

# CERN and Danish Industry

Nikolaj Zangenberg

Innovation Manager, Danish Technological Institute

CERN Industrial Liaison Officer for Denmark

Danish delegate to CERN Knowledge Transfer Forum



Uddannelses- og  
Forskningsministeriet  
—  
Styrelsen for Forskning  
og Uddannelse



**TEKNOLOGISK  
INSTITUT**



**DTU**  
Danmarks  
Tekniske Universitet

# Agenda

- A. The Danish ILO model: BigScience.dk
- B. Danish industrial return
- C. Industry innovation and CERN
- D. Internationalisation of the Big Science market



Uddannelses- og  
Forskningsministeriet  
—  
Styrelsen for Forskning  
og Uddannelse



**TEKNOLOGISK  
INSTITUT**



**DTU**  
Danmarks  
Tekniske Universitet

## A. The Danish ILO model: BigScience.dk

---

# Big Science is moving to Denmark...

## ESS som drivkraft for fremtidens vækst

Strategi for den danske ESS-indsats 2.0

Juni 2020



ESS – European Spallation Source



# Joint organisation of the DK Big Science Industrial Liaison Officers



**Henrik Bak Jeppesen**  
ILO for ESO, CERN & ESRF



**Arne Jensen**  
ILO for ESS



EUROPEAN  
SPALLATION  
SOURCE



**Søren Bang Korsholm**  
ILO for F4E (ITER)



**Nikolaj Zangenberg**  
ILO for CERN, ESRF & European-XFEL



**Jonas Okkels Birk**  
ILO for ILL



**Esther Davidsen**  
Network manager



# 2020: 10-year anniversary



8

## CERN

*"As an ILO function they punch well above their own weight"*

- Anders Unnervik, indkøbschef, CERN



CERN arbejder med grundforskning inden for partikelfysik ved studier af kolliderende højeenergi partikelstråler. CERN finansieres af 20 medlemslande, der betaler et bidrag proportionelt med deres BNP. Med konstruktionen af LHC (Large Hadron Collider, operationel fra 2011) kan kollisioner mellem protoner eller blyioner med energier op til 7 tera-elektronvolt studeres. Partikler trækkes desuden ud i diverse andre testfaciliteter og bruges af besøgende forskere til studier af materialer og strukturer på atomart niveau og til kerneforskning.



*Interview med  
Anders Unnervik  
indkøbschef, CERN*

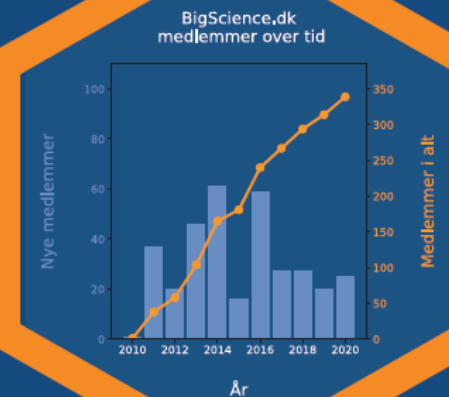


CERN works with fundamental research within particle physics by studying colliding high-energy particle beams. The beams are directed to test facilities, where materials and structures on the atomic level are examined.

12

## BigScience.dk-netværket

På kortet ses, hvordan medlemmerne er spredt i hele landet, og grafen viser netværkets vækst i perioden 2010-2020. Udviklingen er gået særligt hurtigt i årene med ekstra ressourcer 2013-2014 via Vækstmotorprojektet og i 2016 via Interregprojektet "ESS & MAX IV Crossborder Science and Society".

