



19TH WORLD STERILIZATION CONGRESS 2018

XIII INTERNATIONAL STERILIZATION CONGRESS
AND HOSPITAL DISINFECTION

OCTOBER 31 TO NOVEMBER 3
2018 WORLD TRADE CENTER
MEXICO CITY

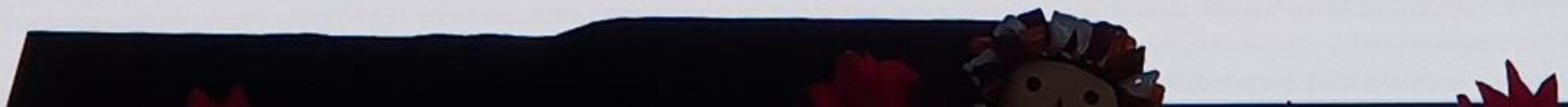
SCIENTIFIC PROGRAM



Automation in the CSSD

Benefits and opportunities

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Antonisen Consult





Quality
Patient safety
Efficiency

The Danish expertgroup recommendations

- Centralizing of reprocessing
- Case cart deliveries
- Use of automation
- Standardization of instrument trays
- Increased use of disposable instruments



Pilot projects were automation and use of robotics were in focus.

- The Defu Stepp project was running over three years from 2010. 15 companies joined as partners.
- The goal was the development of a fully automatic CSSD. The project had four focus area:

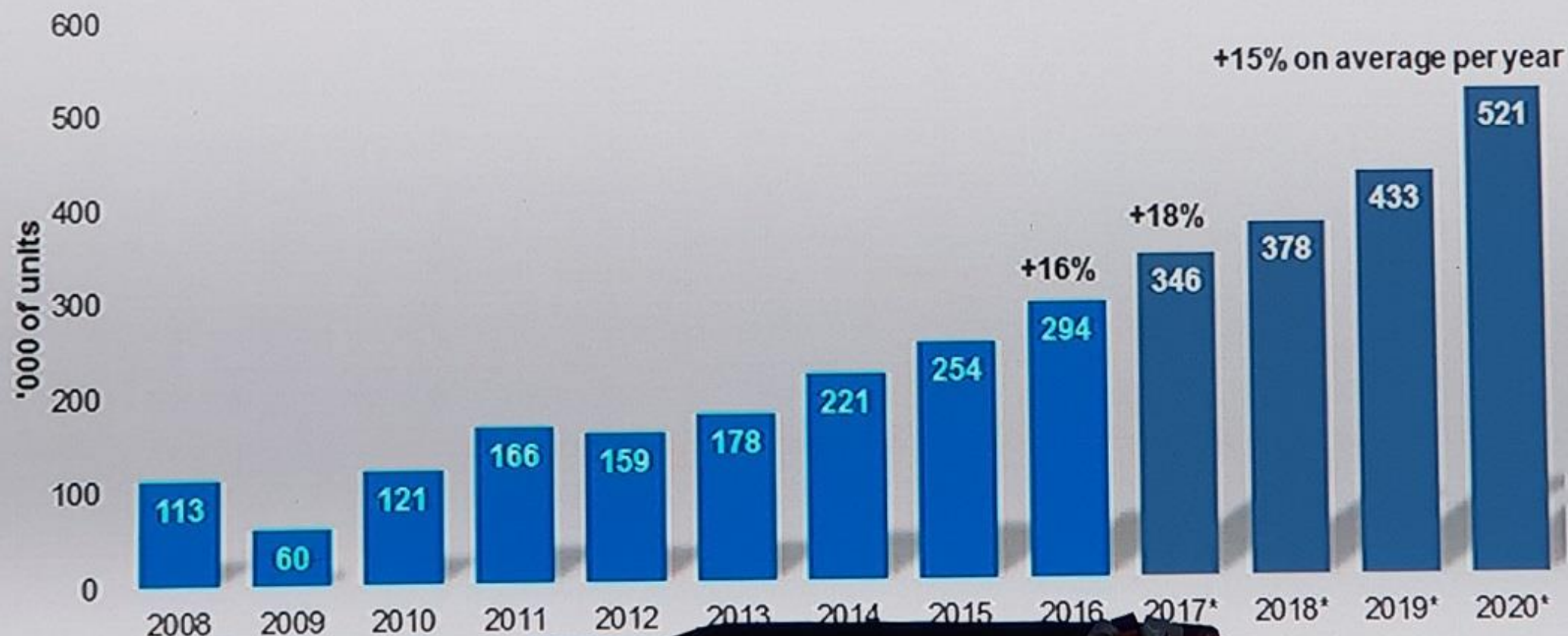
Sub-projects:

- Overall production planning in the CSSD
- Automation of sub-processes in the unclean area in the CSSD
- Development of autoclavable case cart trolley which also form the sterile barrier
- Automatic attachment and removal of instrument containers (cabinet washing machine)

