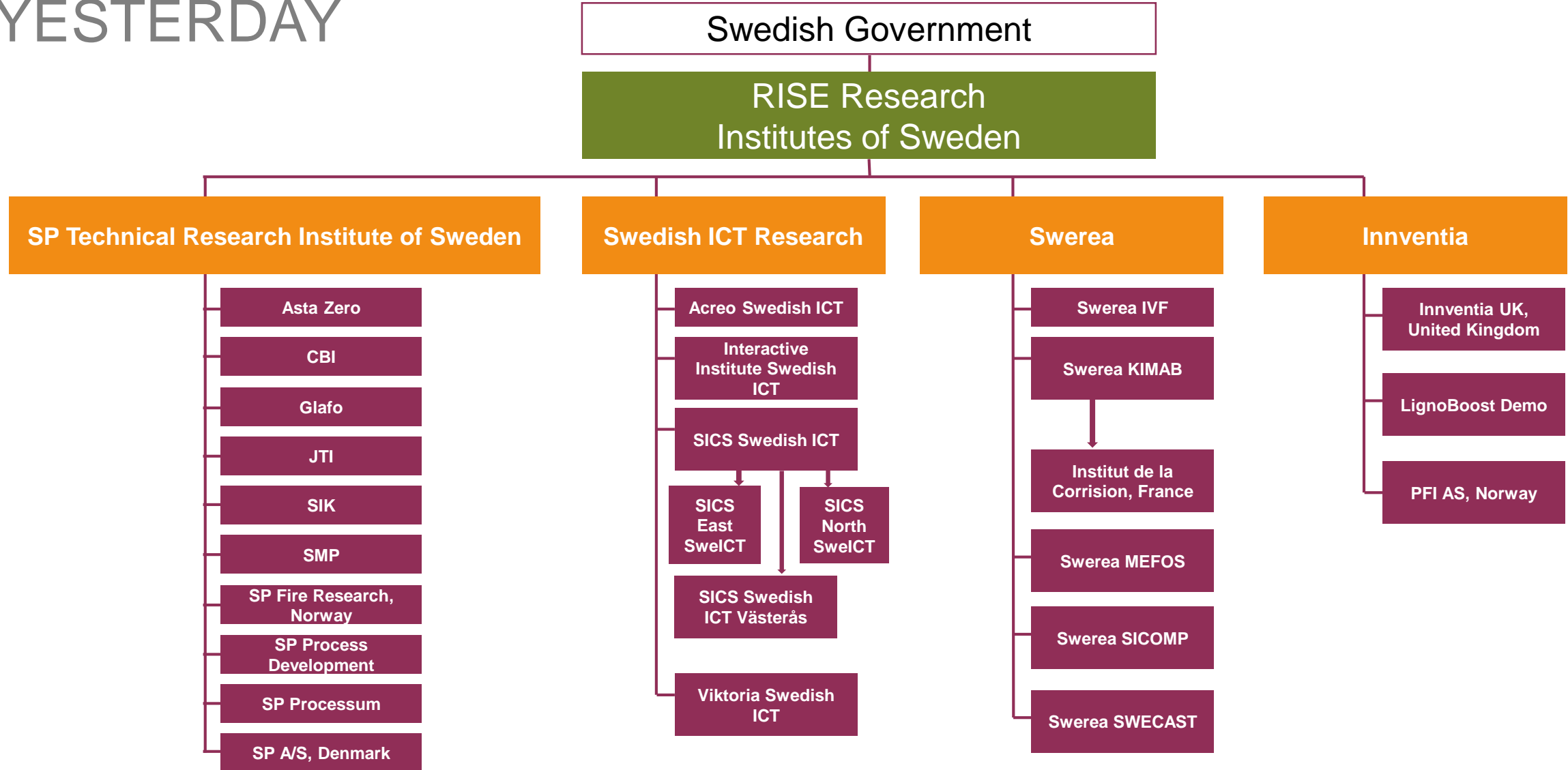
SP staff: 300  
NMI staff: 80

SP staff: 1600 other  
NMI staff: 100

RISE staff: 2300  
NMI staff: 130



# YESTERDAY





# Facts about RISE

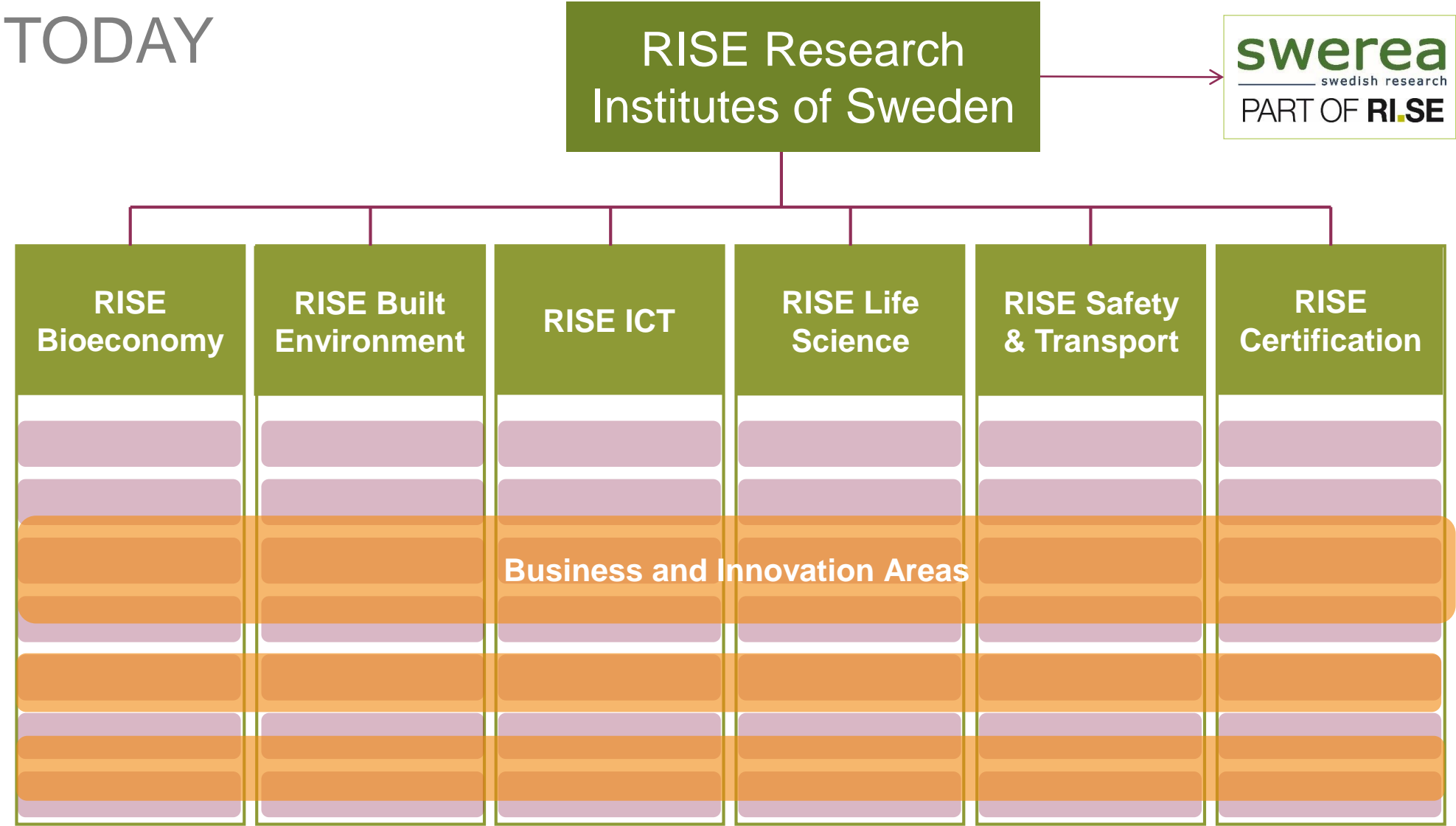


- Mission: "Research and Technology Institutes should be internationally competitive and support sustainable growth in Sweden by strengthening industrial competitiveness and renewal."
- 2015 RISE had a turnover of just over 3 billion SEK, of which 55 % came from industry, and 27 % from public funding in competition (including national and EU funding)
- 2 300 researchers, 30 % with a PhD
- RISE has about 15 000 customers per year
- RISE is owner and partner in 60 % of all T&D-facilities in Sweden

