



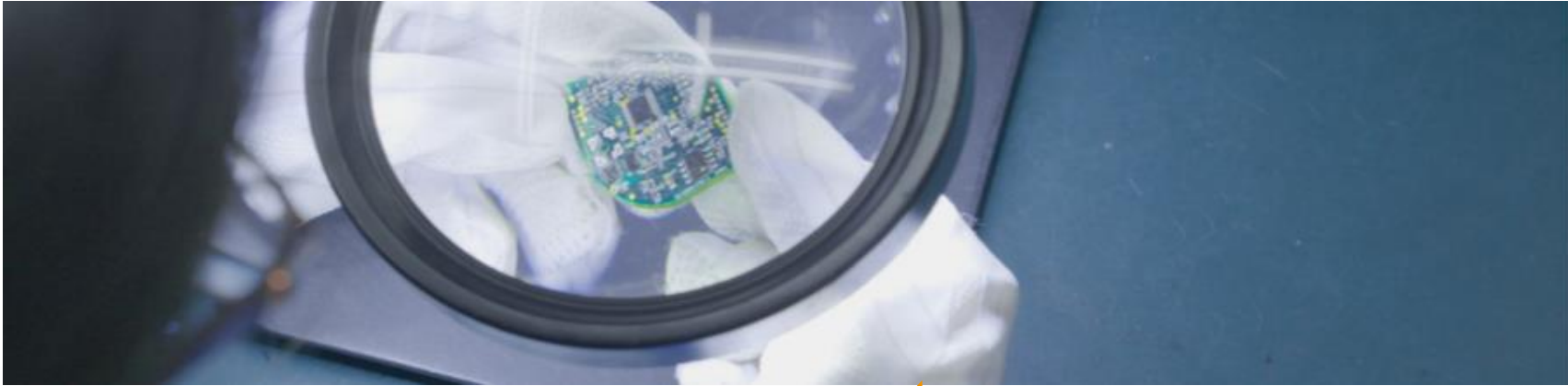
# **Business and Science Synergy: Experience of Kitron and KTK in Development and Sustainability of Staff Competencies**

Kaunas, 20.03.2019

## ***Content:***

- **Kitron Presentation**
- **Kitron in the Context of Industry 4.0**
- **KTK Presentation**
- **Kitron and KTK Cooperation Experience**
- **Requirements of Staff Competencies in the Context of Industry 4.0**

# Kitron History



**1962**

Founded in  
Norway



**2001**

Acquired  
Production  
Subunit in  
Lithuania



**2014**

Expansion in  
Lithuania.  
Improvements  
in Arendal

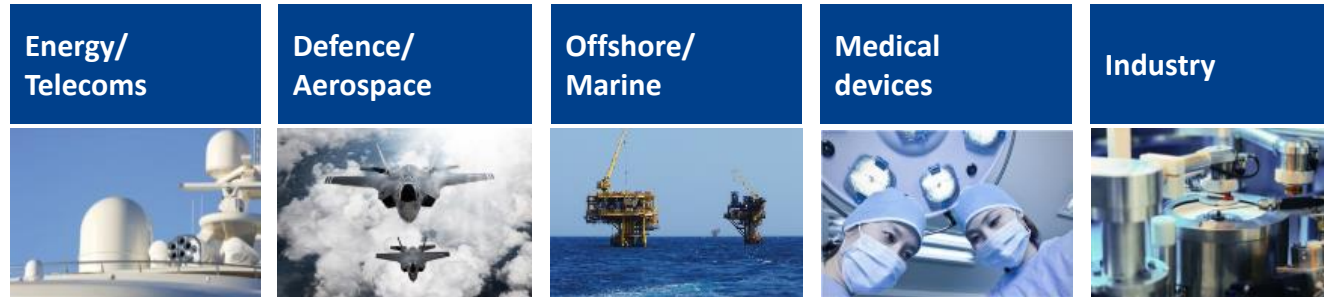


# Kitron Group

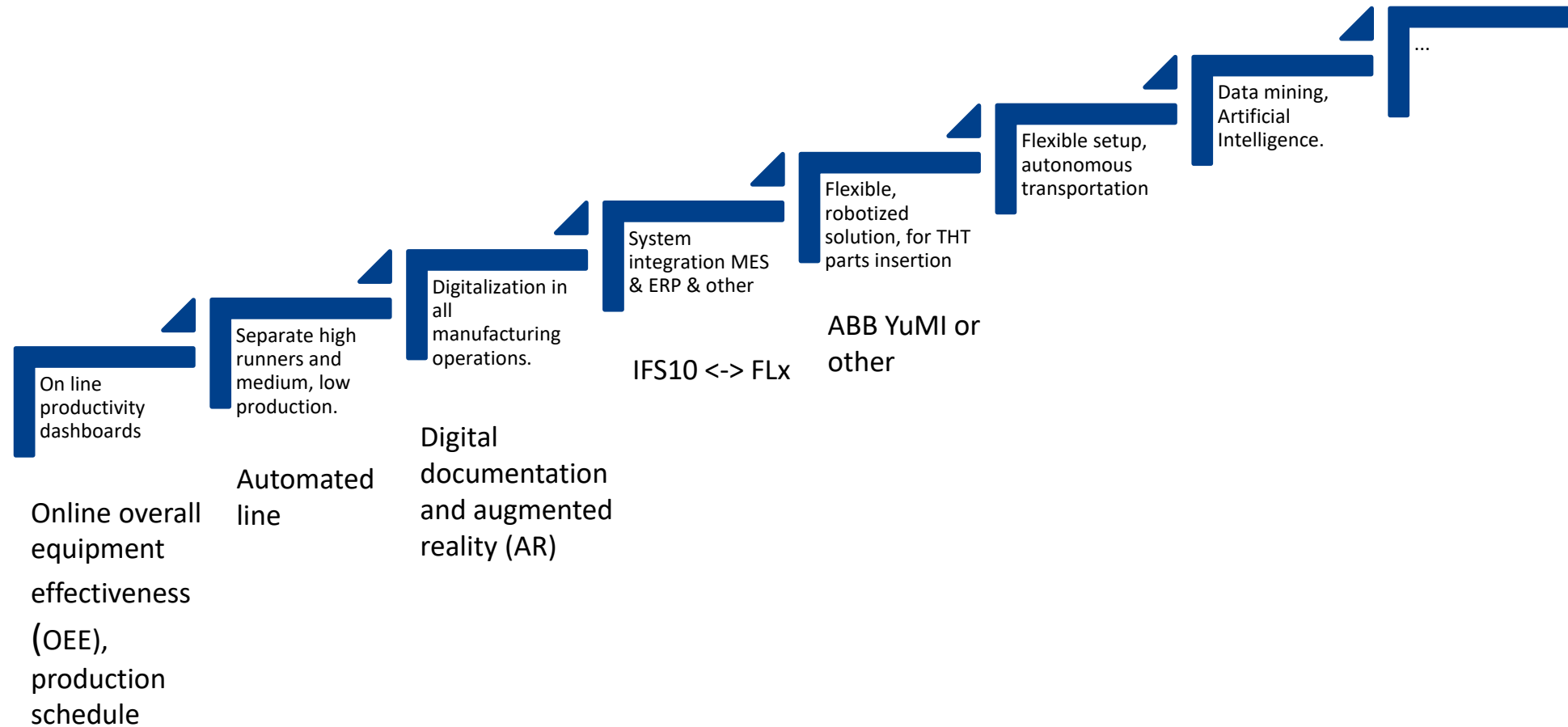
- Modern highly competitive facilities globally
- Investments in new technology
- Increasingly offering advanced services