1.7 million new industrial robots by 2020

Double-digit average annual increase

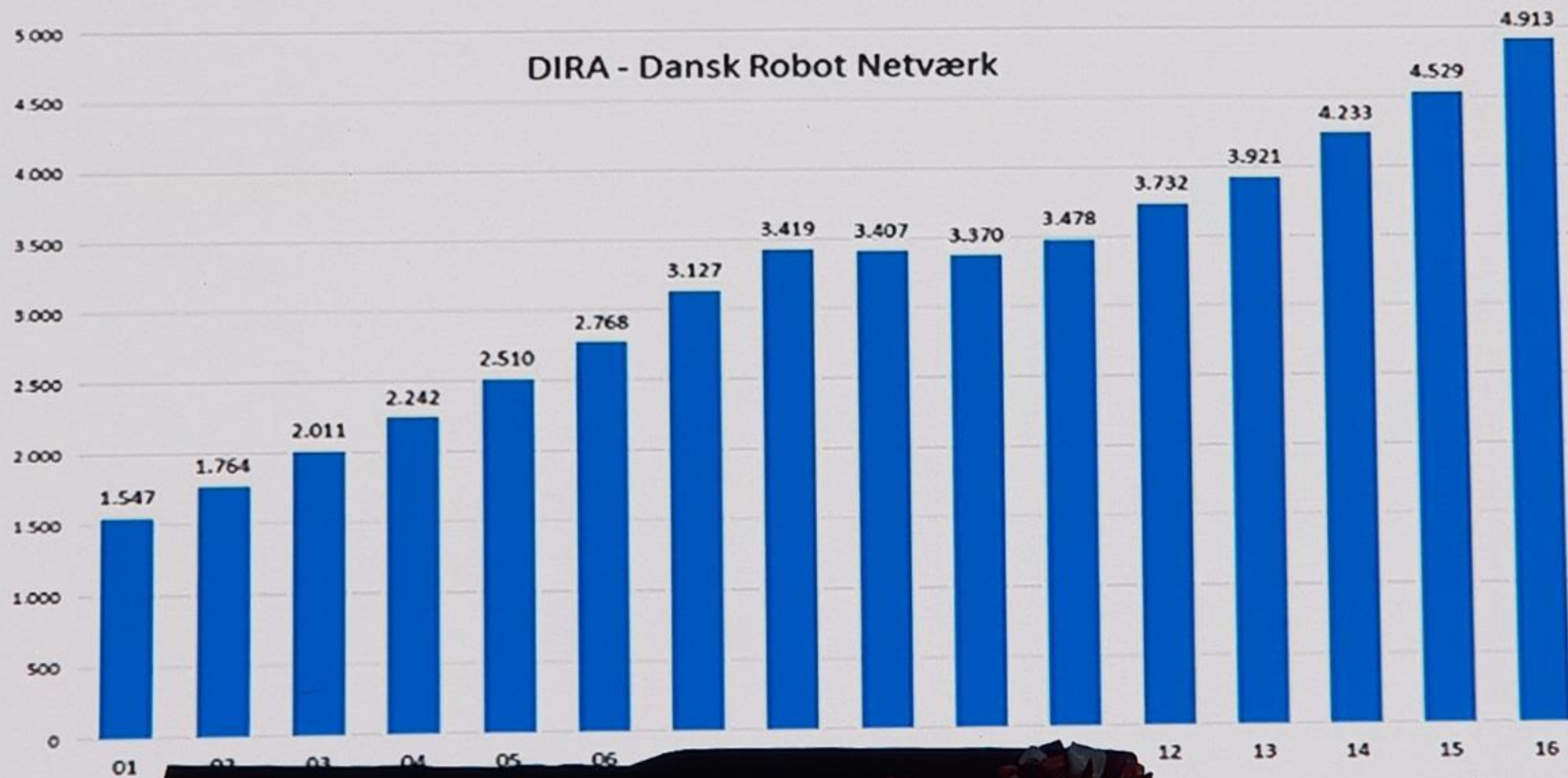
Estimated annual worldwide supply of industrial robots
2008-2016 and 2017*-2020*



Source: IFR World Robotics 201

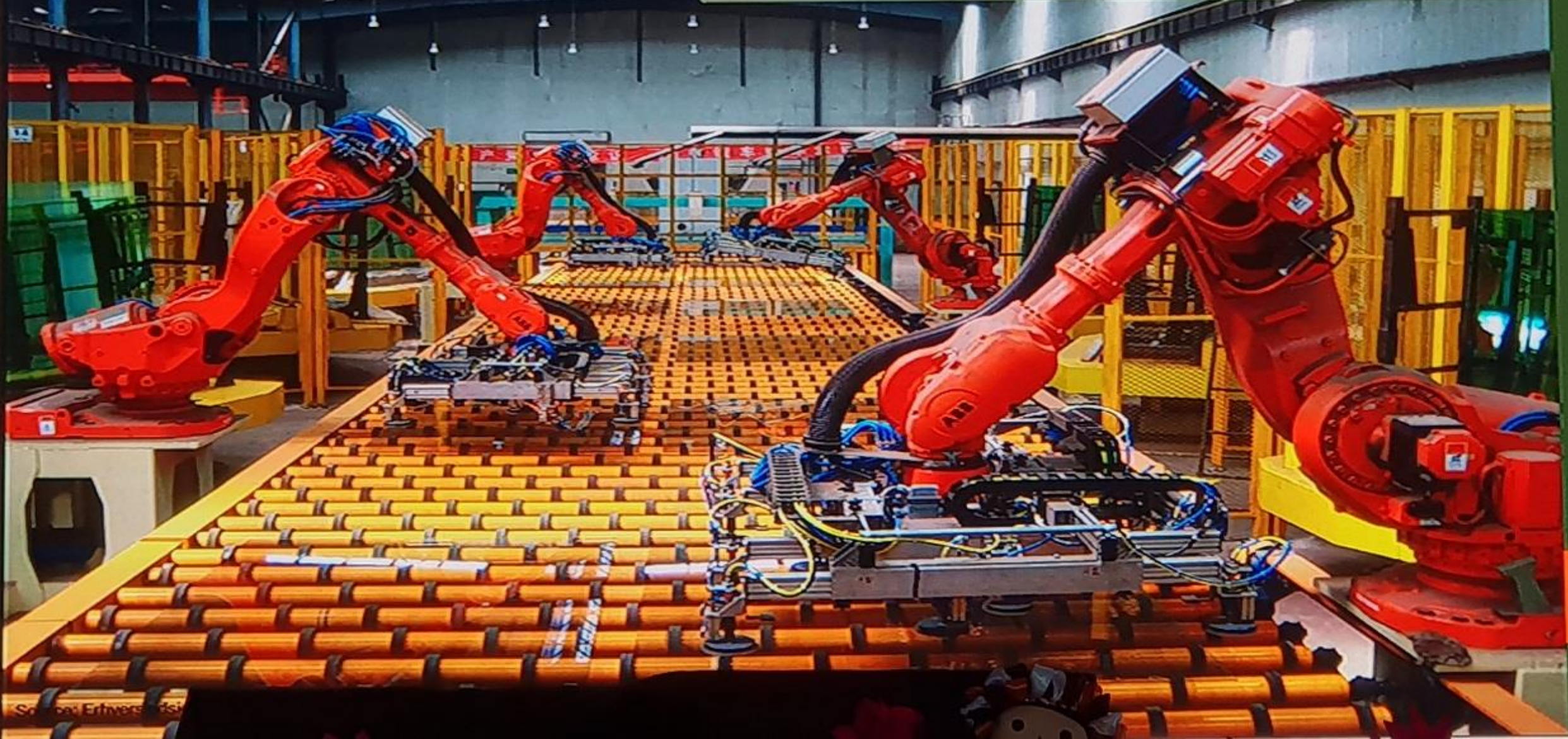
**Samlet antal industrirobotter,
som er højst 10 år gamle i
Danmark, 2001-2016**

