



**The Toyota Way in the Era of Industry 4.0**

Stefano Cortiglioni

Toyota Academy Business Development Director

TPS Senior Specialist South Europe

# Toyota Industries Corporation

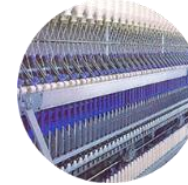
- Total turnover €18.7 Billion
- Total employees 52,600
- 4 business sectors



Automotive **50%**



Materials Handling **45%**



Textiles **3%**



Other **2%**

\* Figures for FY2017 and 1 Eur = 119JPY

Who we are

## Europe at a glance

**102,000**

units sold in FY17

**2.2 billion**

total net sales in FY17

**330,000**

trucks on service agreement

**10,300**

employees across Europe

**3.5 million**

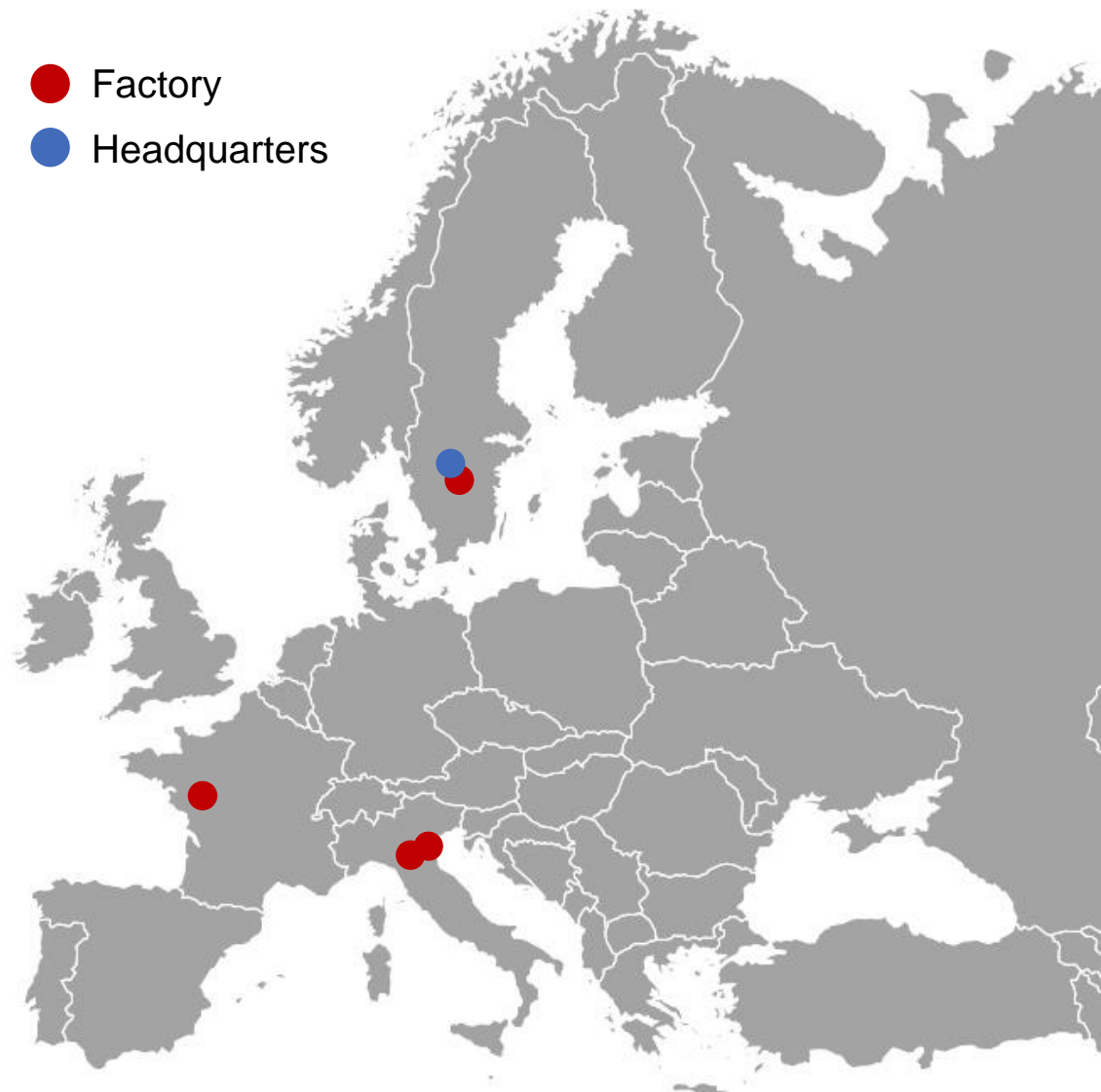