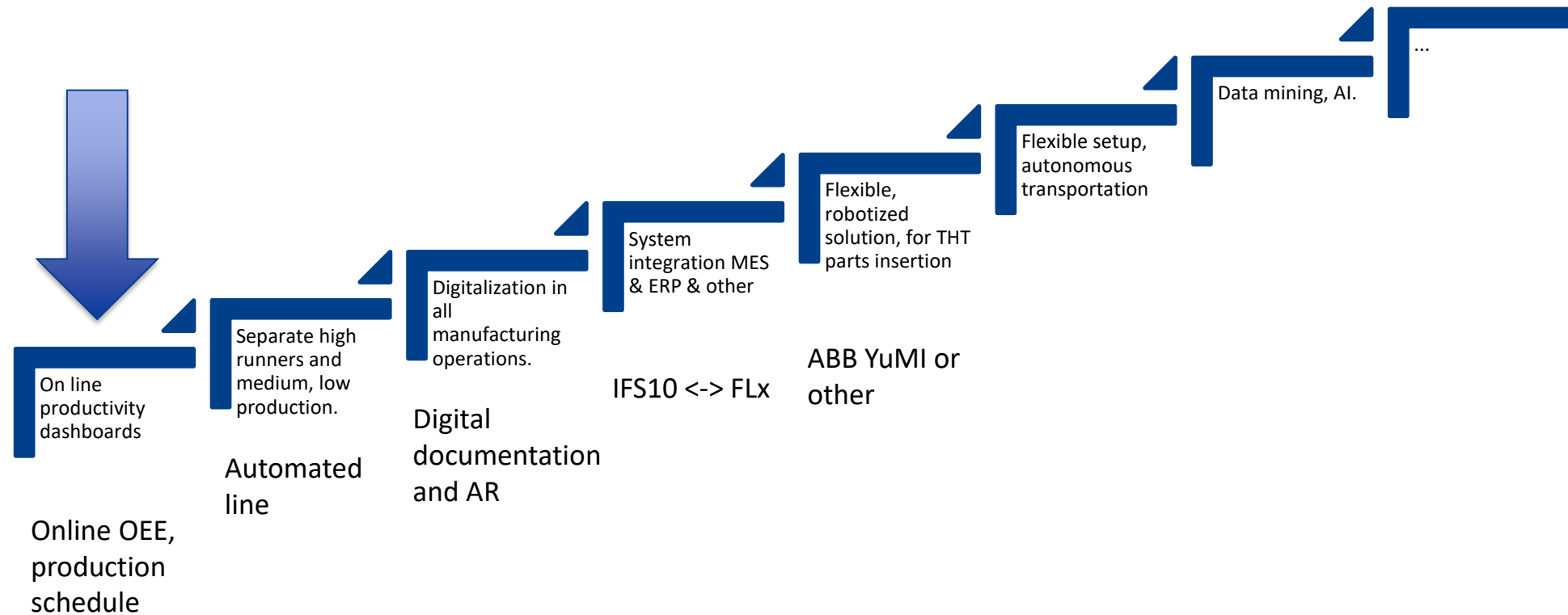
# Customers and market sectors



# Kitron Permanent Development Path... I4.0



# Kitron Permanent Development