DIRA - Dansk Robot Netværk

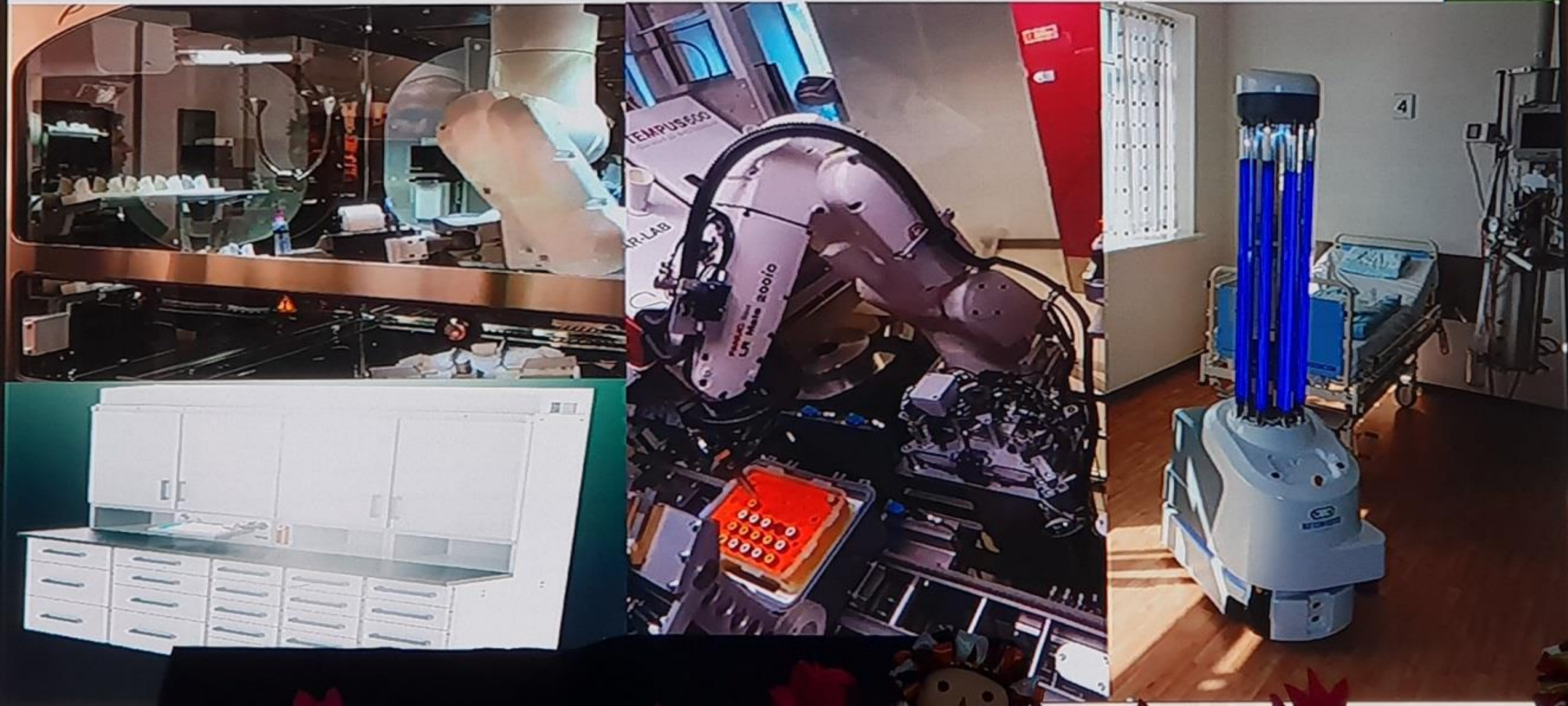


45% of your workflows can be automated with robotics

Source; McKinsey Quarterly, nov. 2015




Automation in healthcare sector



Automation CSSD - opportunities

SUITABLE FOR AUTOMATION	TECHNOLOGIES
Transportation of goods	Transportation systems AGVs and transport cabinets (shuttler) Storage cranes and lifts Robots
Storage facilities	High-bay racking system, i.e. automatic mini load storage Storage robot
Lift, push, stabling, loading/unloading, open/close, handling etc.	Robots AGVs (Automated Guided Vehicles)
Control systems (recognizability and weight)	Vision- and weight systems
Control of flow, functions and locations	MES (Manufacturing Execution Systems) WMS (Warehouse Management Systems)

2 Centralized, automated sterilization centers



1.6 million people

466,500 
Instrument containers per year




7 larger hospitals 


ISO 81,500
ISO baskets per year



243,000
surgical procedures per year

1,500,000 
Wash nets per year



500 million DKK
in budget per site 

approx. 100 million AUD
68 million EUR
75 million USD

Conditions and requirements

- The two central sterile units must be identical
- Design and work flow must be uniform
- Workflow to automate as far as possible and must be identical for the two sterilization centers
- Maintenance of equipment should be coordinated as much as possible
- Use of standard instruments

1. AUTOMATIC TRANSPORT OF GOODS

The "good old days"...