service assignments per year

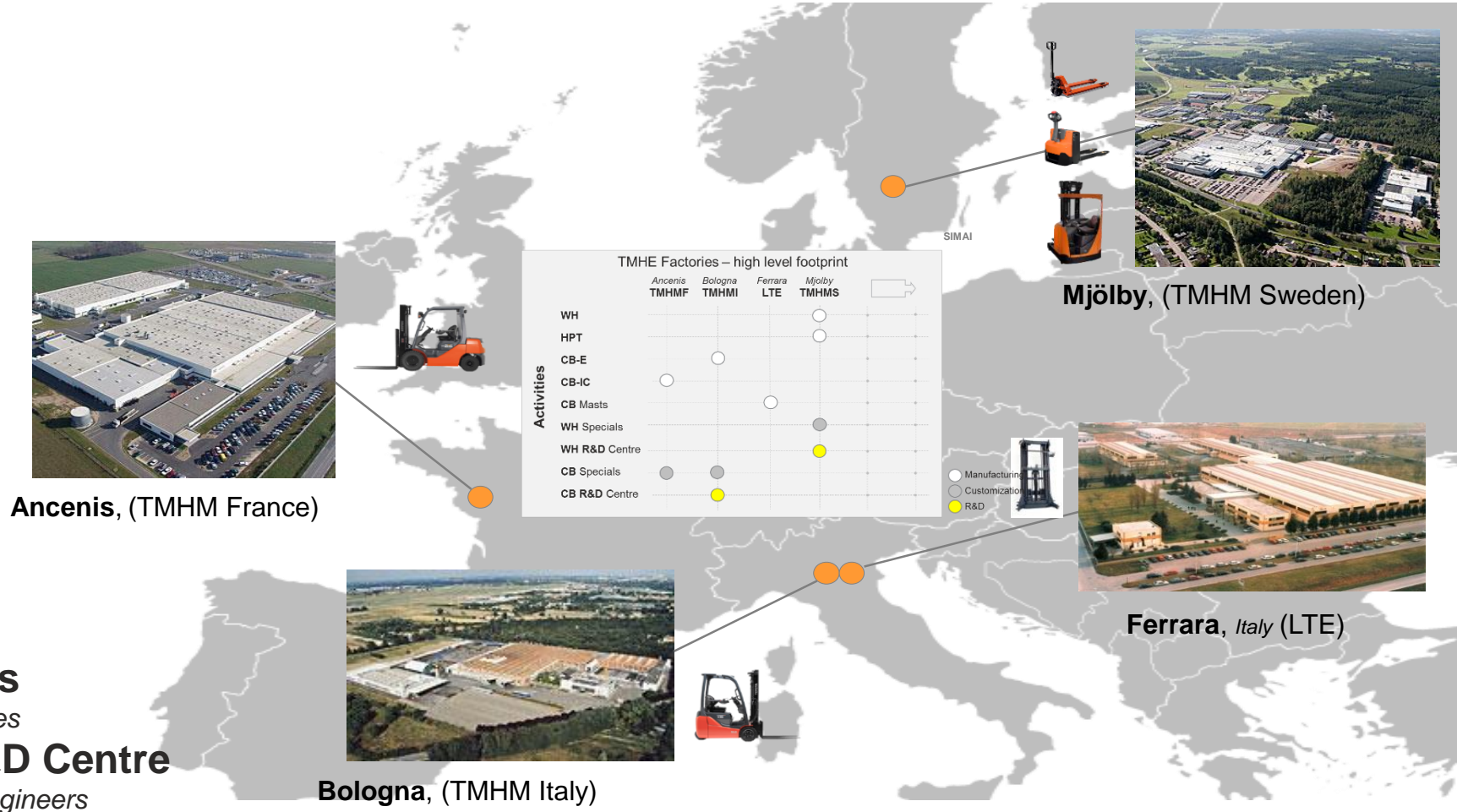
**4,900**

trained service technicians

Active in over **30** countries in Europe

- Factory
- Headquarters

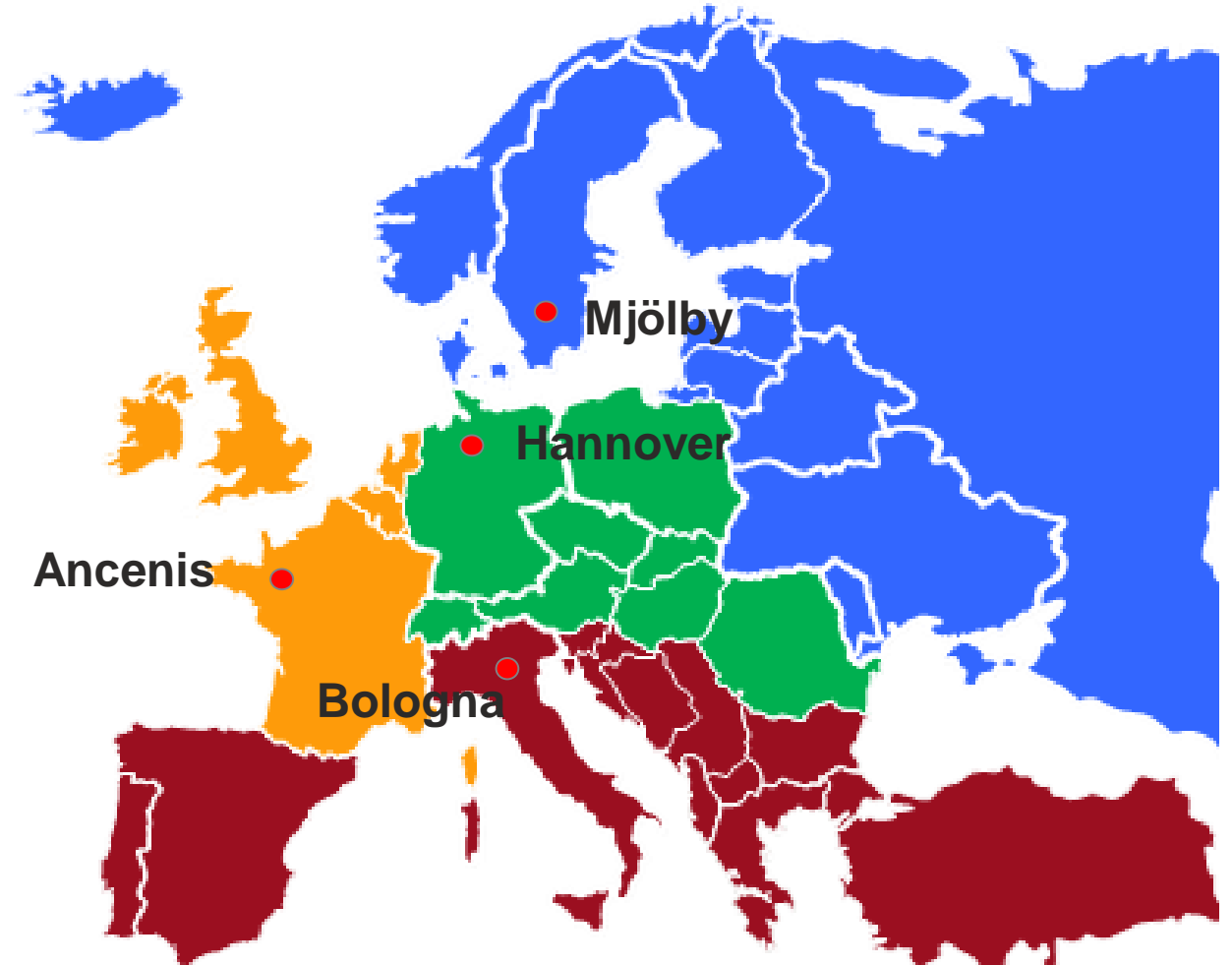




**4 Factories**  
 ~3500 employees  
**2 Main R&D Centre**  
 ~300 Design Engineers

## **Toyota Lean Academy** Training & Consulting Division

- Toyota Material Handling has established a new division dedicated to Training & Consulting.
- TPS Senior Expertise, with over 10 years of managerial experience on Toyota plants, are members of the new team
- European Customer Centers are located close to the TMHE factories



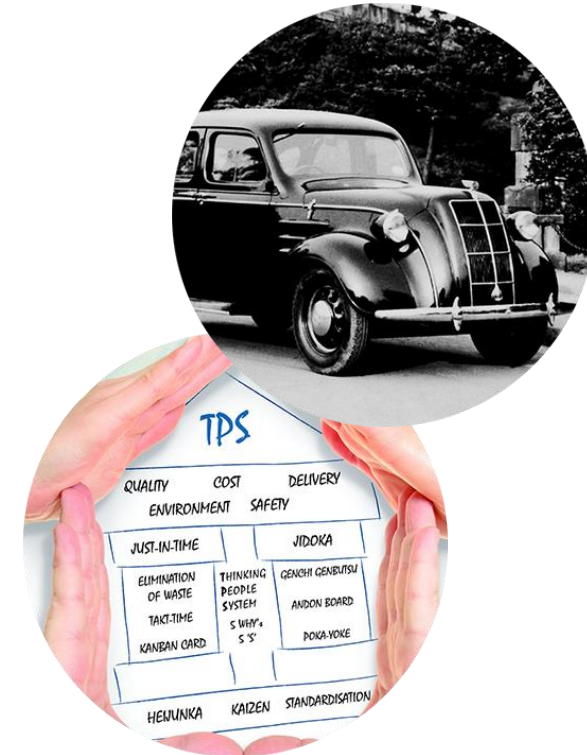
