DANISH
TECHNOLOGICAL
INSTITUTE

Industry 4.0 and sustainable production in Denmark

- and how DTI supports it

May 2021

Søren Peter Johansen, Technology Manager
Robot Technology and Automation, DTI
spj@dti.dk https://www.linkedin.com/in/spjohansen

DANISH
TECHNOLOGICAL
INSTITUTE

Implementation of robot, automation and AI solutions in the industry

Dissemination, training and education towards industry within new robot technologies

Analysis and consultancy on strategic automation and choice of technologies

Research, development and innovation within robot technology

DANISH
TECHNOLOGICAL
INSTITUTE

Implementation of robot, automation and AI solutions in the industry

Dissemination, training and education towards industry within new robot technologies

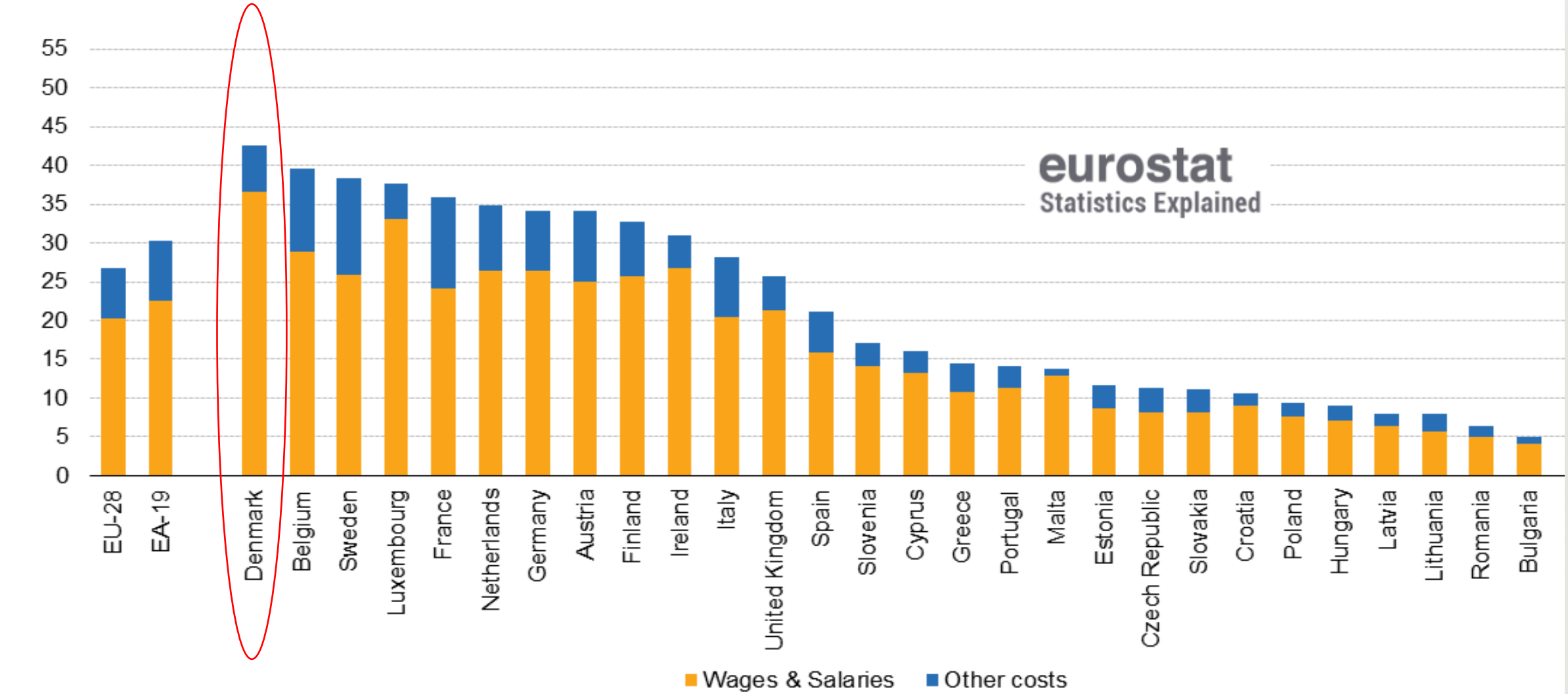
Analysis and consultancy on strategic automation and choice of technologies