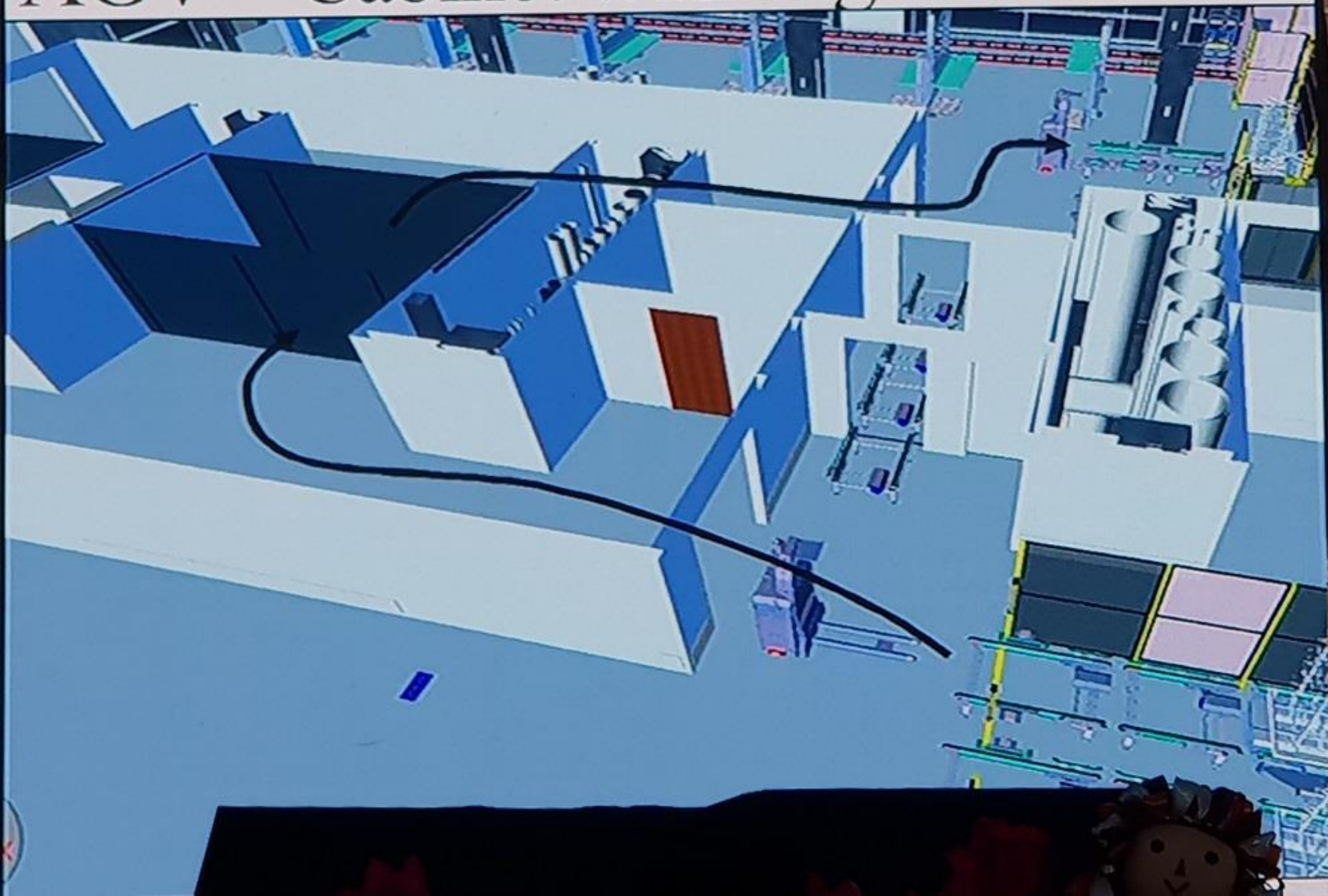


Now or future

- AGVs = Automated Guided Vehicles
 - Roller conveyer transfer cabinets (shuttles)
 - Transport systems
-
- Transport trolleys
 - Autoclave racks
 - Washing racks with instrument containers etc.
 - Washing stands with instruments
 - Instrument containers
 - Transport containers
 - Instrument net



AGV – Cabinet washing racks



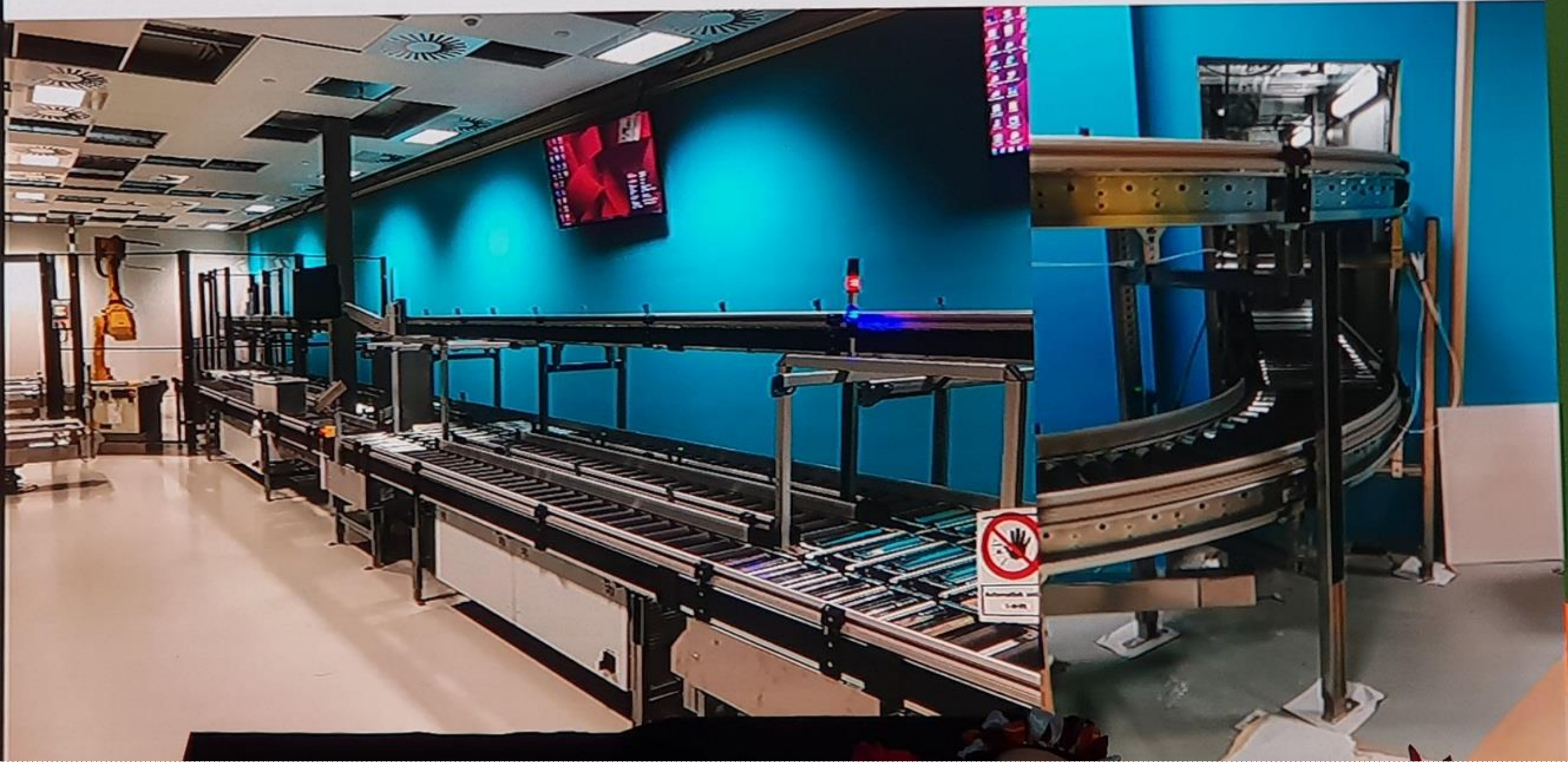
AGV – Boxes, instrument containers, racks – and placing item on/off washing stands