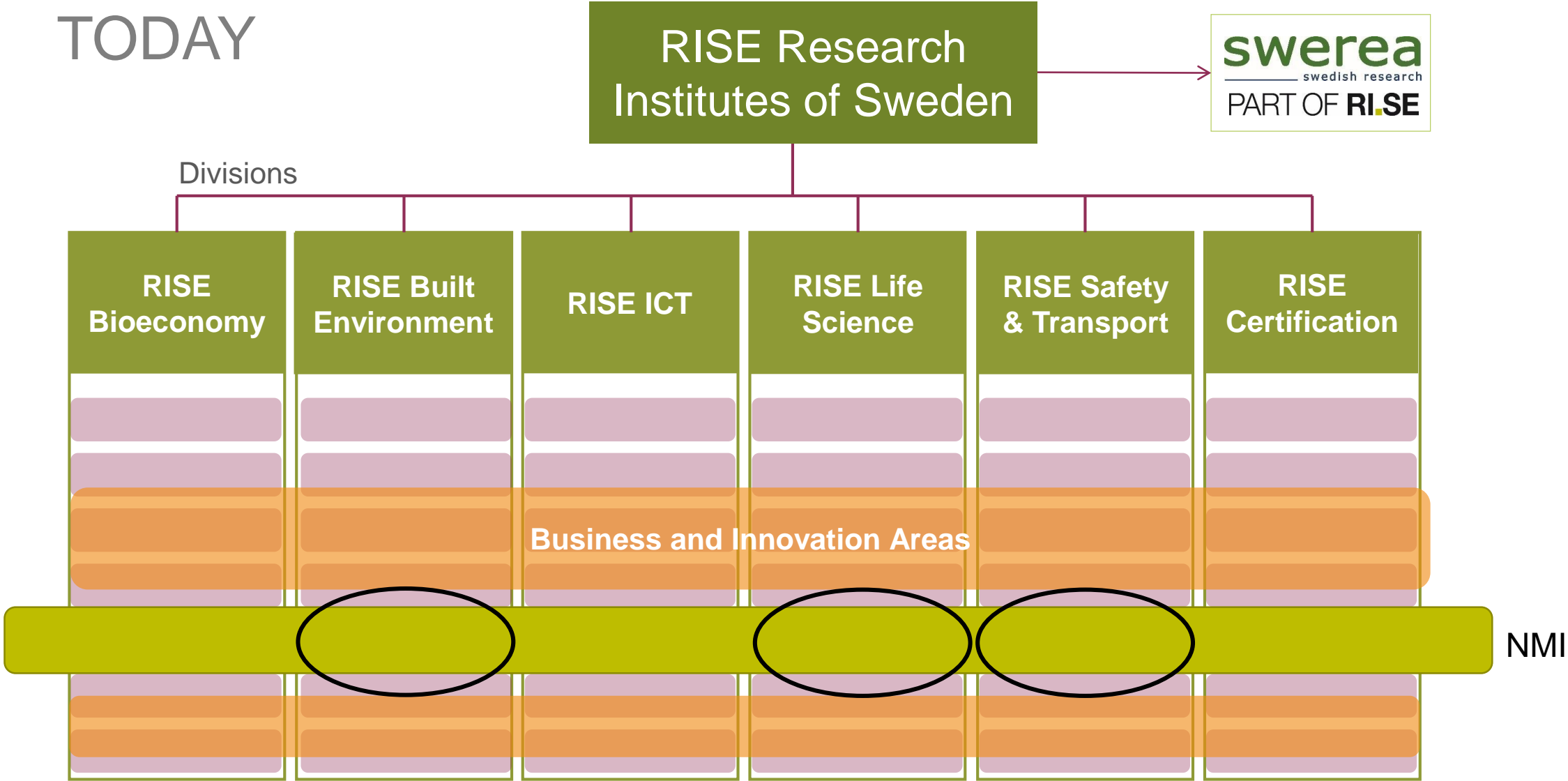


Outside of Sweden  
Copenhagen  
Trondheim  
London  
Brussels

TODAY



TODAY







# RISE as Swedish National Metrology Institute (cont.)

- Positive trend regarding NMI core funding
  - Increased internal support and collaboration within RISE
  - Governmental NMI core funding, from Vinnova, has increased over the last 5 years
- NMI has large increase in “other” public funding e.g. H2020
- The NMI has about 1600 customers per year on services such as calibration and training courses