Research, development and innovation within robot technology

DANISH
TECHNOLOGICAL
INSTITUTE

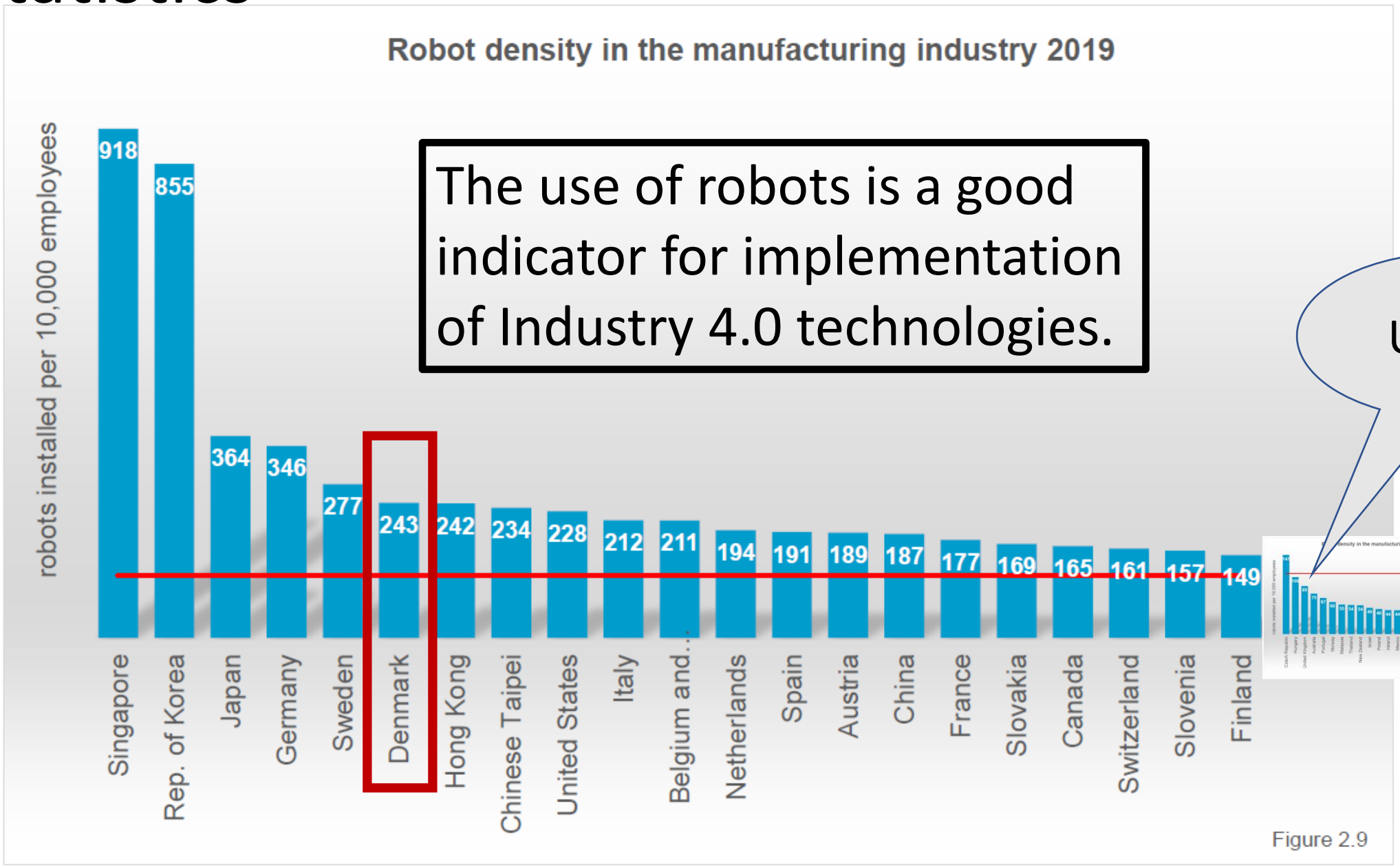
Estimated hourly labour costs, 2017

(EUR)



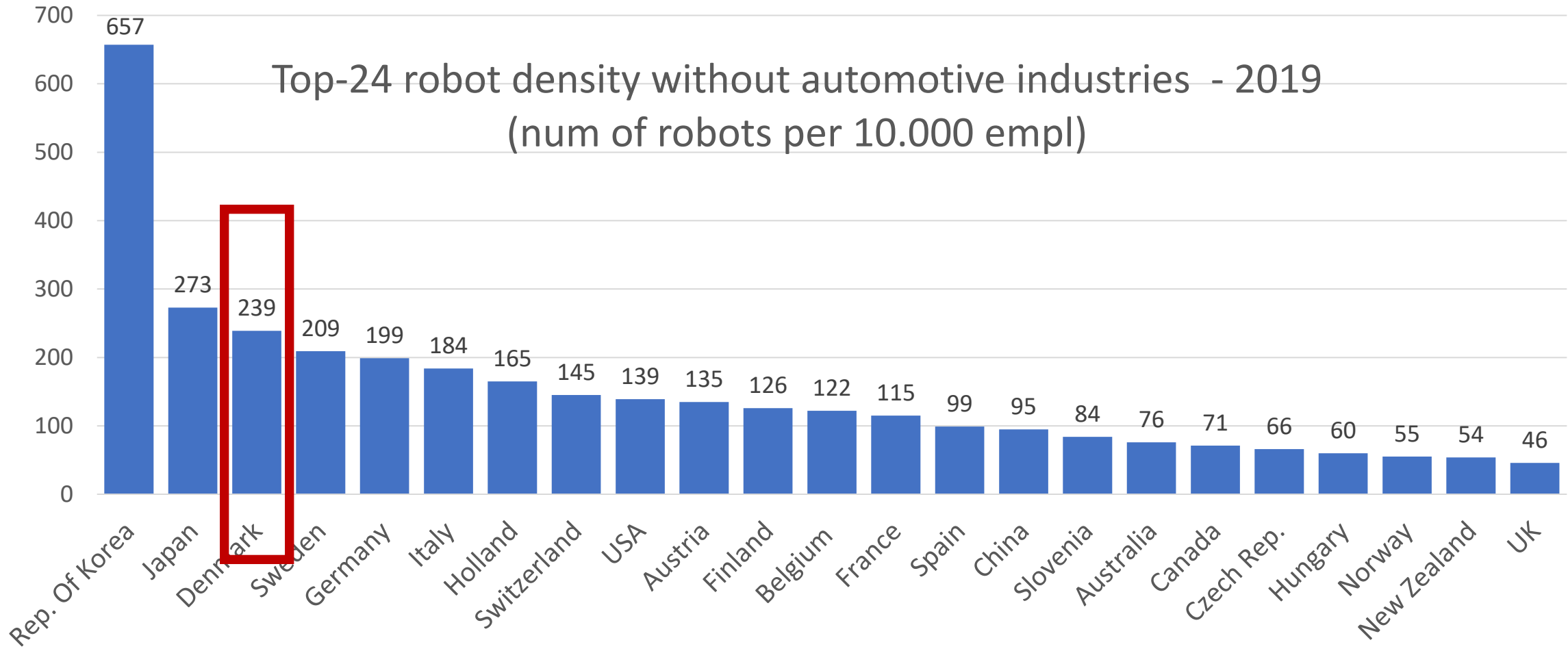
Statistics

DANISH TECHNOLOGICAL INSTITUTE



Statistics

DANISH TECHNOLOGICAL INSTITUTE



DANISH
TECHNOLOGICAL
INSTITUTE

Implementation of robot, automation and AI solutions in the industry

Dissemination, training and education towards industry within new robot technologies

Analysis and consultancy on strategic automation and choice of technologies

Research, development and innovation within robot technology

DIRA

– DANISH INDUSTRIAL ROBOT ASSOCIATION

200 member companies that develops, imports, integrates and uses robot technologies.