AGV – Boxes, instrument containers, racks – and placing item on/off washing stands



Roller conveyer - transfer cabinets (shuttles)



2. STORAGE FACILITIES

The "good old days"...



Now or future

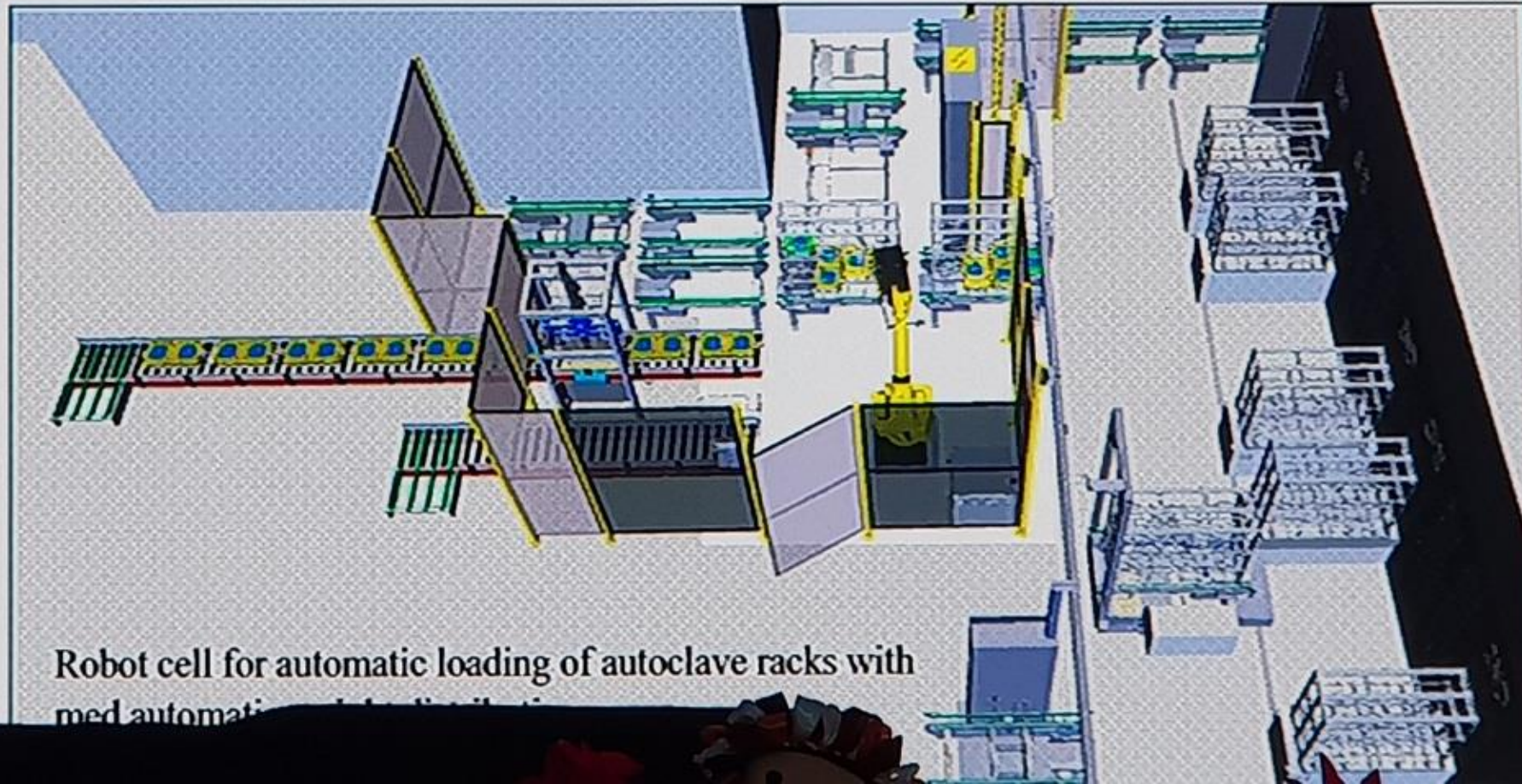


3. HANDLING, LOADING & ONLOADING

The "good old days" ...