Path... I4.0

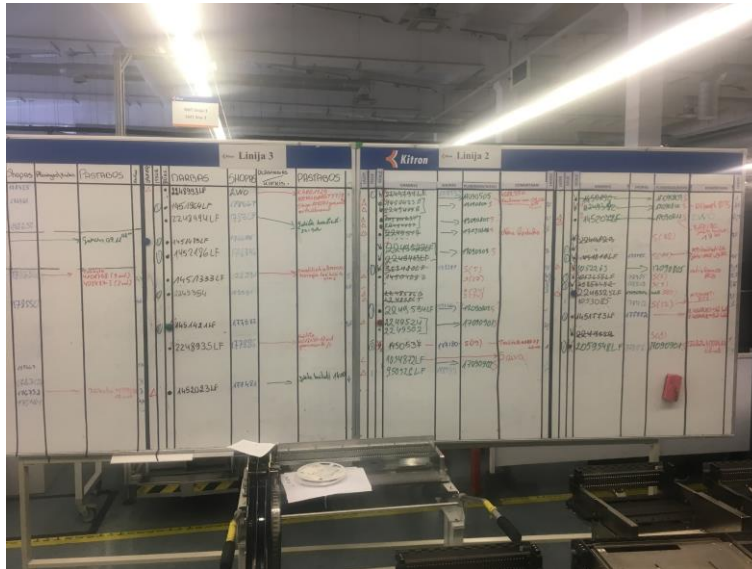




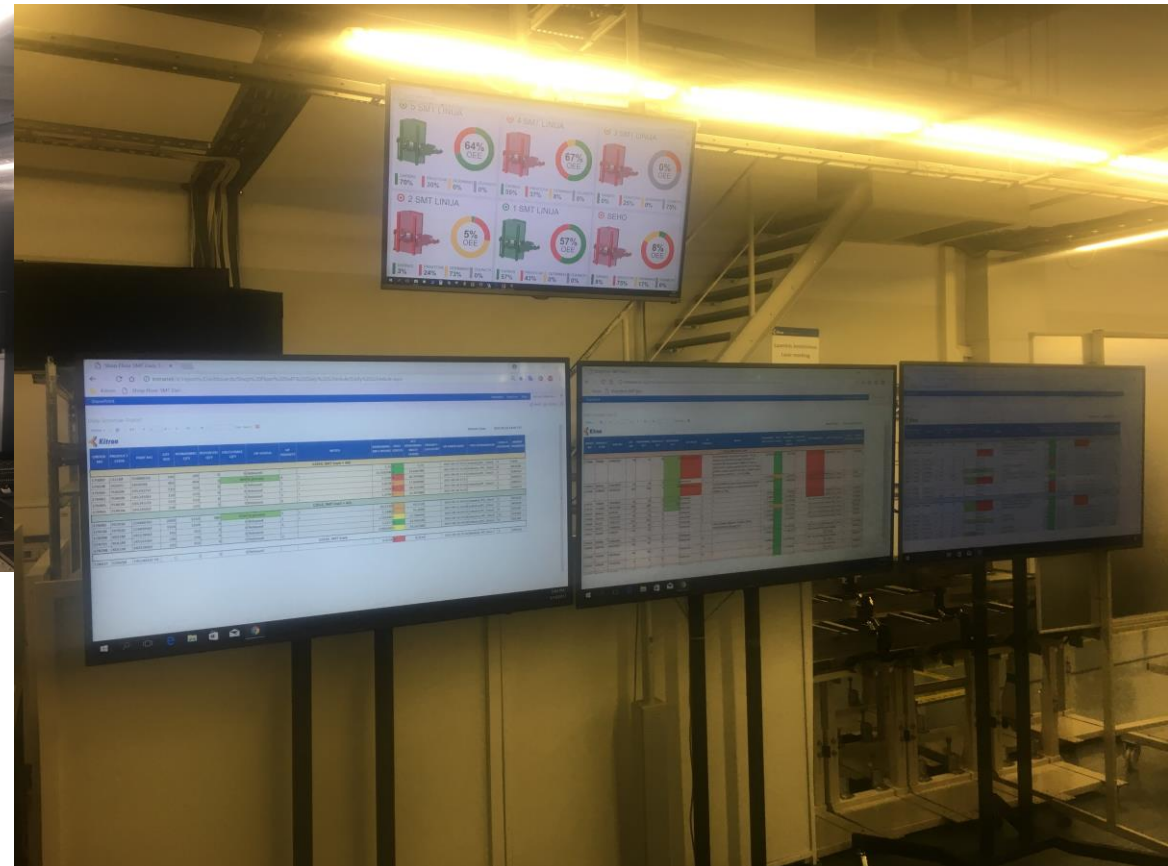
# Live line status, real time updated schedules