DIRA
Dansk Robot Netværk


KØBENHAVN
HOVEDBANEGÅRDEN 24/11

Attract public the media – that shows a lot of industrial robots

DANISH TECHNOLOGICAL INSTITUTE

Live national television – TV2

Live national television – DR

DIRA – Automation Award

Automation and robots get a lot of press coverage!

DANISH TECHNOLOGICAL INSTITUTE

Margrethe Vestager,
European competition commissioner

Lars Løkke Rasmussen,
Prime-minister of Denmark

Any effects?

Robotter skaber nye og bedre job

Robots create new and better jobs

Analyse

DANMARK SKAL HAVE 5.000 FLERE ROBOTTER I INDUSTRIEN FOR AT BLIVE VERDENSFØRENDE

Congress resolution: Denmark should be world leadning in the use of industrial robotics !!

FAGBLADET 3F

NYHEDER | TEMAER | FOTO & TV | BLADET

FAGLIGT | AKASSE | ARBEJDSMILJØ | UDDANN

FORSIDEN NYHEDER 10. jun. 2016 kl. 10:00 Del Print

Robots needs more qualified (human) hands

Robotter mangler ledige hænder

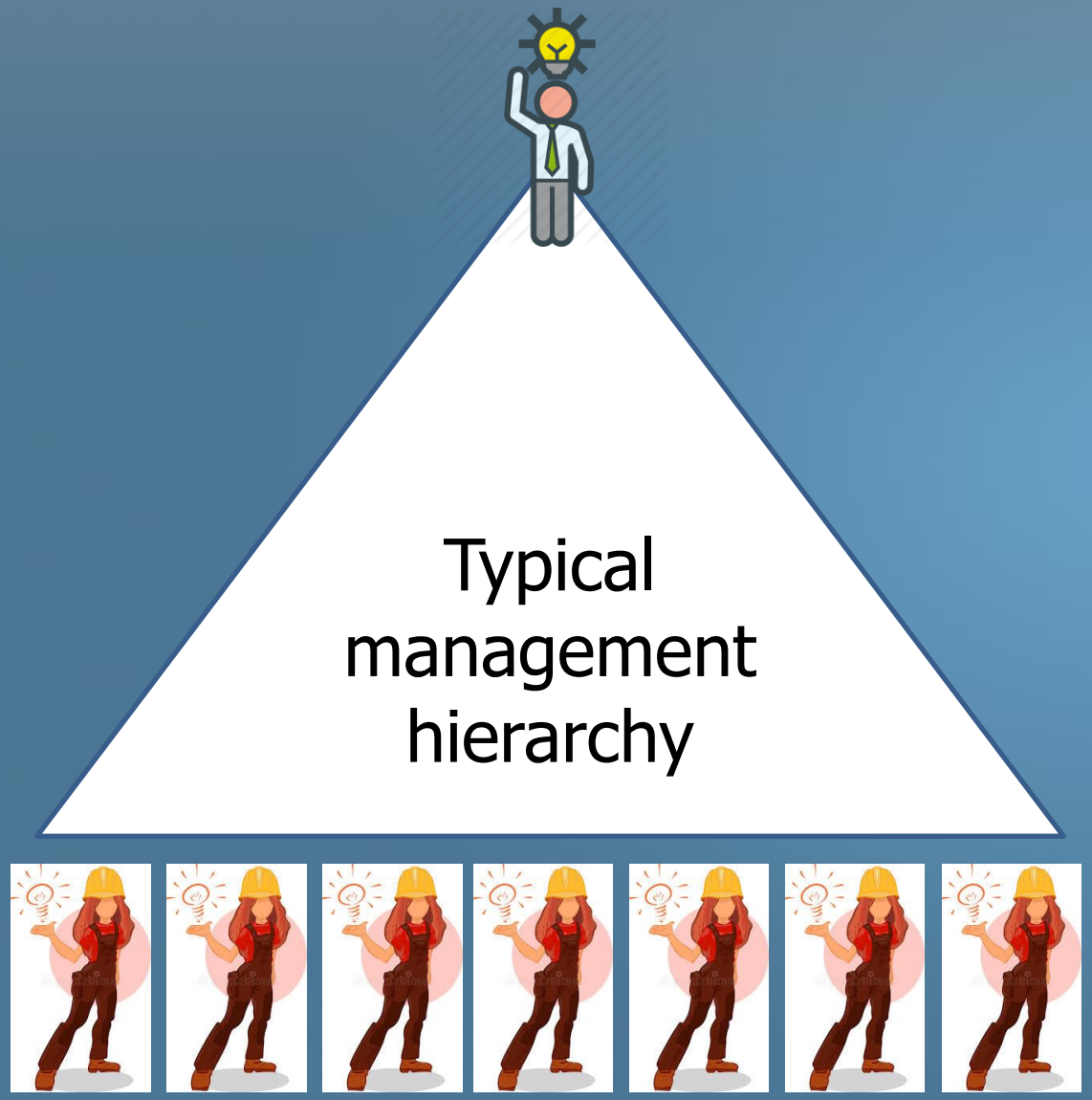
Robotindustrien er i kæmpe [illegible] - men mangler kvalificeret arbejdskraft

A bottom-up demand for automation and robots

The employment minister and the chairman of the Danish [illegible]workers are united in killing the myth that robots kill jobs.