Now or future



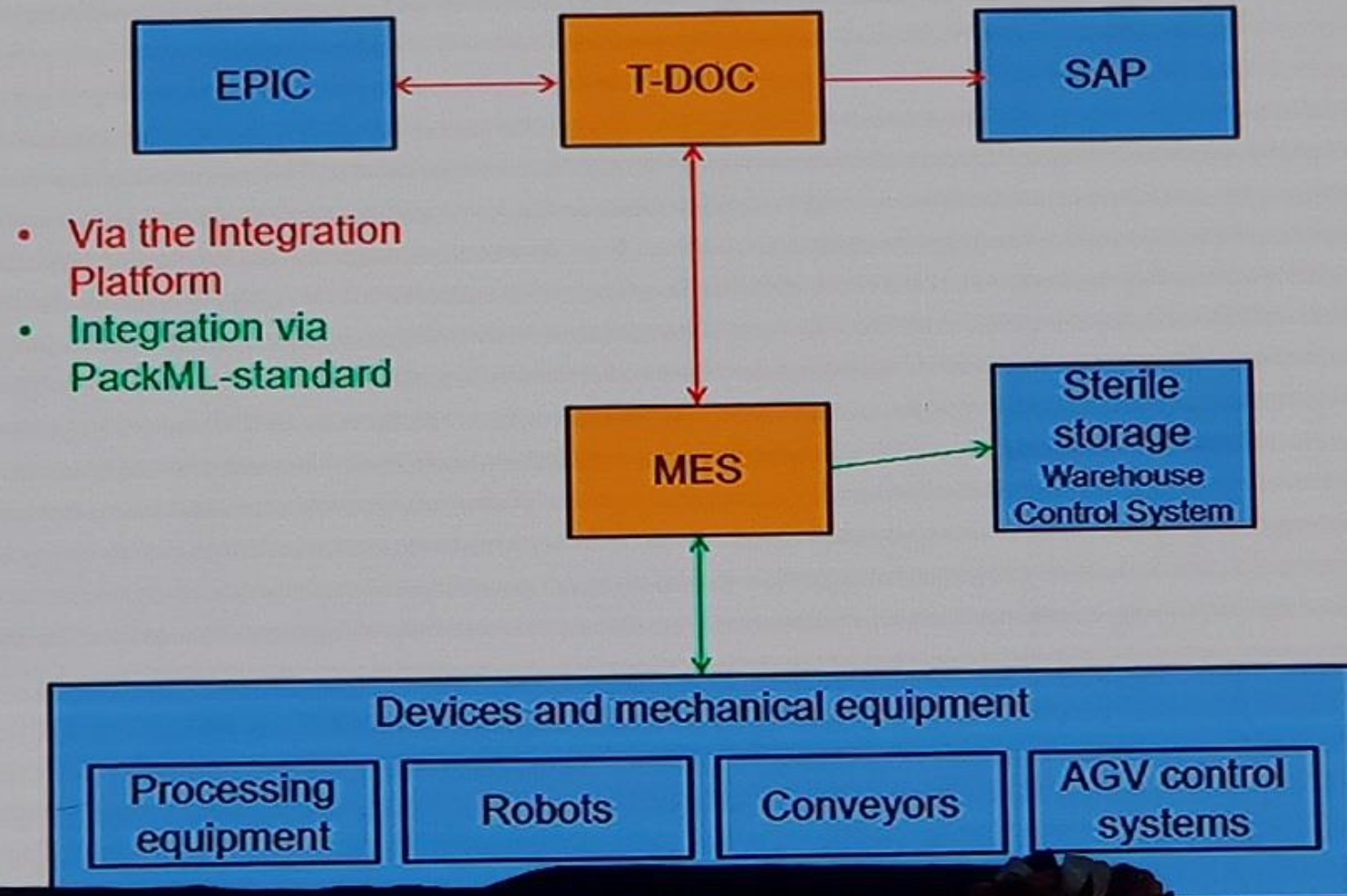
Robot cell for automatic loading of autoclave racks with med automatic distribution

3. HANDLING, LOADING & ONLOADING

The "good old days"...



4. CONTROL SYSTEM & FLOWS



CHALLENGES

- Hygienic design
- Space for cleaning



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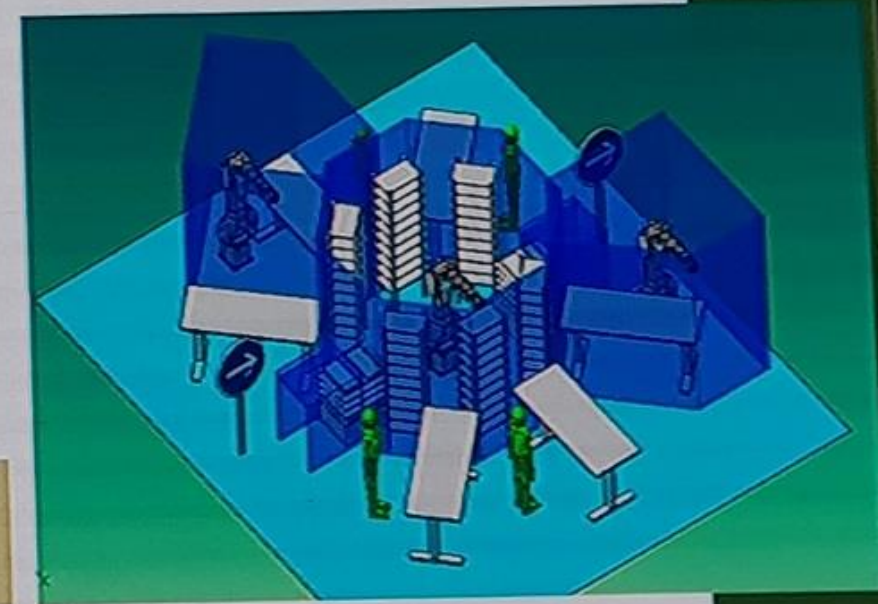
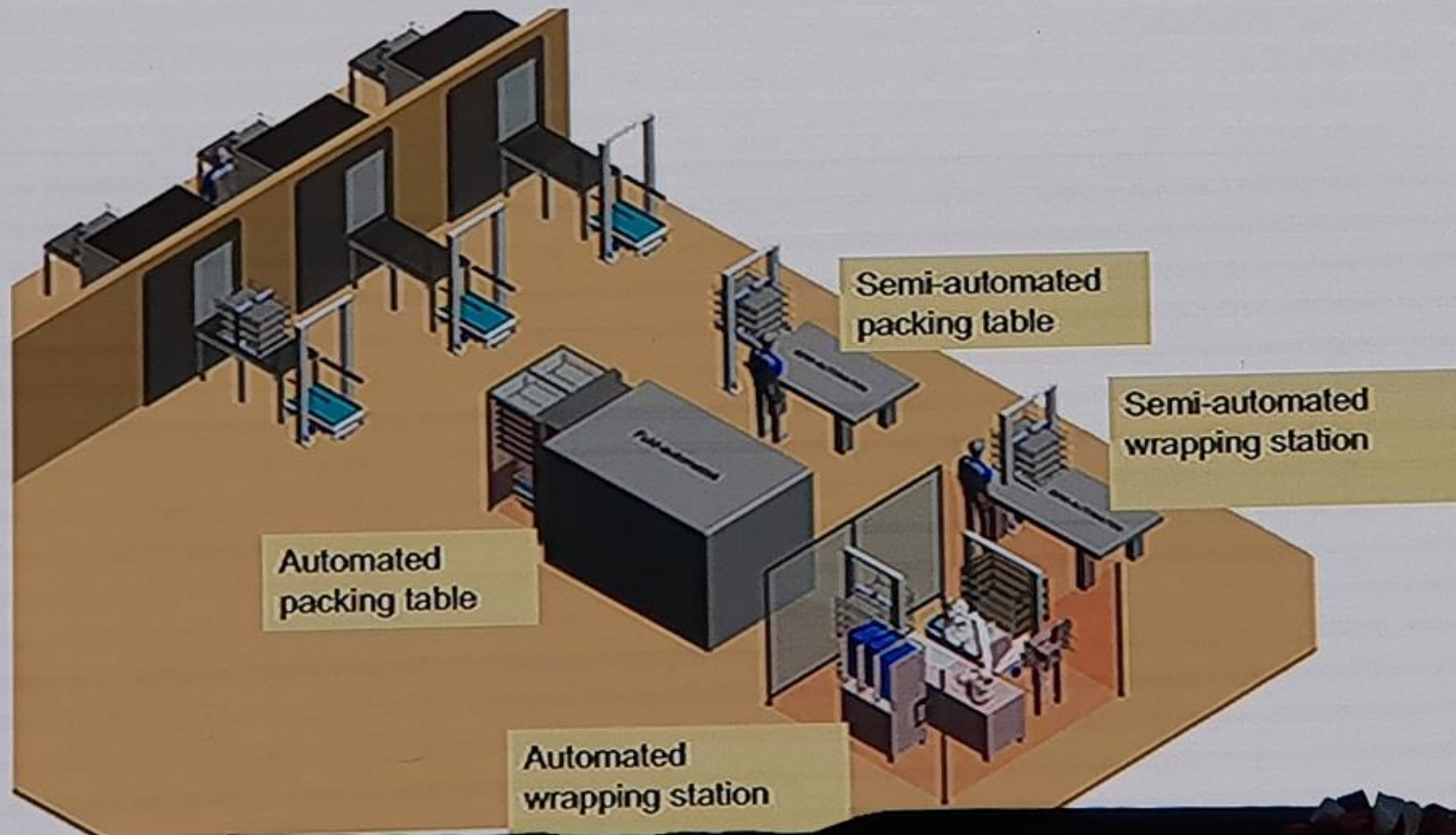