What is our journey: How we made it there

Toyota history

## In the beginning

—● 1936 First Toyota car produced

—● 1953 The Toyota Production System (TPS) is born



- The TPS is not only a method of production but it is **cultural mindset** that involve **all company employees** and departments.
- It is also called: **Thinking People System**.
- Two Japanese words represent this meaning:
  - Monozukuri: Capability to make good things
  - Hitozukuri: Capability to produce good things through people

物 – Mono (Things)  
者 – Mono (People)  
人 – Hito (People)

} 造り – Zukuri (Production)

## Customers 2020

- Shorter Lead Time
- Wider product offers
- Customizations



## Companies 2020

- Lean
- Flexible (Supply chain included)
- Close to the market



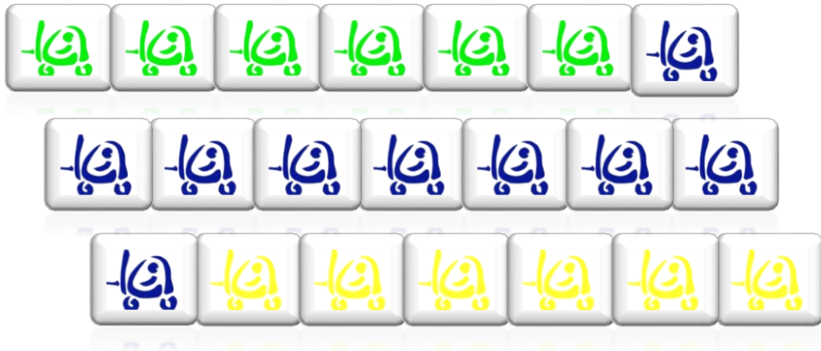
## Logistic 2020

- Flexible
- Fragmented (Pallet Vs Single Component)
- Efficient





Production in batches



Mixed Production, 'pulled' by customer orders



## Just in Time – From push to Pull

- The wide range of products, unstable market and the number of different configurations requested by customers make difficult to predict models and volume (Forecast accuracy)
- Move from Make to stock to Make to order was the way to reduce Finished Good Inventory and unsold trucks
- High flexible production lines has been arranged to produce all the product range in one piece flow