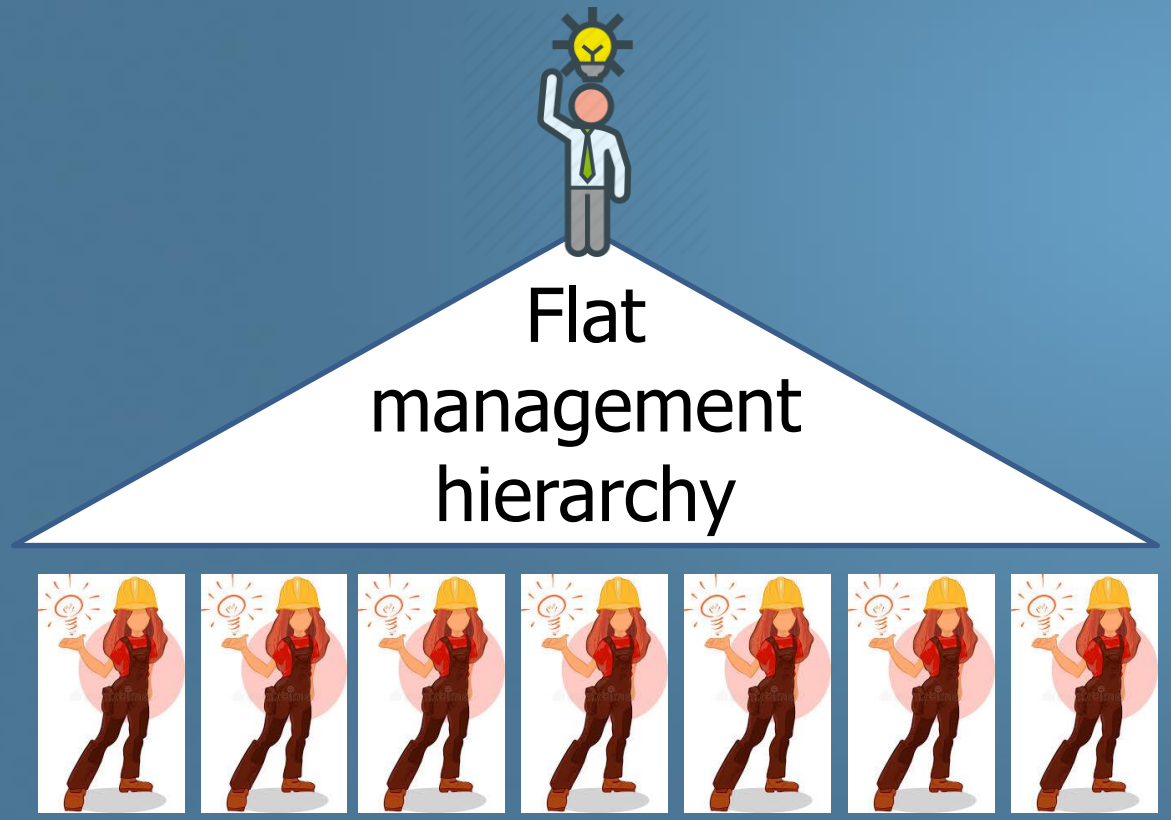
[illegible]geringen og fagbevægelsen danner nu fælles front for at få sat turbo på [illegible] digitale dagsorden. Beskæftigelsesminister Troels Lund Poulsen (V) og [illegible]nsk Metals formand, Claus Jensen, vil have aflivet myten om, at [illegible]botterne stjæler arbejdspladser.

Innovation and management



Innovation and management

In Denmark



How would you estimate the potential power of innovation in a company ??

Within 3 seconds !

Count the number of human brains.

The combination of a flat management hierarchy and a bottom up demand for automation is enabling innovation and productivity

DANISH
TECHNOLOGICAL
INSTITUTE

Implementation of robot, automation and AI solutions in the industry

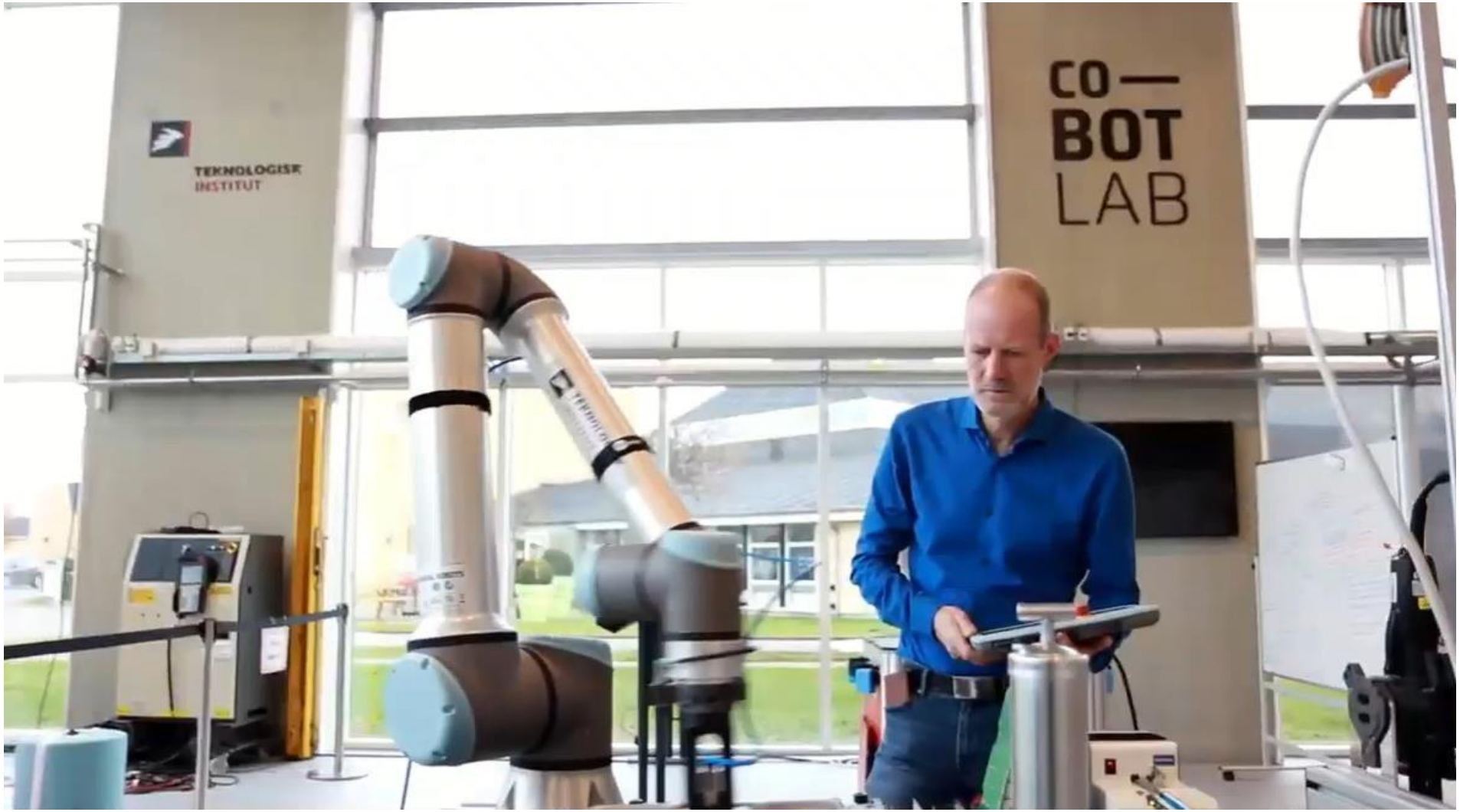
Dissemination, training and education towards industry within new robot technologies