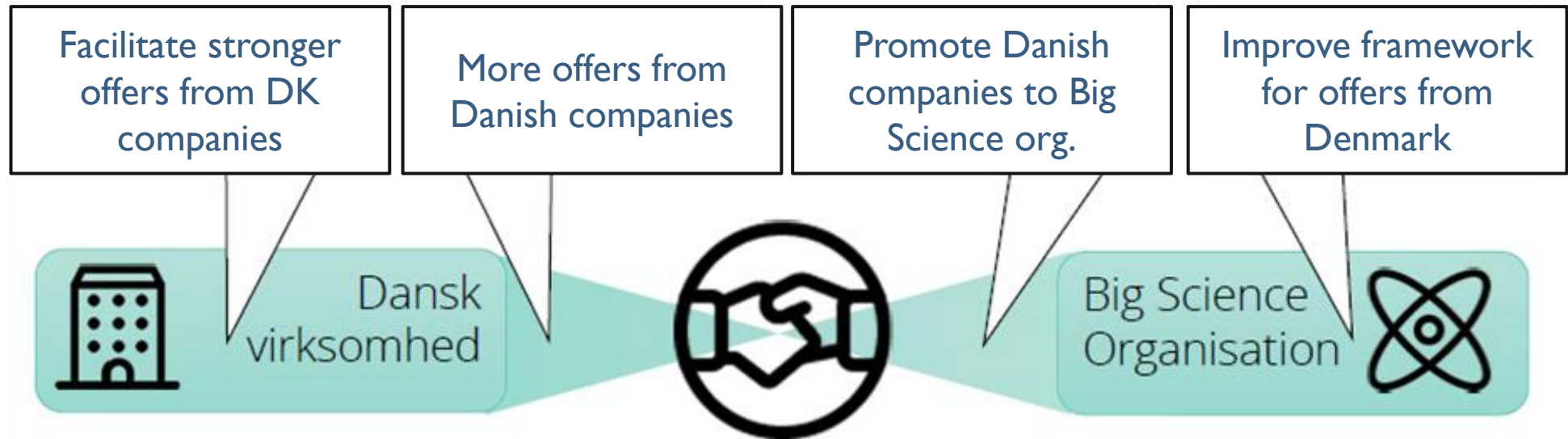


# BigScience.dk – helping companies engage with Big Science

---

**Vision 2024:** Danish companies will bring home contracts from Big Science worth DKK 180 mio pr. year (CHF 26,5 mio) – including DKK 100 mio. from ESS.