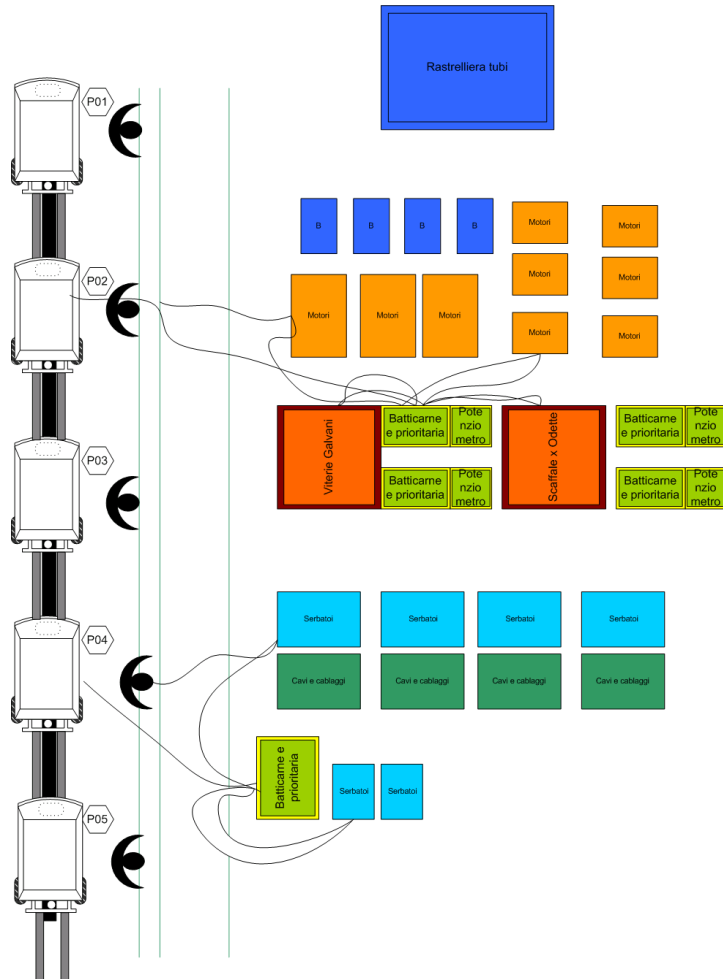
## Just in Time

- The most famous pillar of TPS which the payoff is:  
    «**What you need, When you need, Where you need**»
- The just in time approach is driven by logistic transformation following the 4 key rules:
  - **Accuracy:** Provide only the components related to single order.
  - **Punctuality:** Delivery when we need
  - **Location:** Provide closer the workstation
  - **Tack Time:** Delivery according to the Takt Time



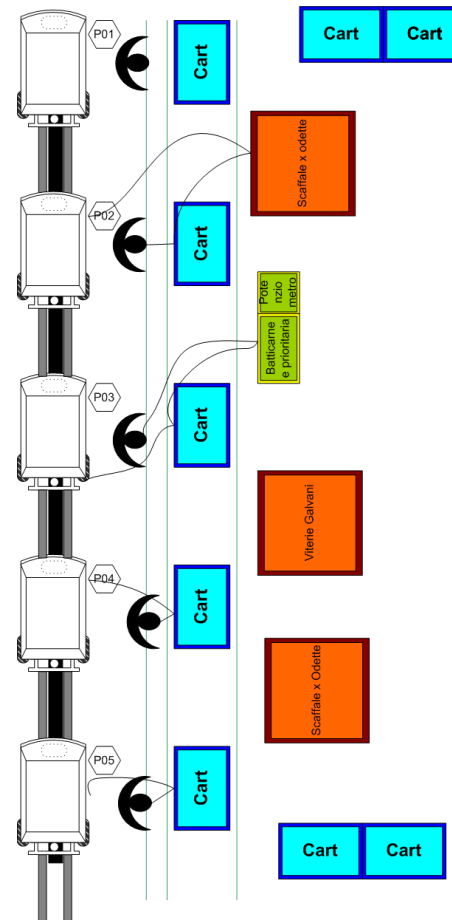
Starting point (2005)