**Mass**



**Length**



**Volume**



**Pressure**



**Force**



**Acceleration**



**Sound pressure**



**Time / Frequency**



**Electricity**



**Photometry /  
Radiometry**

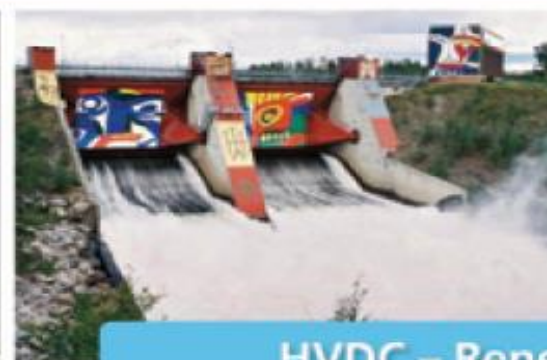
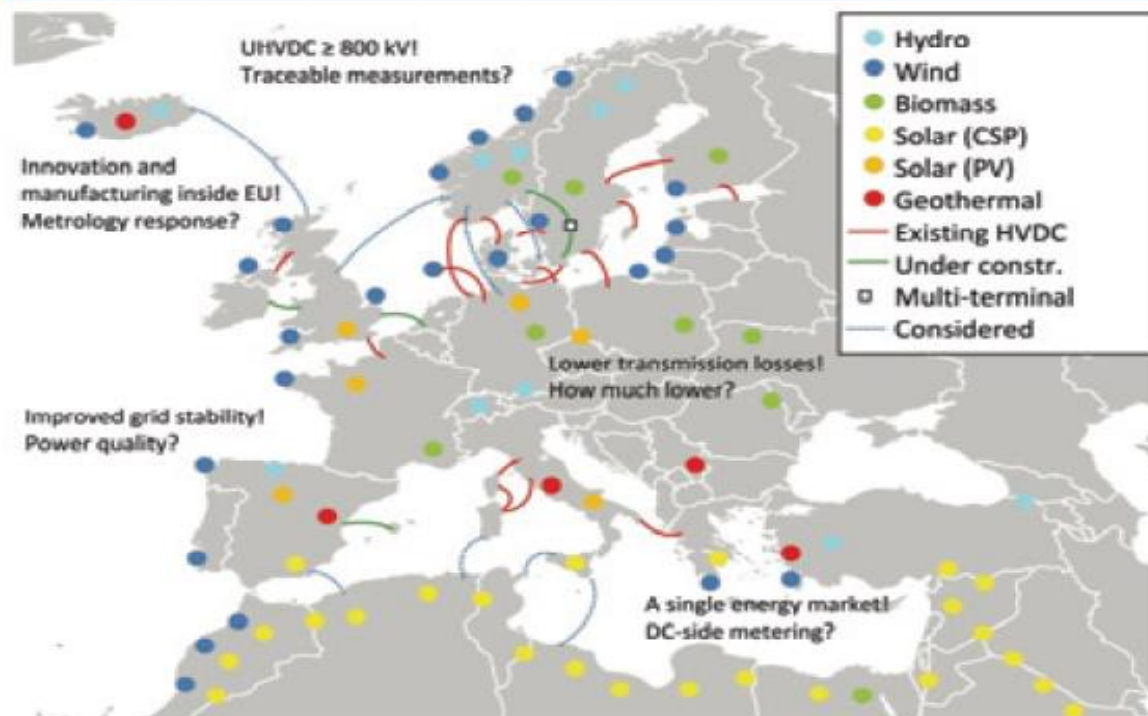