## Main activities:

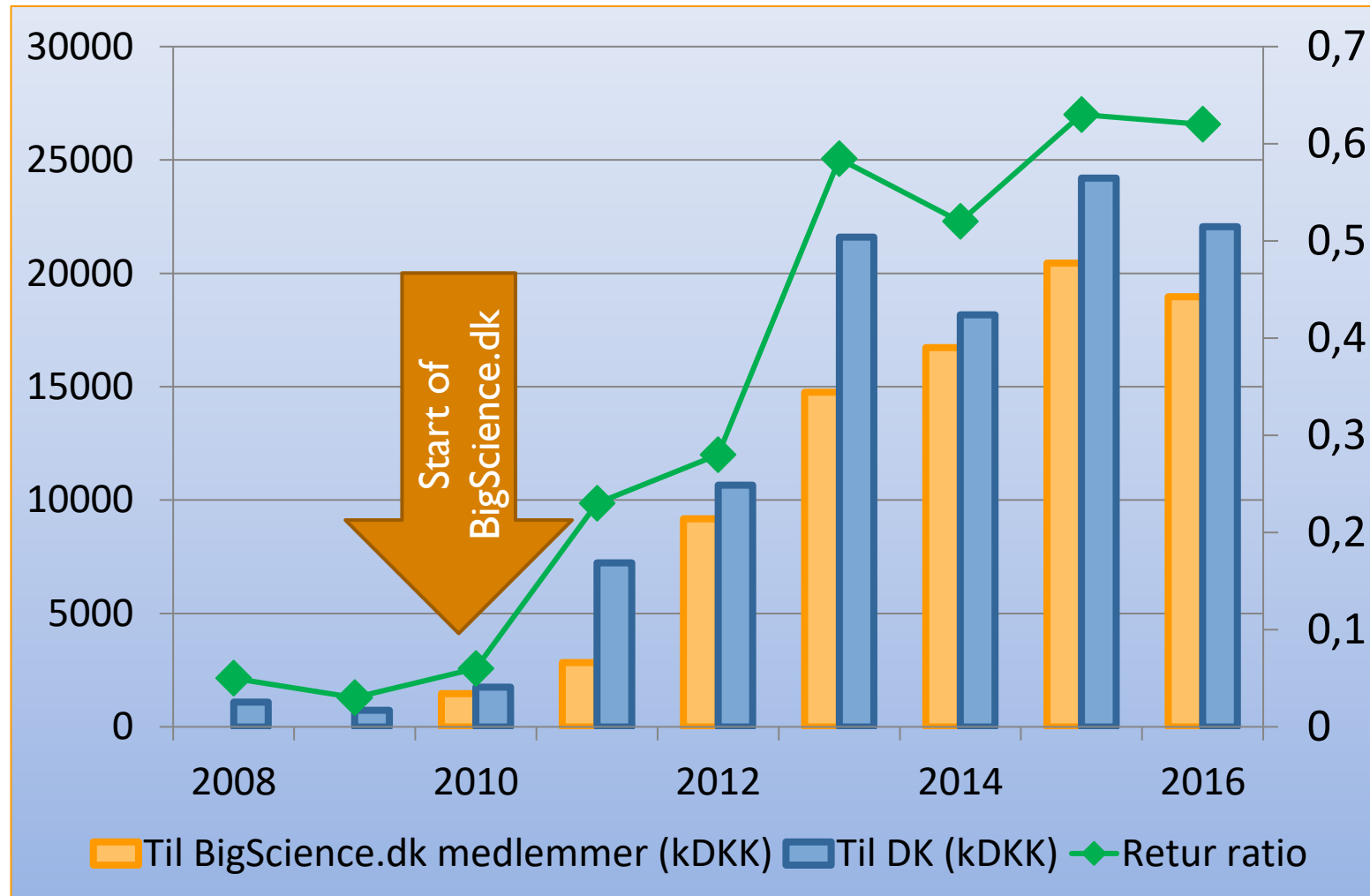


## B. Danish industrial return

---

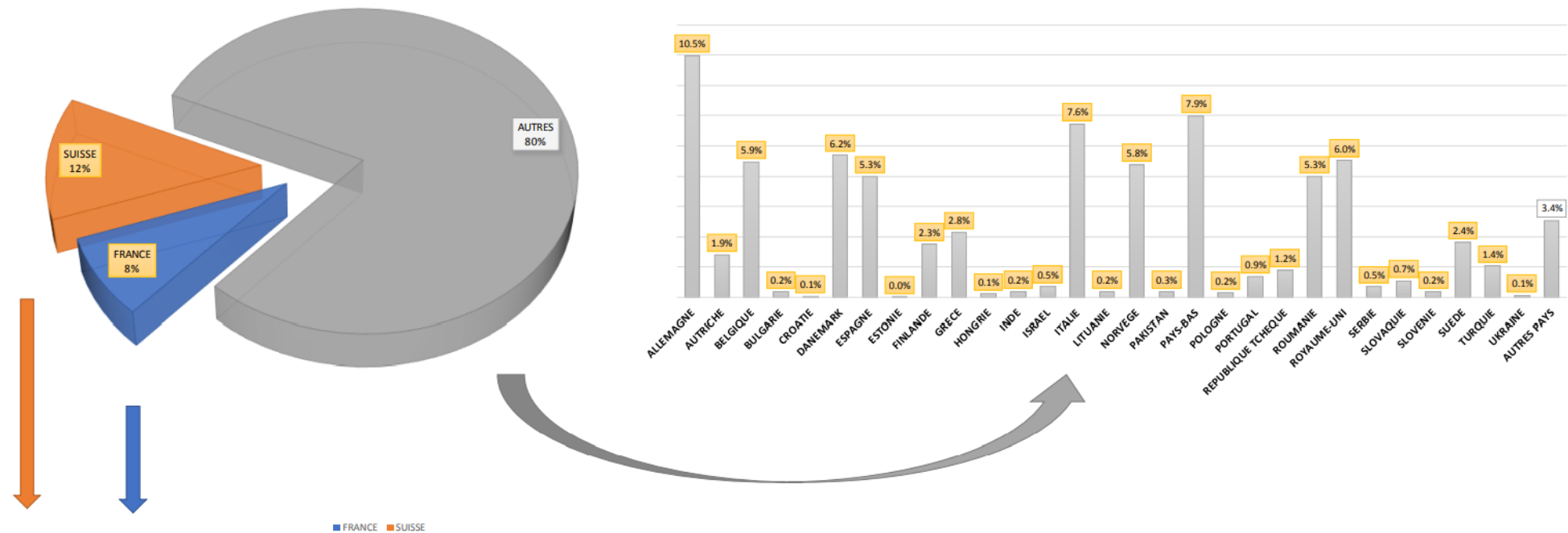


## CERN "supply" contracts over the years



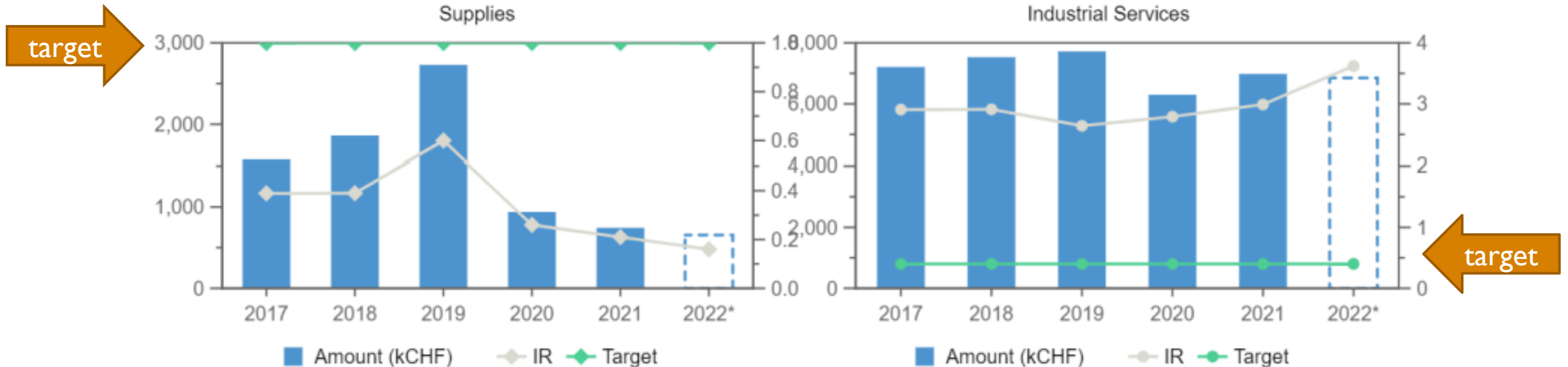
Huge effort from CERN mechanical workshop

# MME Subcontracting Service: expenditure distribution 2014-2020



- DK accounted for 6.25 % of purchases (return coefficient of 3.5)

## Drop in orders over last 2-3 years – DK is now “very poorly balanced”



### Explanations:

- ▶ Other “very poorly balanced” countries required attention
- ▶ Change of BigScience.dk ILO
- ▶ DK@CERN cancelled + inability to seek out opportunities physically at CERN (Corona)
- ▶ In 2021-22, Danish companies have been busy (hiring challenge)

# Examples of DK supplies



- ▶ SubC supplies pump modules for cooling with CO<sub>2</sub> to replace PFC-gasses



- ▶ CTS (previously Noliac) and CERN started a formal collaboration in 2014 which led to a commercial supply piezo-electric actuators