Analysis and consultancy on strategic automation and choice of technologies

Research, development and innovation within robot technology

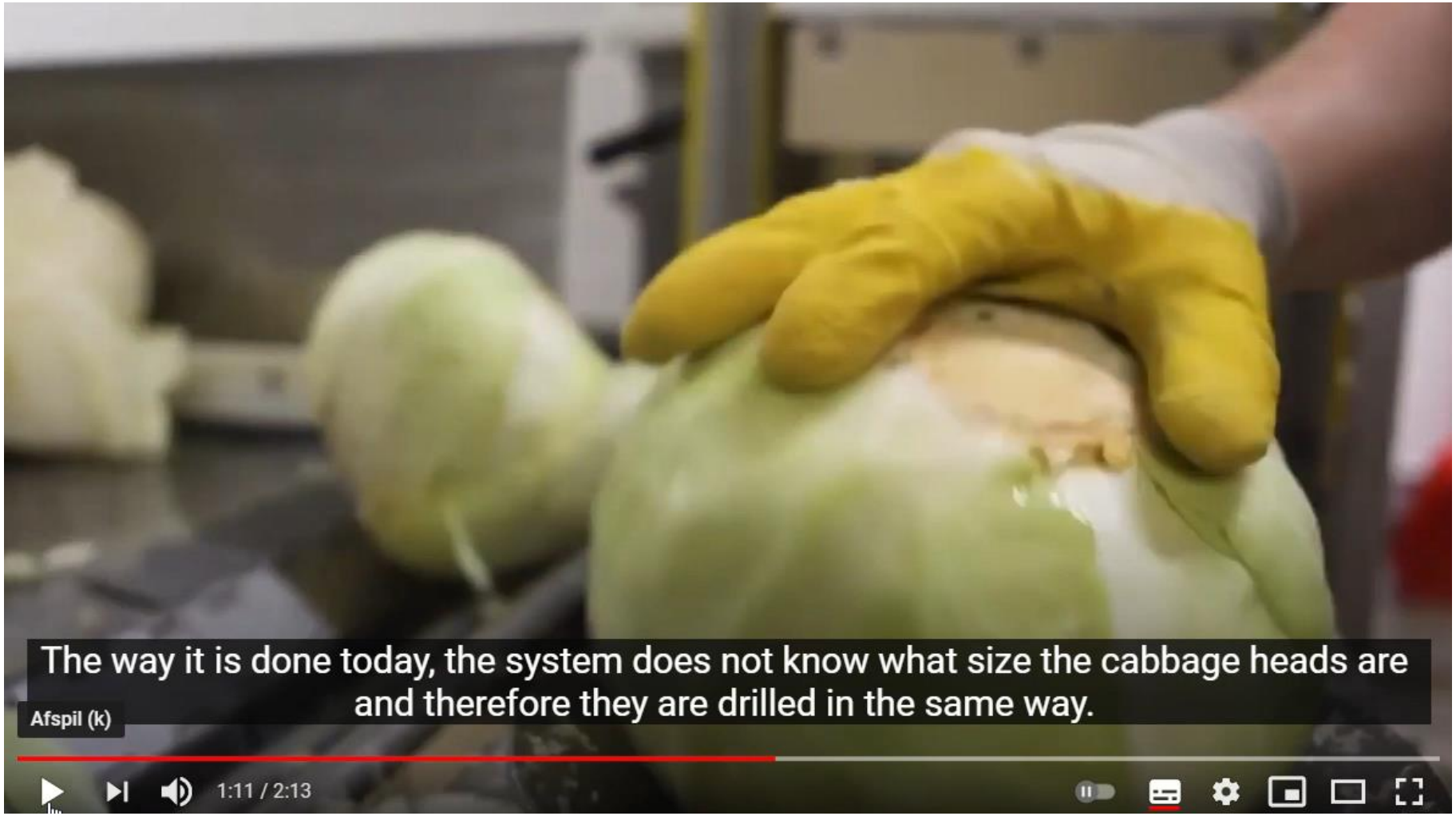
Supporting the industry – assisting starts ups