## Online OEE and daily schedule in SMT

Before

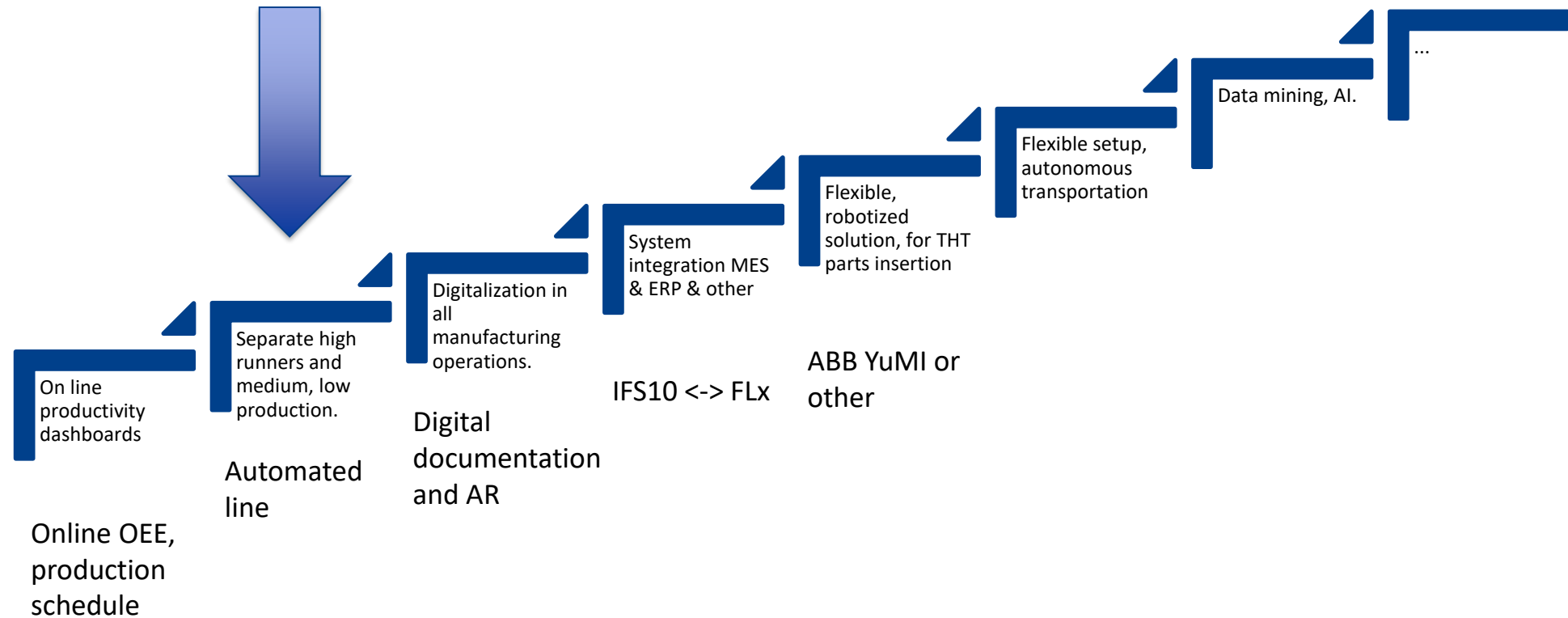


After





# Kitron Permanent Development Path... I4.0

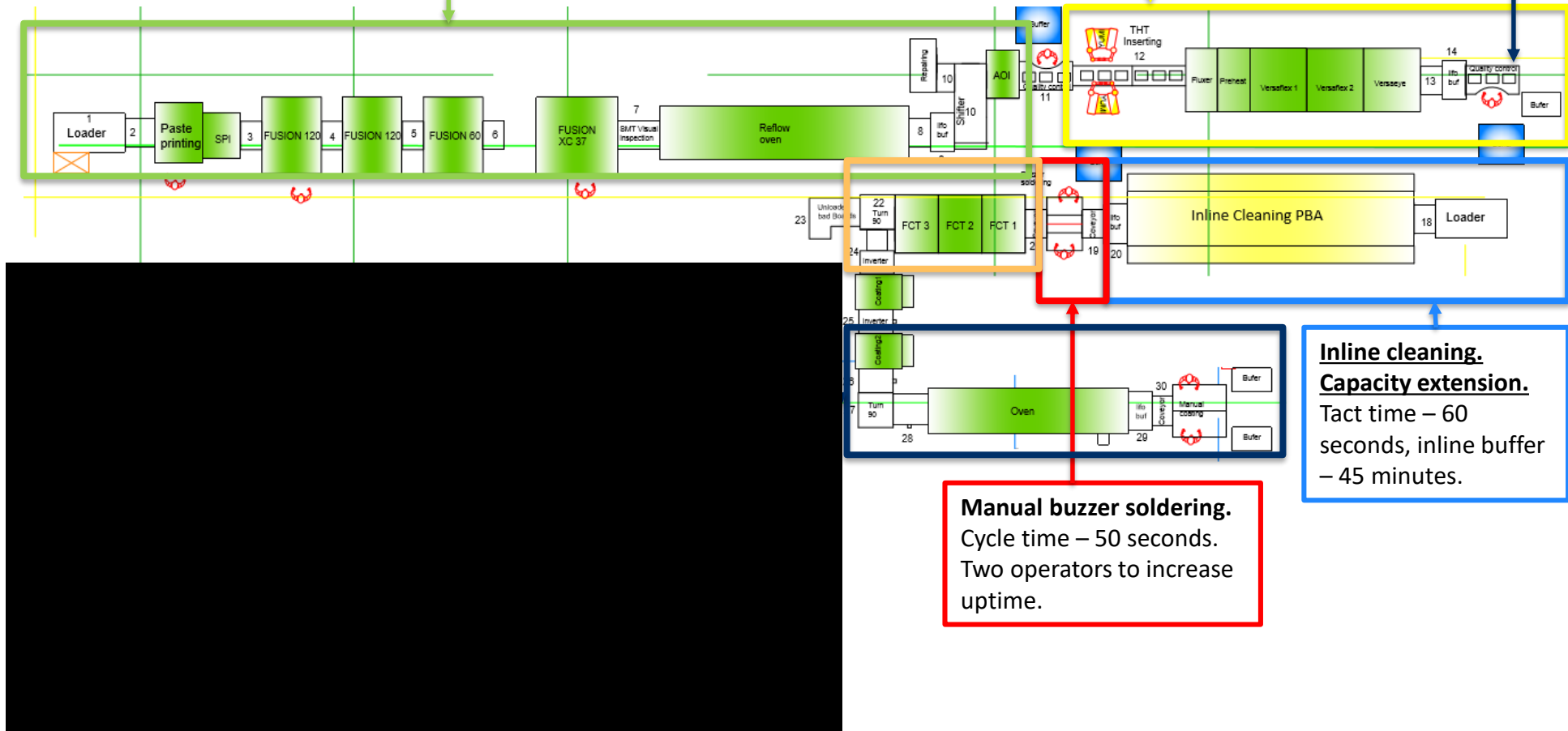


# Fully automated one-piece-flow production line

**SMT. Capacity extension.** Tact time – 85 sec/ panel., inline buffer before THT insertion – 50 minutes.

**THT insertion. Automation.** (new process - YuMI). **Selective soldering with THT AOI.** **Capacity extension.** Tact time – 70 sec/ panel, possibility to run Selective soldering independently (Process split at point 12)