CHALLENGES

- Hygienic design
- Space for cleaning

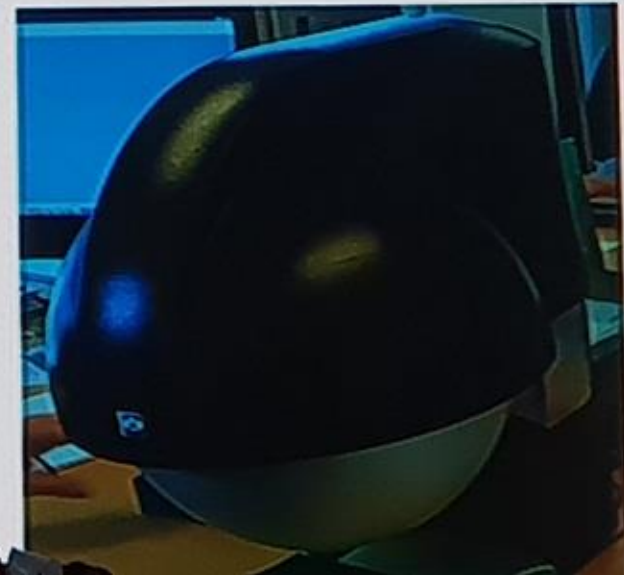


The Intelligent reprocessing unit- Automated Packaging and Inspection (DISAPI)