DANISH TECHNOLOGICAL INSTITUTE



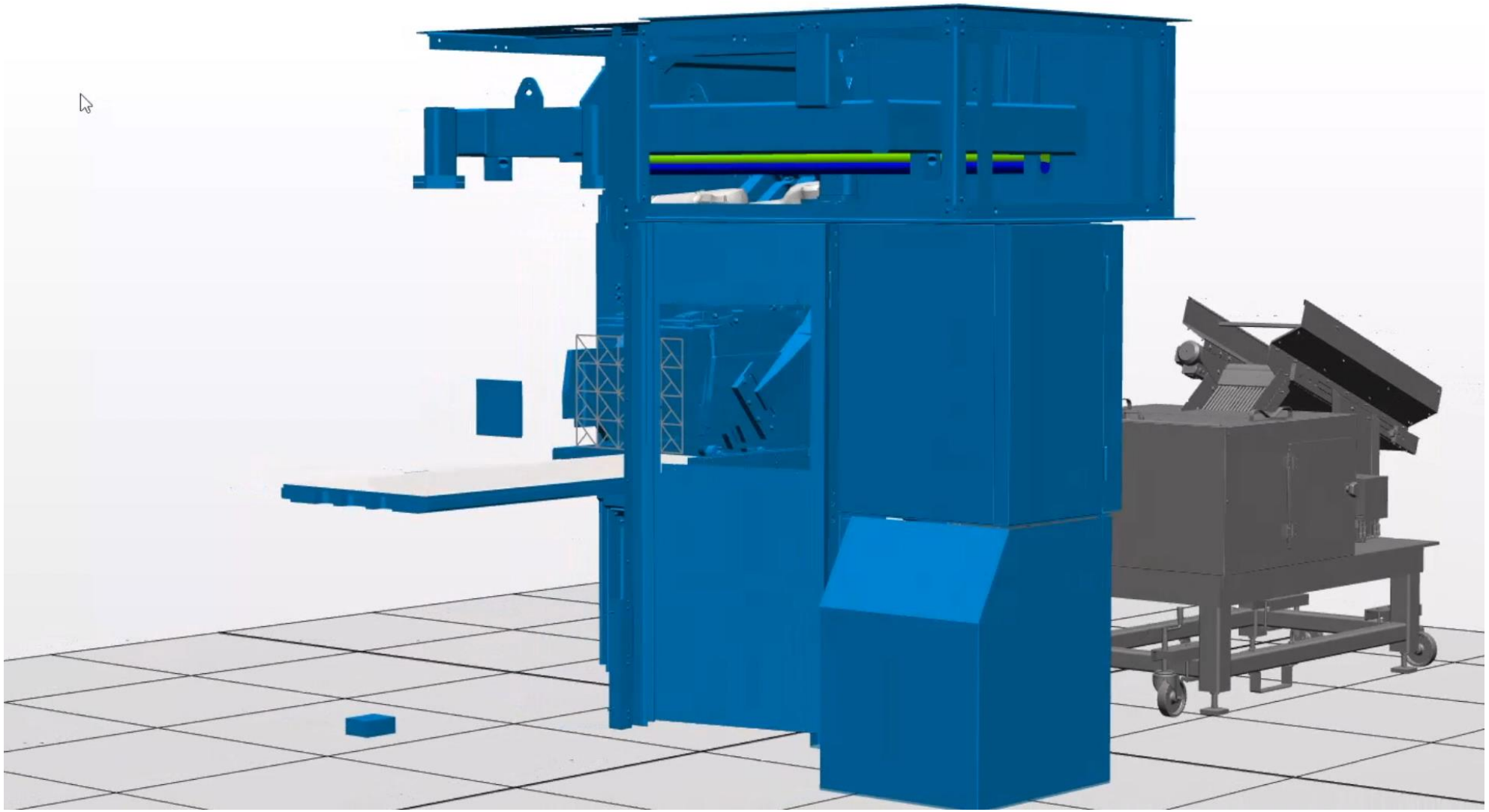
Supporting the industry – with advanced sensors

DANISH TECHNOLOGICAL INSTITUTE



Supporting the industry – using digital twins

DANISH TECHNOLOGICAL INSTITUTE

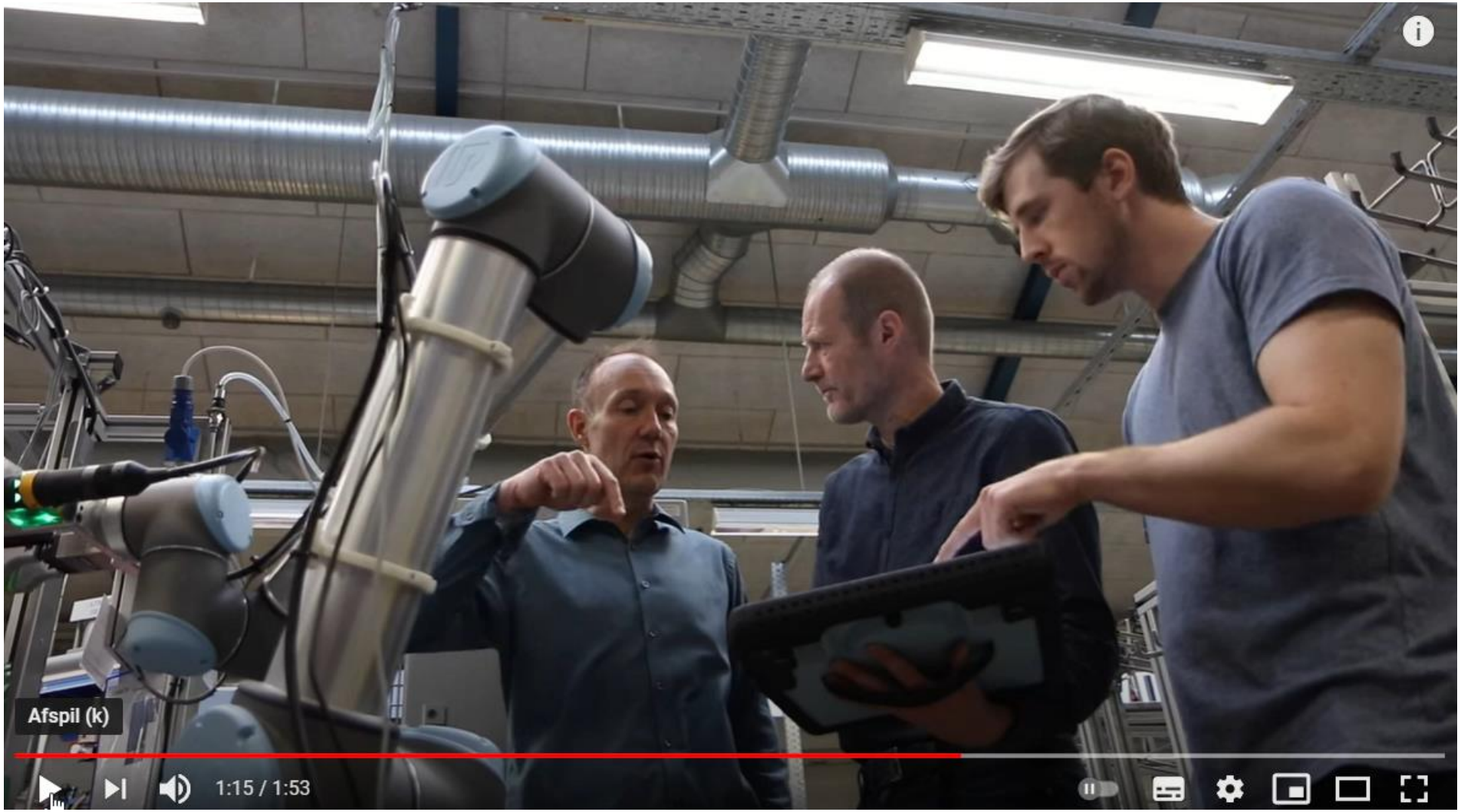


Supporting the industry – implementing safe cobots

DANISH TECHNOLOGICAL INSTITUTE

Supporting the industry – assisting local programmers

DANISH TECHNOLOGICAL INSTITUTE



It all about business – LINAK® example

WE IMPROVE YOUR LIFE

DANISH TECHNOLOGICAL INSTITUTE

Production sites in:

China, Slovakia, USA, Thailand and Denmark

The site in Denmark has the higest cost on man-power.