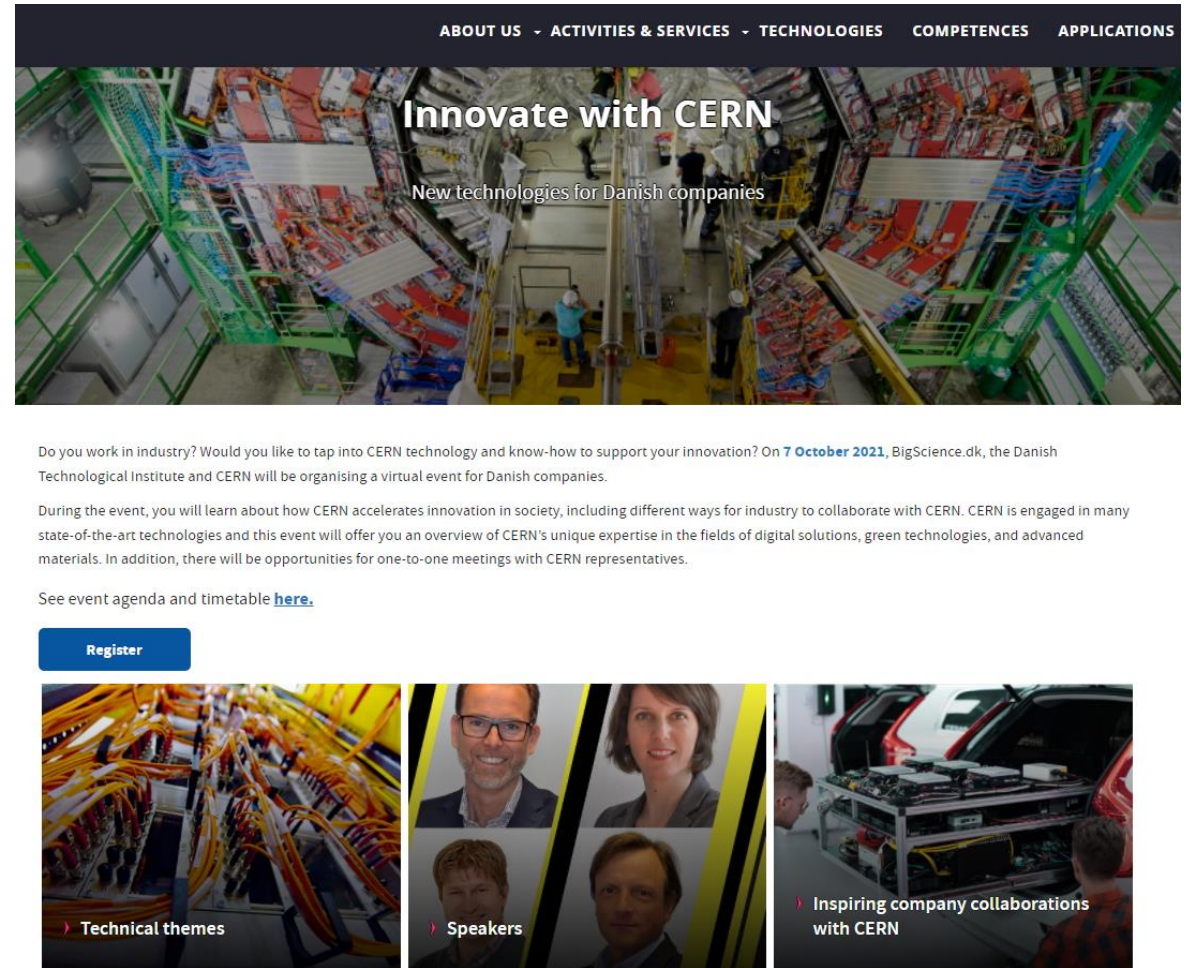


## C. Industry innovation and CERN

---

# Engagement with CERN Knowledge Transfer

- ▶ Innovate with CERN, online event (Oct 2021)
  - ▶ 12 (mainly large) companies joined
- ▶ Innovate with CERN and ESS, Taastrup (Nov 2021)
  - ▶ CERN visited 2 companies
  - ▶ Low interest in general meeting
- ▶ Continued collaboration and new plans for 2022/23



ABOUT US ▾ ACTIVITIES & SERVICES ▾ TECHNOLOGIES COMPETENCES APPLICATIONS

## Innovate with CERN

New technologies for Danish companies

Do you work in industry? Would you like to tap into CERN technology and know-how to support your innovation? On **7 October 2021**, BigScience.dk, the Danish Technological Institute and CERN will be organising a virtual event for Danish companies.

During the event, you will learn about how CERN accelerates innovation in society, including different ways for industry to collaborate with CERN. CERN is engaged in many state-of-the-art technologies and this event will offer you an overview of CERN's unique expertise in the fields of digital solutions, green technologies, and advanced materials. In addition, there will be opportunities for one-to-one meetings with CERN representatives.