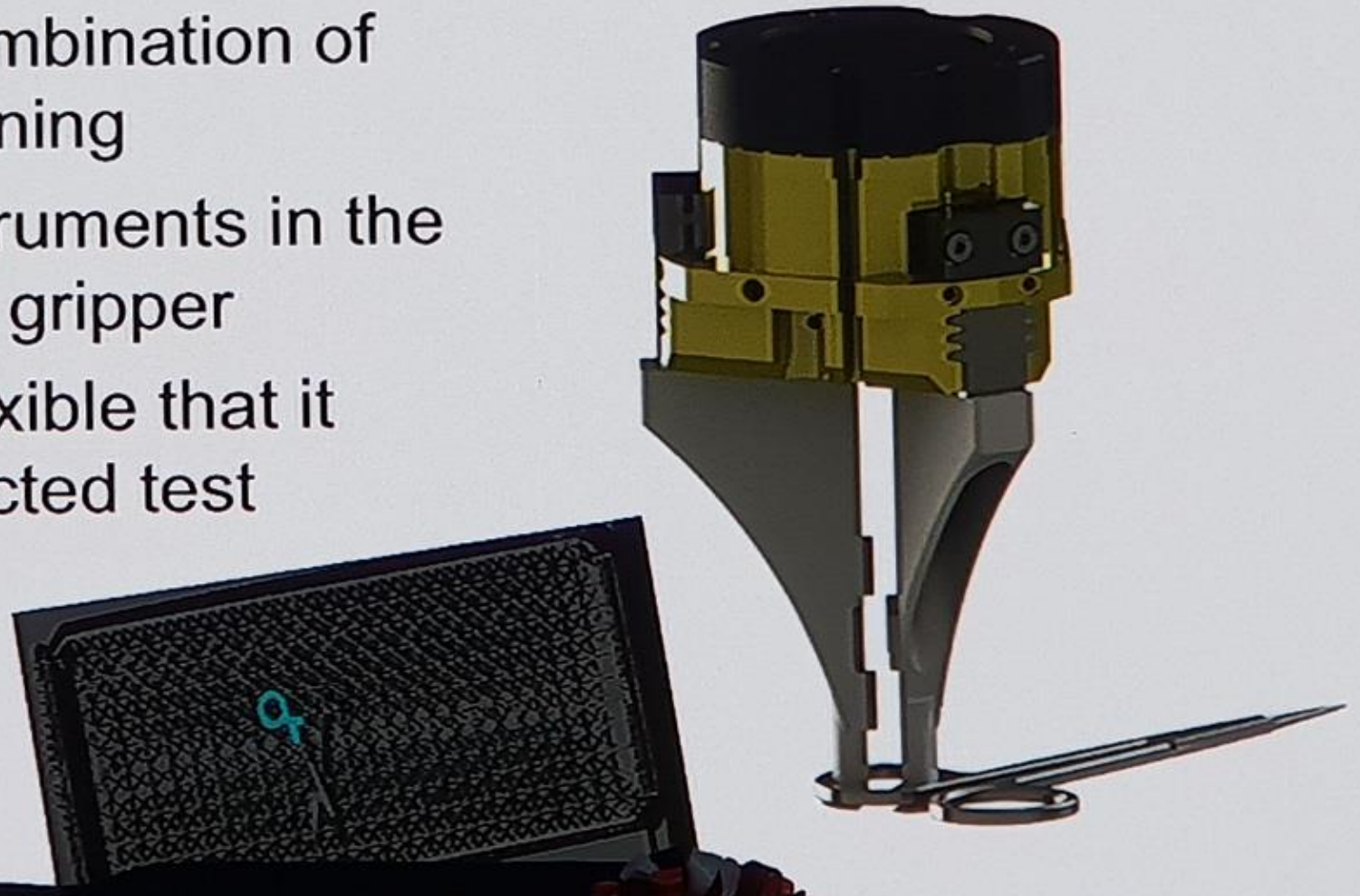
Fully automatic cleaning control

- Based on multi-spectral vision, and automation technology
- Identify debris on instruments
- Evaluation of the instrument is clean, unclean or in need of further control
- Potential for detection of corrosion damage

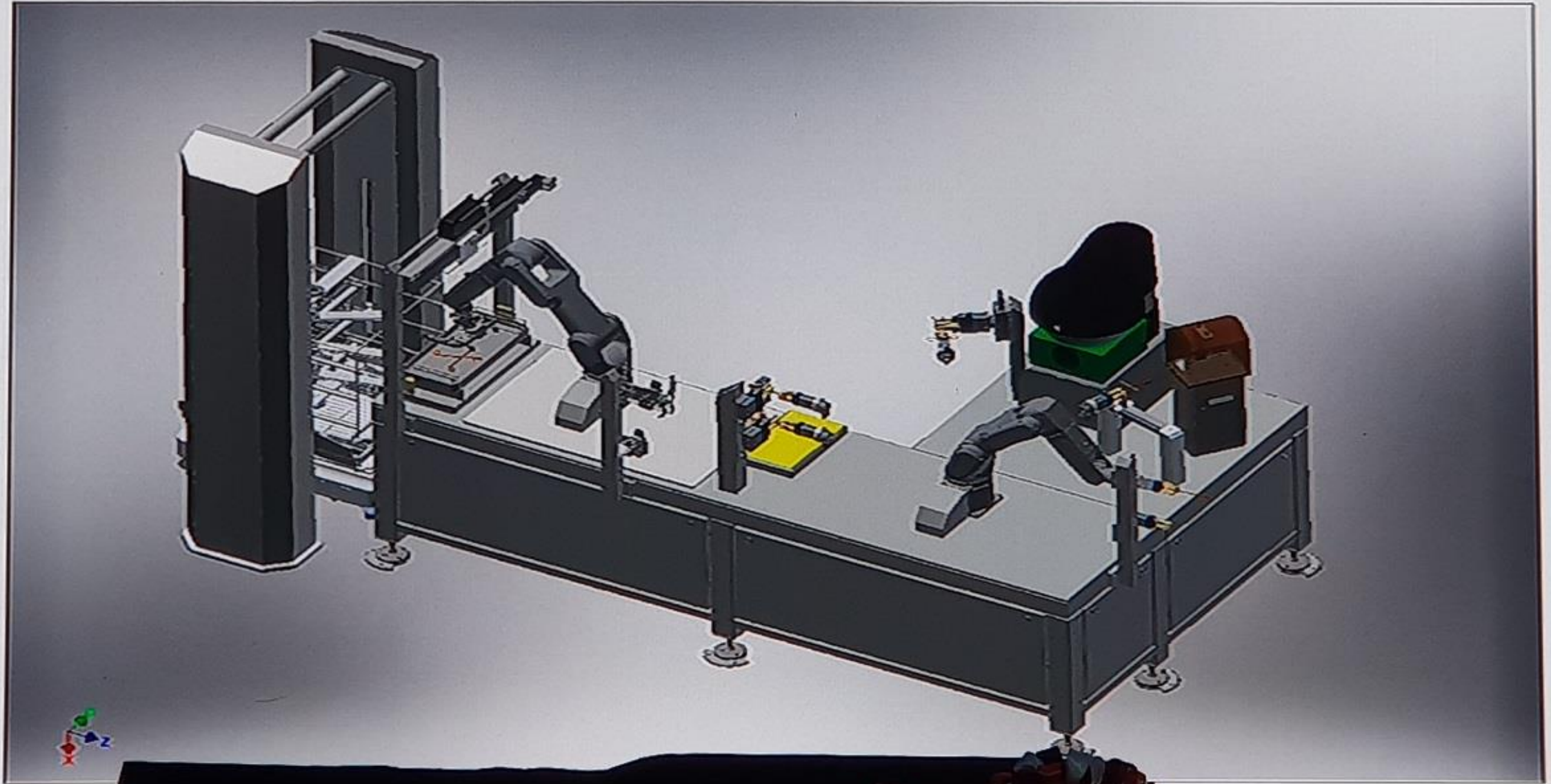


Vision - recognition of instruments

- The solution uses a combination of camera and laser scanning
- The position of the instruments in the trays is dented - Robot gripper
- Gripper, which is so flexible that it can handle all the selected test instruments



Fully automatic packing table



Benefits and opportunities

KEY WORDS

- Minimization of errors - increased patient safety
- Precision - Documentation and Traceability
- Better working environment - Ergonomics
- Increased efficiency