- and the higest productivity due to the use of advanced technology !

DANISH
TECHNOLOGICAL
INSTITUTE

Implementation of robot, automation and AI solutions in the industry

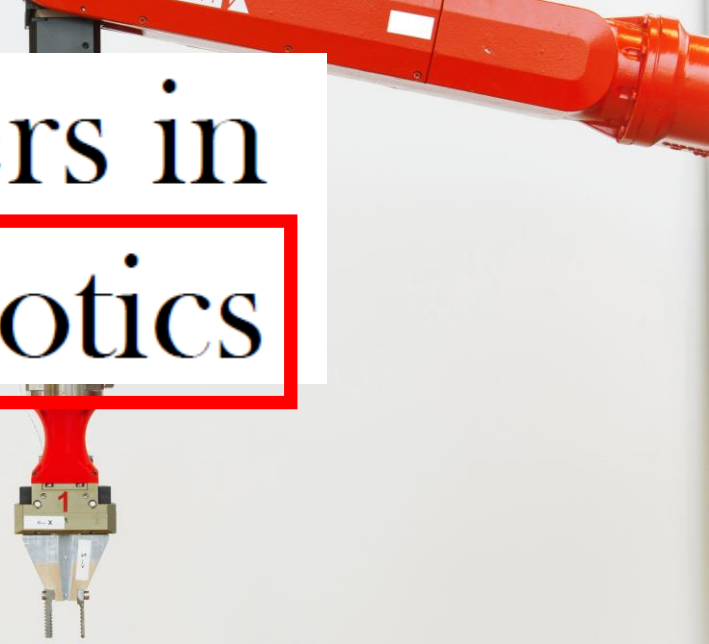
Dissemination, training and education towards industry within new robot technologies

Analysis and consultancy on strategic automation and choice of technologies

Research, development and innovation within robot technology

DANISH TECHNOLOGICAL INSTITUTE

Frontrunners in Horizon 2020 robotics



Grøn/Bruun has assessed the funding provided to technological development within the fields of robotics in Horizon 2020 under LEIT-ICT calls.[1] A total of 74 projects was found with a total EU contribution of EUR 253,4 million. The distriubtion is as follows:

- German institutions are the most successful in robotics under LEIT-ICTl with approximately 21% of the total funding.
- The Danish institution Danish Technological Institute (Teknologisk Institut) is the most successful institution with total funding of EUR 12,04 million.
- In spite of being heavily technology oriented the largest part of the funding is allocated to universities and research institutions, with private companies receiving EUR 72,4 million or 38,4% of the funding.
- A total of 362 institutions have been funded.

https://www.teknologisk.dk/_/media/71513_Gr%F8nBruun%20Update%20-%20Frontrunners%20in%20Robotics%20.pdf

May 2018

DANISH TECHNOLOGICAL INSTITUTE

Horizon 2020 – EU funded research and innovation

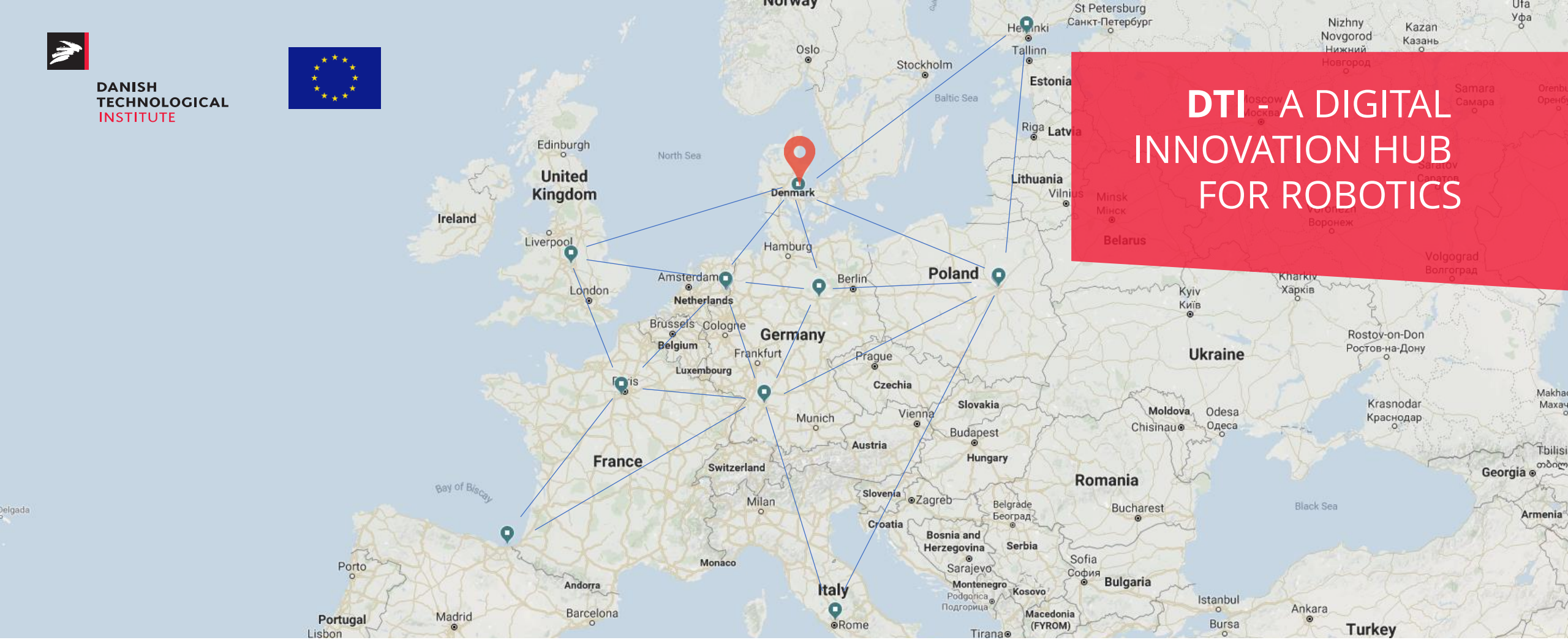
Tabel 1: Funding to robotics in LEIT-ICT, per organisation