Components stock close to the line



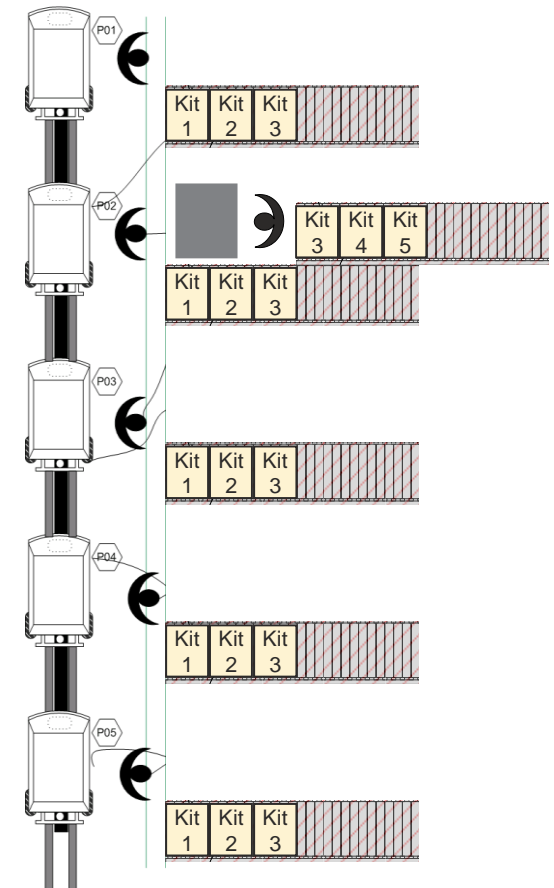
1° Step (2009)

KIT & Supermarket

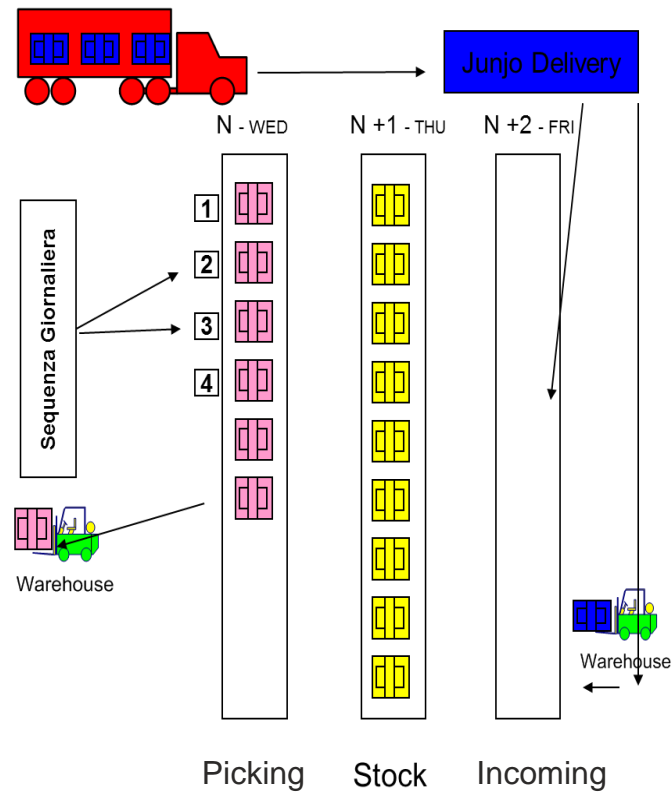


2° Step (2012)

Box Kit & Shutter



## Frames stock layout



## Junjo (Sequence)

- The production sequence is submitted to the supply chain covering 7 days rolling
- Supplier produce the components related to sequence and deliver, on daily base, to TMHMI the daily quantities



## Lean as a Foundation for the digitalization



# Thank You

stefano.cortiglioni@it.toyota-industres.eu



***“Having no problem is the  
biggest problem of all.”***

*- Taiichi Ohno*