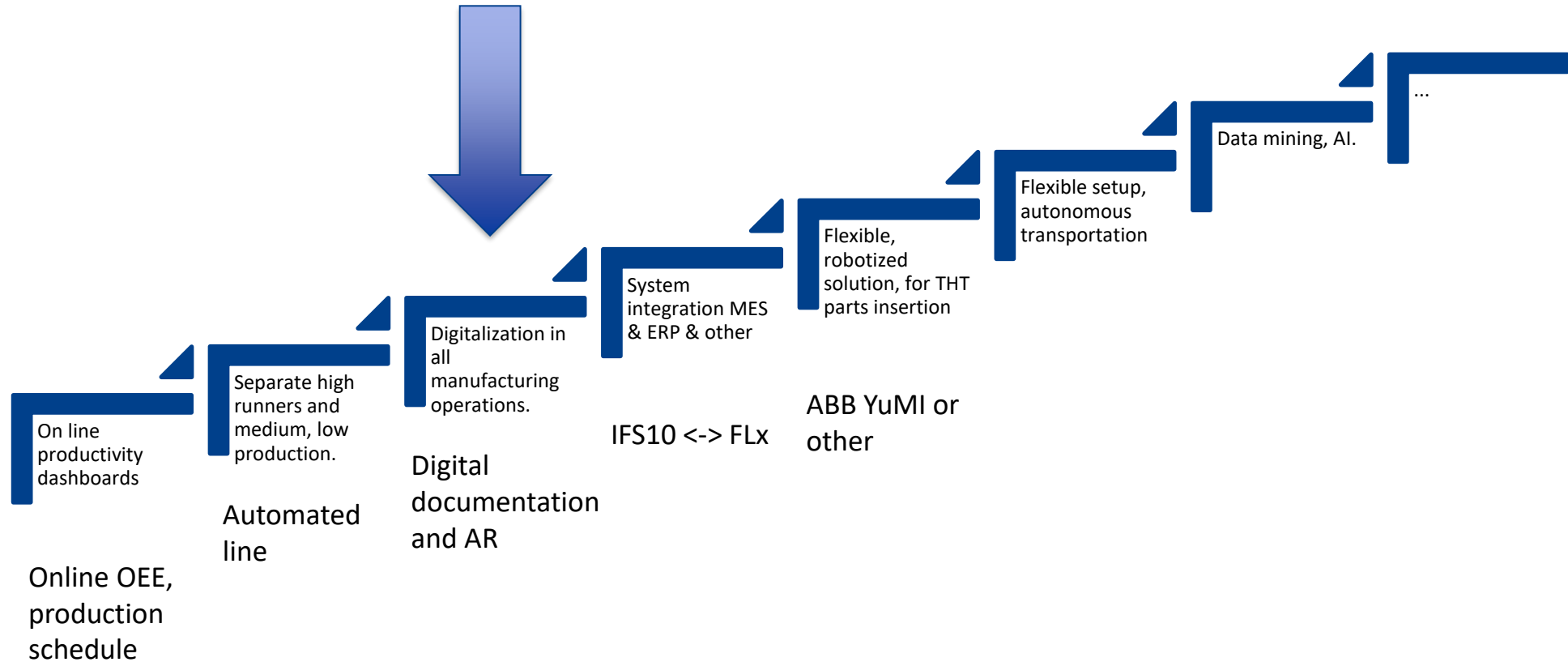
Line split



**Inline cleaning. Capacity extension.** Tact time – 60 seconds, inline buffer – 45 minutes.

**Manual buzzer soldering.** Cycle time – 50 seconds. Two operators to increase uptime.

# Kitron Permanent Development Path... I4.0



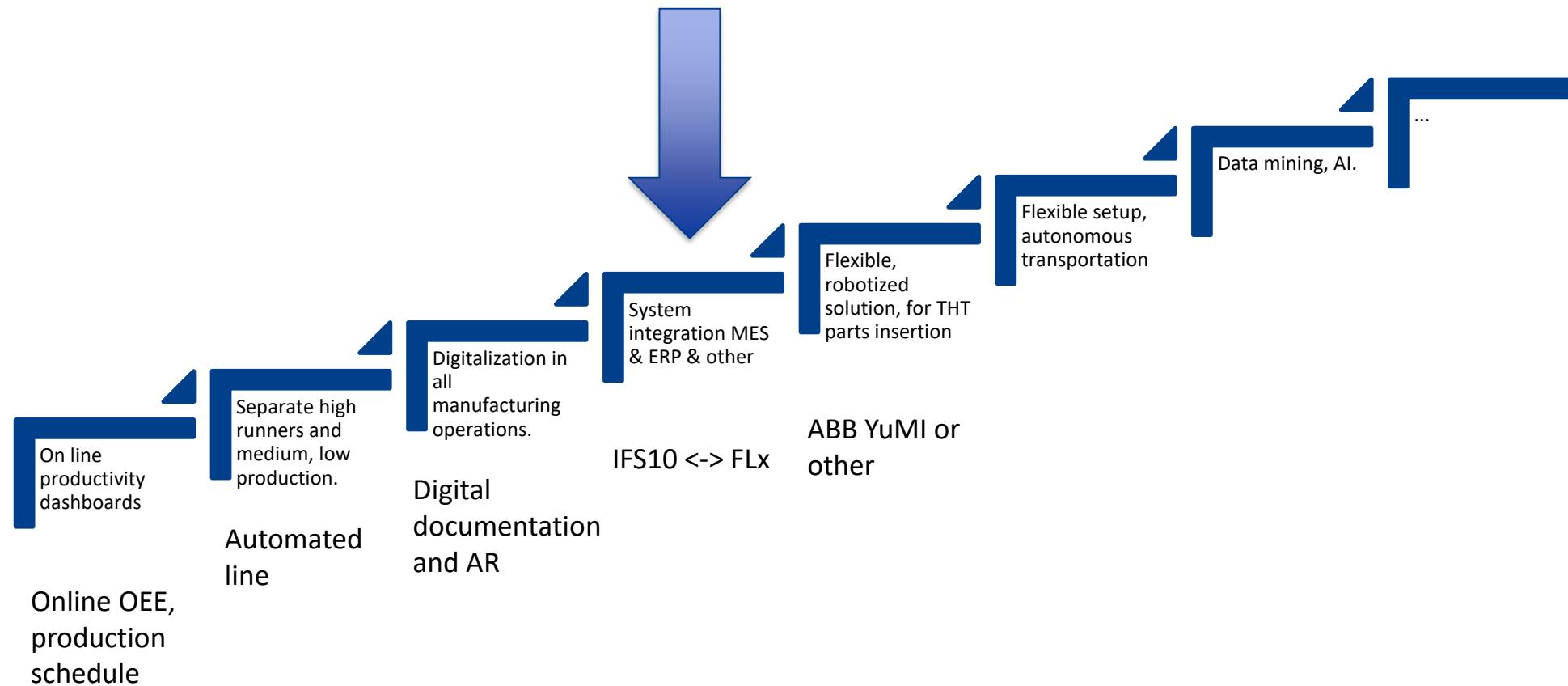
# Augmented Reality Manufacturing



**Kitron**

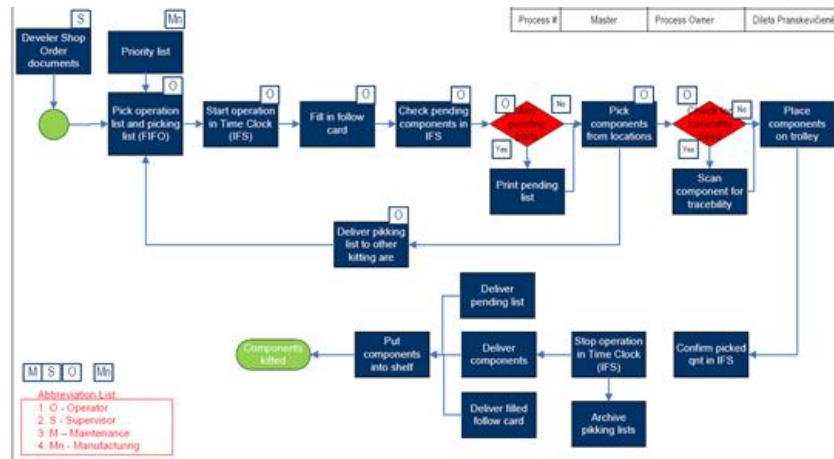
Your ambition. Our passion.

# Kitron Permanent Development Path... I4.0



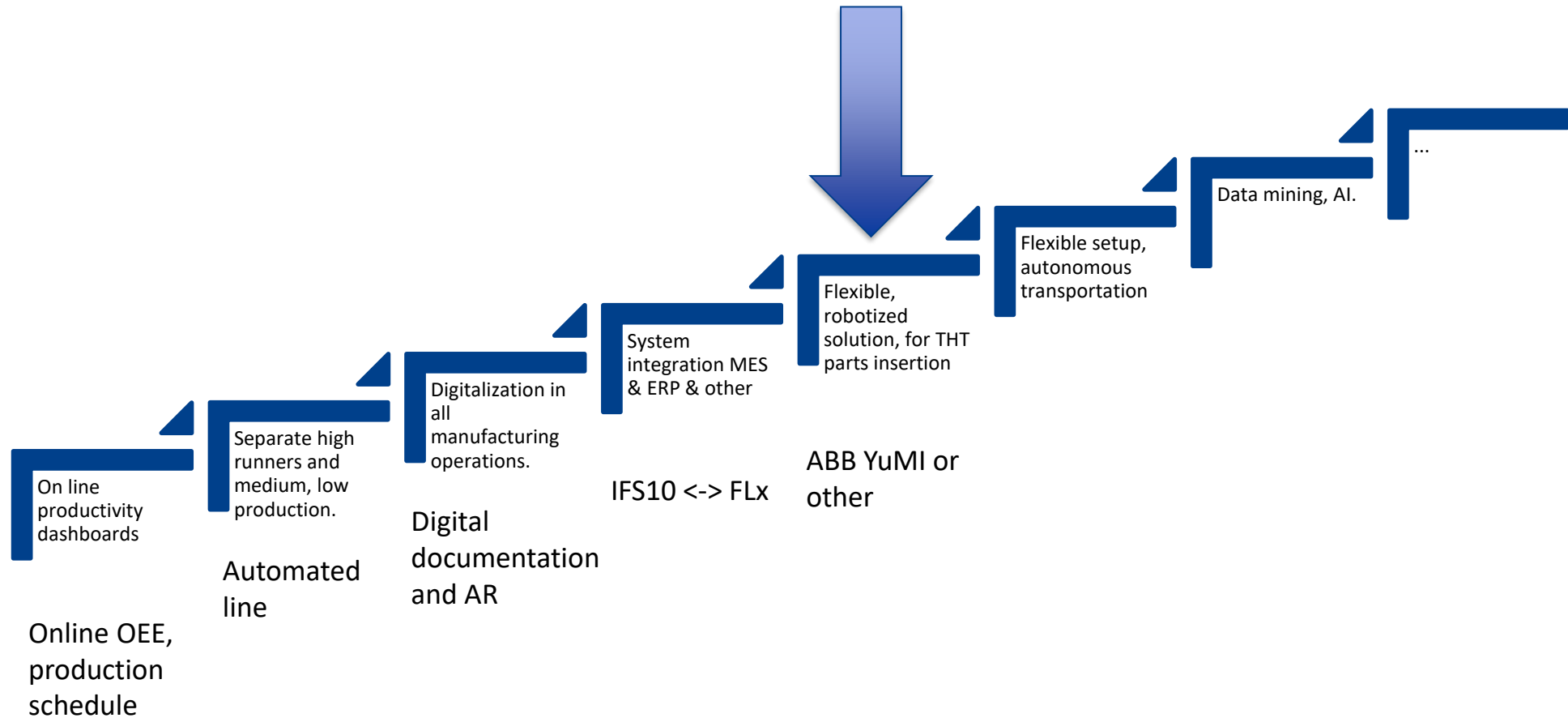
# System Integration

- Laser marking integration. Elimination of manual data collection - reduces error rate.
- Integrated production equipment with Manufacturing Execution Systems (MES). Collects traceability and data of quality to the MES data base. For example: If the product has not passed the test and the MES system does not have an "OK" result, the products will not be packaged and sold.
- Integration of automatic equipment storage (kardex towers) with Enterprise Resource Planning (ERP) system. The Kardex system helps to eliminate errors, ensures FIFO („first in first out“), traceability, helps to optimize space, etc.
- Integrated KANBAN (Japanese word, literally meaning “signboard” or “billboard”) solutions.
- Etc.