Rank	Name	Projects	EU contribution (mill. EUR)	Country
1	TEKNOLOGISK INSTITUT (DTI)	4	12,04	DK
2	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	5	10,21	FR
3	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	10	7,75	DE
4	PANEPISTIMIO PATRON	3	6,02	EL
5	PKF ATTEST INNCOME SL	2	5,38	ES
6	FUNDACION TECNALIA RESEARCH & INNOVATION	10	5,13	ES
7	TECHNISCHE UNIVERSITEIT DELFT	2	5,02	NL
8	FUNDINGBOX ACCELERATOR SP ZOO	1	4,71	PL
9	KUNGLIGA TEKNISKA HOEGSKOLAN	7	4,44	SE
10	KUKA ROBOTER GMBH	4	4,09	DE
11	KARLSRUHER INSTITUT FUER TECHNOLOGIE	3	3,90	DE
12	TECHNISCHE UNIVERSITAET MUENCHEN	4	3,34	DE
13	CENTRE NATIONAL DE LA RECHERCHE SCIEN-TIFIQUE CNRS	5	3,18	FR
14	RHEINISCH-WESTFAELISCHE TECHNISCHE HOCHSCHULE AACHEN	4	2,91	DE
15	UNIVERSITY COLLEGE LONDON	4	2,82	UK
16	UNIVERSITEIT TWENTE	4	2,53	NL
17	ROBERT BOSCH GMBH	4	2,40	DE
18	DEUTSCHES ZENTRUM FUER LUFT - UND RAUM-FAHRT EV	3	2,35	DE

May 2018

DANISH TECHNOLOGICAL INSTITUTE

DTI - A DIGITAL INNOVATION HUB FOR ROBOTICS



HEALTH CARE

DIHERO

SAFETY

COVER

MANUFACTURING

ROBOTT NET robot technology transfer network

INSPECTION & MAINTENANCE

RIMA

ROBOTT-Net

ROBOTT-NET VOUCHER COMPANIES

ROBO TT NET
robot technology transfer network

At DTI 1.000+ technology experts work to support sustainable production in any field

DANISH TECHNOLOGICAL INSTITUTE

Danish Technological Institute > Services

Business areas

We offer consultancy and services within a wide range of business areas, which are not limited to those listed below. We create customised solutions in close cooperation with our customers, and we always welcome a challenge. Contact us if your company needs a technological boost.

Support for sustainable production

DANISH TECHNOLOGICAL INSTITUTE

AgroTech

AgroTech is part of Danish Technological Institute. Our customers are technology companies, nurseries, food companies, food service, plant breeding companies and public customers. We have a strong corporation with universities in order to secure our customers easy access to new knowledge. You will find a list of services from the division AgroTech in the following areas; Plants, Environment, Food and Facilities. We will be pleased to help you.

Pilot production of food and feed

At Danish Technological Institute we offer a 1.300 m2 test facility for testing and production in pilot scale. Here you can develop and test recipes, ingredients and additives for extruded food, pelletized feed and extruded fish feed in collaboration with us. This gives you a unique opportunity to confirm whether your product is ready for the market.

Support for sustainable production

DANISH TECHNOLOGICAL INSTITUTE

Building and construction

Building and Construction represents Denmark's largest concentration of knowledge regarding construction materials, and contributes to ensuring that the building materials used in the Danish construction industry are of high quality and that they are properly and efficiently applied, produced and maintained.

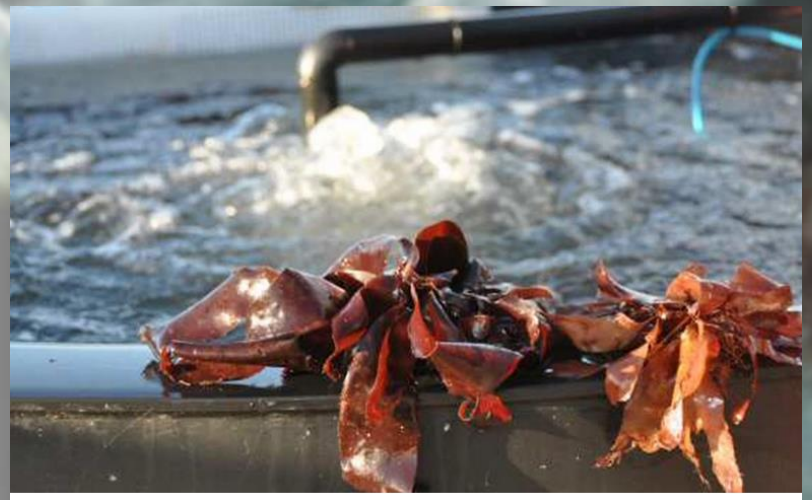
Bio-based Products - Biocomposites

Support for sustainable production

DANISH TECHNOLOGICAL INSTITUTE

Environmental Technology

In the Environmental Technology division, we focus on reaping the advantages of its new recognition within Danish industry. We are working on a high and practical level in the areas of biotechnology, ICT, food technology and health. We have high-tech laboratories, which are fully utilized when resolving tasks.



Marine biomass

Support for sustainable production

DANISH TECHNOLOGICAL INSTITUTE

DANISH
TECHNOLOGICAL
INSTITUTE

Thank you for your time.

Any questions?

See more at www.dti.dk

Søren Peter Johansen, Technology Manager
Robot Technology and Automation, DTI
spj@dti.dk https://www.linkedin.com/in/spjohansen