**Temperature**



**Chemical  
measurement  
technology**

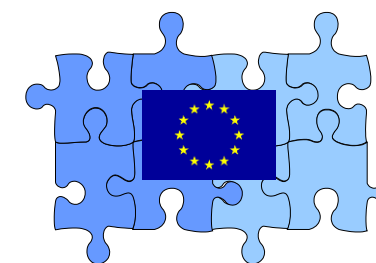
## ENG07: Metrology for HVDC



### HVDC – Renewables Highway

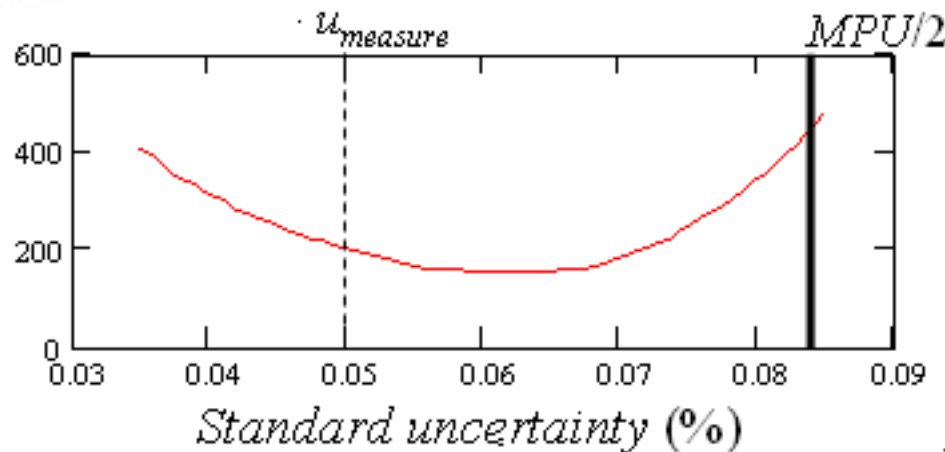


EMRP A169 ENG07 HVDC, Co-ordinator: SP (Sweden)



# Optimised uncertainties – risks & economy when decision-making ('Conformity Assessment')

*Economic loss (€)*



**Economic decision theory approach**

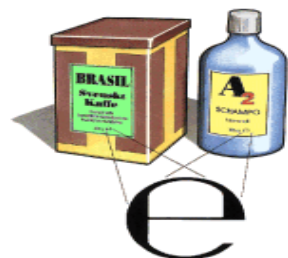
$$E_d = \left( \frac{D}{u_{measure}^2} + C \right) \cdot [1 - \Phi(|USL - x_{measure}|, 0, u_{measure})]$$

Consequence cost

Test cost

Uncertainty

## NEW04 Uncertainty



**Pre-packaged coffee**

**0.4 M€/a**



**Electricity meters**

**1.5 M€/a**



**Gas meters**

**3 M€/a**



**Petroleum meters**

**1 M€/a\***



**CO vehicle exhaust meters**

**0.7 M€/a**



\*National annual saving with optimised uncertainty

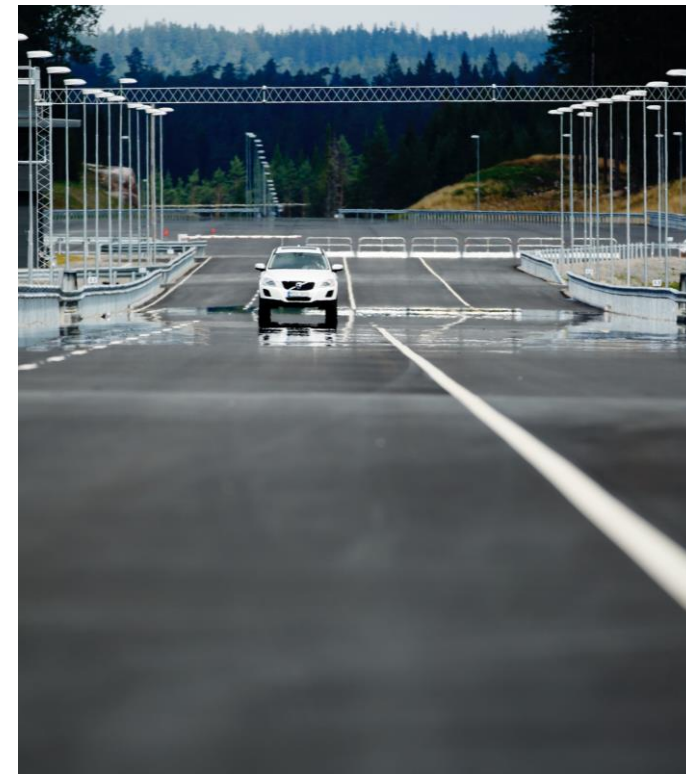


# From EMRP NEW04 to European Centre MATHMET



- MATHMET founded by LNE, NPL, PTB and SP in 01/2016
- Website online 03/2016 ([www.mathmet.org](http://www.mathmet.org))
- **Kickoff-Meeting, General Assembly 06-07/2016**

THE WORLD'S  
FIRST FULL-SCALE  
TEST FACILITY  
FOR TOMORROW'S  
ACTIVE SAFETY.



THANK YOU!

Jan Johansson

E-mail [jan.johansson@ri.se](mailto:jan.johansson@ri.se)

Telephone +46 10 516 5504



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Safety & Transport  
Measurement Science & Technology