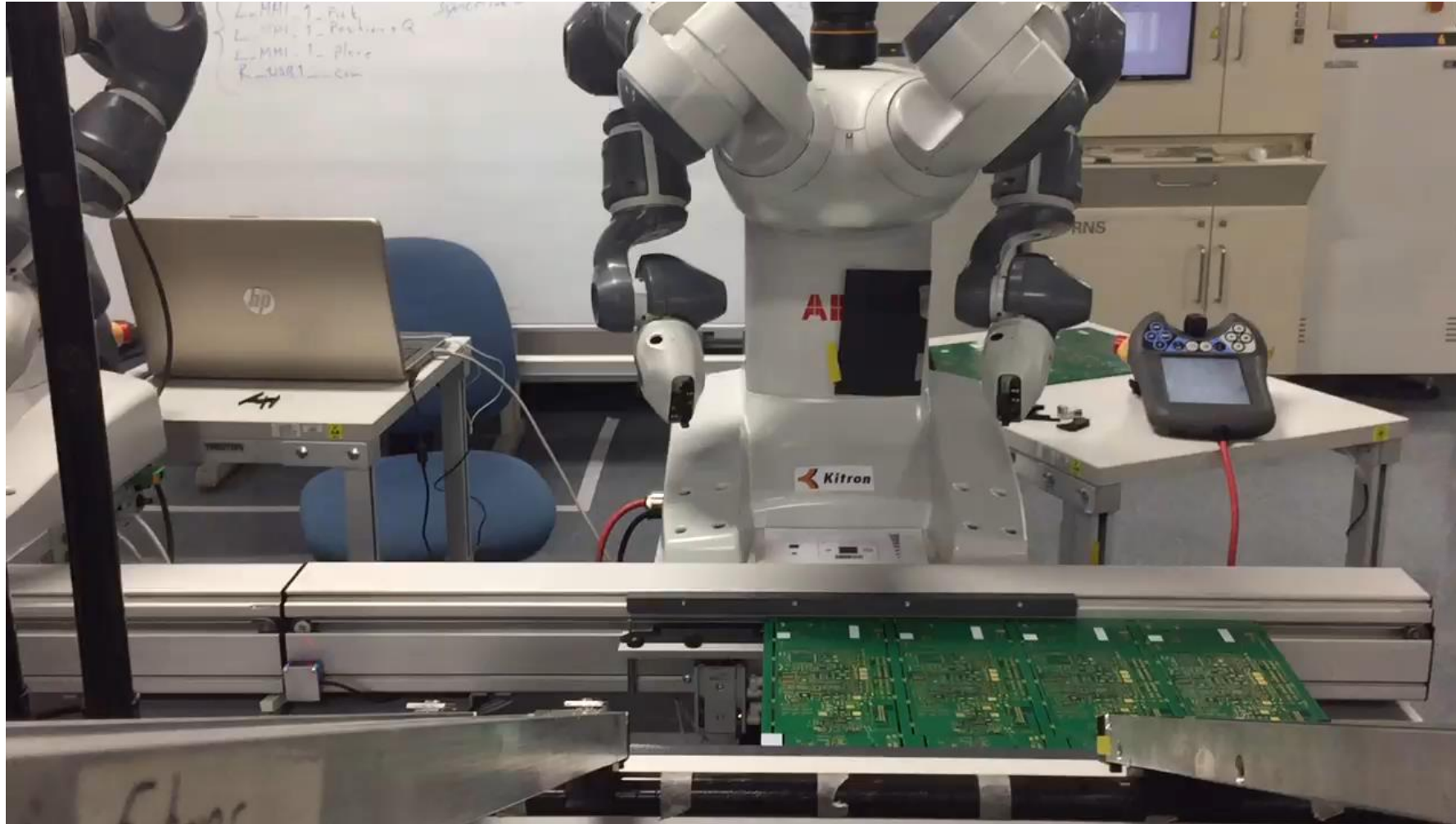




# Kitron Permanent Development Path... I4.0



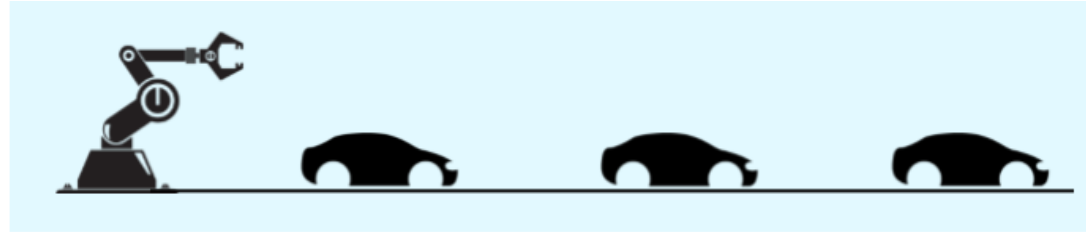
# Automated/robotized manual work operations



# I3.0 and I4.0 Comparison

## FIFO („first in first out“)

- Inflexible.
- Conveyor sequence - if the process is not necessary, passed without added value.