See event agenda and timetable [here](#).

[Register](#)

Technical themes

Speakers

Inspiring company collaborations with CERN

## Example: Collaboration between CERN and Danish companies

---



- ▶ CERN will have payload on the GOMX-5 mission

## D. Internationalisation of the Big Science market

---



# Big Science Business Forum, International, Feb 2018

---

Worlds first industry fair on the Big Science market for suppliers

- ▶ **1037 participants** from 530 companies from 29 countries
- ▶ **120** presentations of BSO procurement needs
- ▶ Survey:
  - ▶ **95%** satisfaction
  - ▶ **98%** would participate in future BSBF

Key ingredients for success:

- ▶ Political support (€)
- ▶ Buy-in from facilities (CONTENT)
- ▶ Engage ILOs (OUT-REACH)
  - ▶ Disseminated to ILO-fora at each BSO
  - ▶ Promotion at single-BSO supplier events



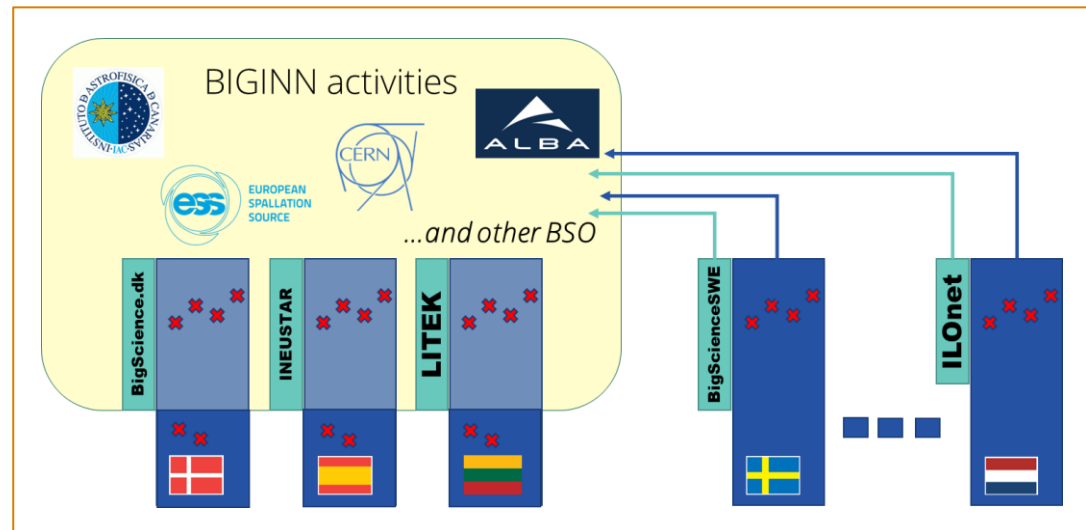
# Big Science Business Forum 2022, Granada, Oct 4-7

---

- ▶ Technical parallel sessions
- ▶ Industry and facility exhibition
- ▶ Special track for innovative small/medium size companies (NEW)



# Pan-European activities



The top section, titled "ENRIITC Objectives", features a central yellow circle labeled "Enhancing RI-Industry Collaboration". This circle is surrounded by three blue triangles: "Mutual learning and networking of ILOs and ICOs" at the top, "Mapping of RI-Industry collaboration" on the right, and "Raising awareness and demonstrating impact" on the left.

**Webinar #8: ENRIITC OUR Knowledge!**  
12 May 2022 | 1500 -1630 CEST  
**REGISTRATION NOW OPEN!**

- Our last training webinar will be a very special session!
- Members of our community will join the session as speakers on the topic "Towards a broader and enhanced ENRIITC ILO & ICO network."
- We look forward to welcoming you for the final session of the ENRIITC your Knowledge journey!

A large lightbulb icon on the right contains the ENRIITC logo and the text "our Knowledge". At the bottom right, a small text line reads: "ENRIITC is funded by the European Framework for Research and Innovation Horizon 2020, under grant agreement 101019222".

Thank you