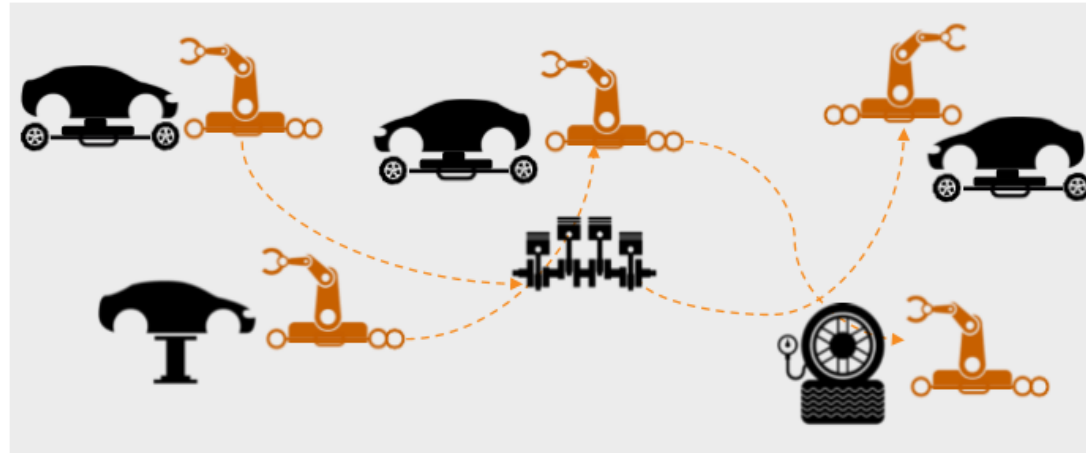


I3.0

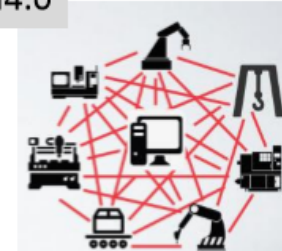


## Smart manufacturing

- Unlimited flexibility.
- Adaptive algorithm.
- High equipment performance %.



I4.0



Hyper connectivity

# KTK History

- **1920** – The first higher technical school in Lithuania. Training technicians of Construction, Mechanics, and Electrical engineering.
- **1925** – The first graduates of marine engineering.
- **1931** – Teachers and students designed and constructed the first glider in Lithuania.
- **1975** – One of the most popular technical education school in Lithuania.
- **2002** – Became a high education institution.
- **2018** – One of the most popular Engineering College in Lithuania.







## KTK History

- The activity has been performed for 99 years. All the time it was training specialists exclusively of technological sciences.
- Studies are performed in Electrical and Electronic, Mechanics, Aviation, Construction and Transport engineering fields.
- >1500 students study at KTK.
- Approximately 300 students finish studies in KTK every year.



## Kitron and Kaunas Technical College – partnership of science and business

### Partnership history

- **2002** - The beginning of cooperation.
- **2015** - „Kitron Electronics Assembly Laboratory“ was opened.
- **2016** - The agreement between KTK and Kitron was signed for IPC 7711/7721 Trainings.
- **2017** - The agreement between KTK and Kitron was signed for Onboarding Trainings.

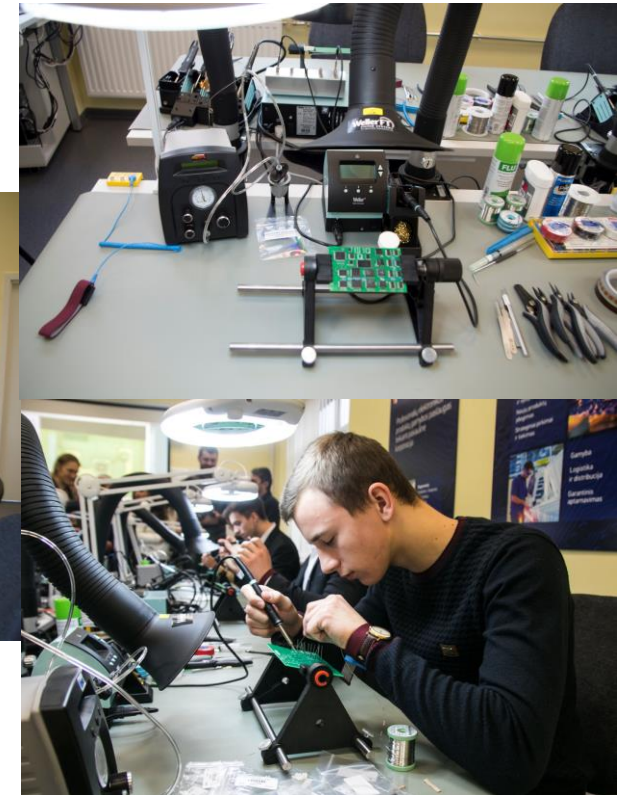




## Kitron and Kaunas Technical College – partnership of science and business

### „Kitron Electronics Assembly Laboratory“

- Kitron has invested over 100,000 EUR to electronics assembly laboratory.
- This is one of the most modern electronics assembly laboratories in the Baltics. Over three years, more than 500 students and about 250 Kitron employees have trained in the laboratory.



## Kitron and Kaunas Technical College – partnership of science and business

### „Kitron Electronics Assembly Laboratory“ anniversary

- In 2018 Kitron Kaunas celebrated the three-year anniversary of our collaboration with Kaunas Technical College on its IPC standard laboratory.
- At the anniversary event we had PCB assembly and manual soldering contests. Prizes were awarded to the best three students.





## Kitron and Kaunas Technical College – partnership of science and business

### Onboarding Trainings

- Kitron onboarding trainings at Kitron premises.
  - Performed by KTK.
  - > 2 years sustainable training process.
  - > 800 employees passed trainings.
    - Onboarding trainings is value added input to further training process.



## Kitron and Kaunas Technical College – partnership of science and business

### Requirements of Staff Competencies in Context of Industry 4.0:

- Well-developed critical and systemic thinking skills.
- Well-developed mathematical and IT skills.
- Well-developed communication and collaboration competences.
- Ability to critically analyze own activities and their effects.
- Communication in own native and foreign language (English mostly).
- Digital literacy and social activity.
- Self-learning skills.
- Ect.



## Kitron and Kaunas Technical College – partnership of science and business

### Kitron Management about partnership:

- It is a win-win partnership - Kitron has a reliable training partner and an opportunity to contribute to the deepening of students' knowledge in the means of practice, and Kaunas Technical College has the opportunity to improve its professional competence by drawing on the experience of company which is using modern technologies in electronics assembly process.
- Kitron is looking forward to further develop and expand training program which basically is next level of training, dedicated for engineering personnel.





**Your long-term sustainable partner**



**Open the world of engineering**