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150-200mm Fab Modernization

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SECTION 01

SOITEC presentation



SOITEC IN NUMBERS

IN OUR SOIL GROWS AN AMAZING FUTURE



1992

Soitec is
founded

391

Patents filed
worldwide
each year

4,100

Active
patents

10.8%

of revenue
dedicated to
gross R&D

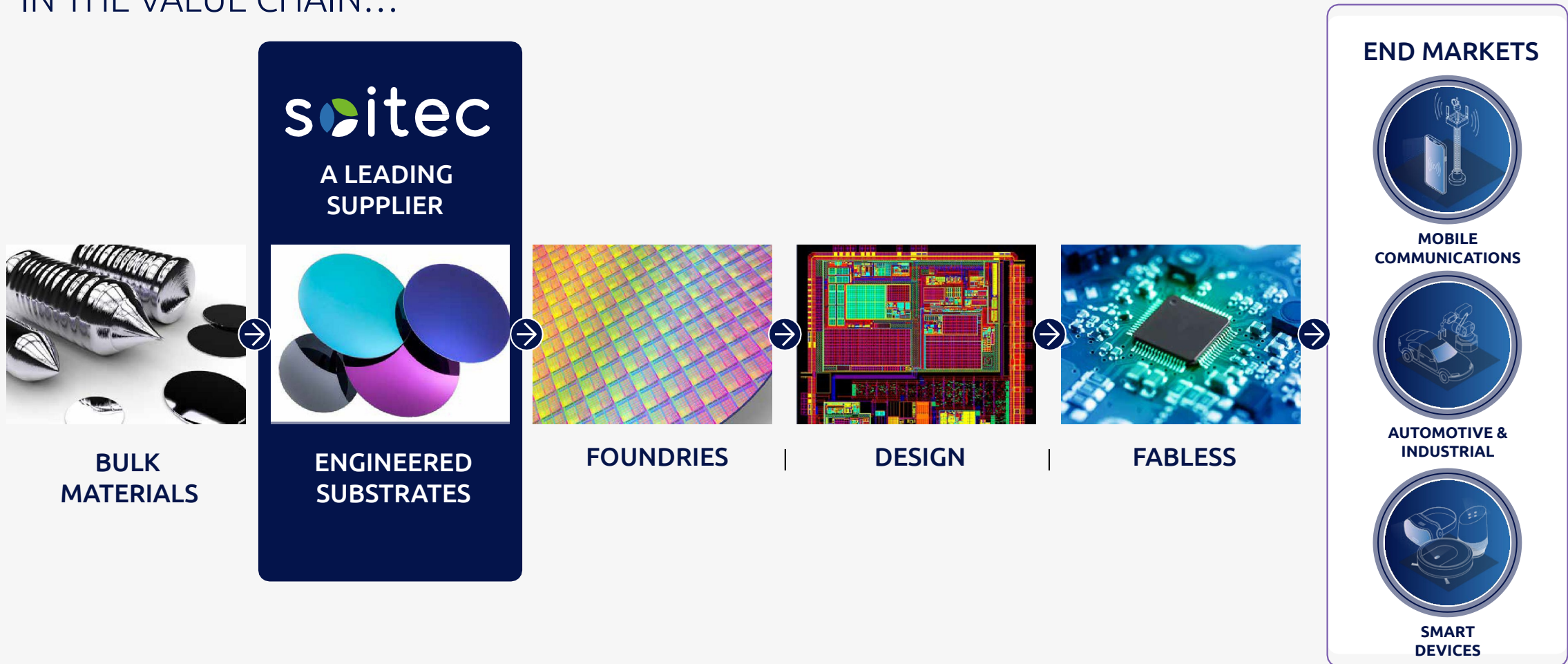
2300

Employees
(35% women)
industry average
20-25%)

€978M

Revenue
(Fiscal year 2024)

SOITEC HAS BUILT A UNIQUE POSITION IN THE VALUE CHAIN...



GLOBAL INDUSTRIAL FOOTPRINT - CAPACITY EXPANSION



SECTION 02

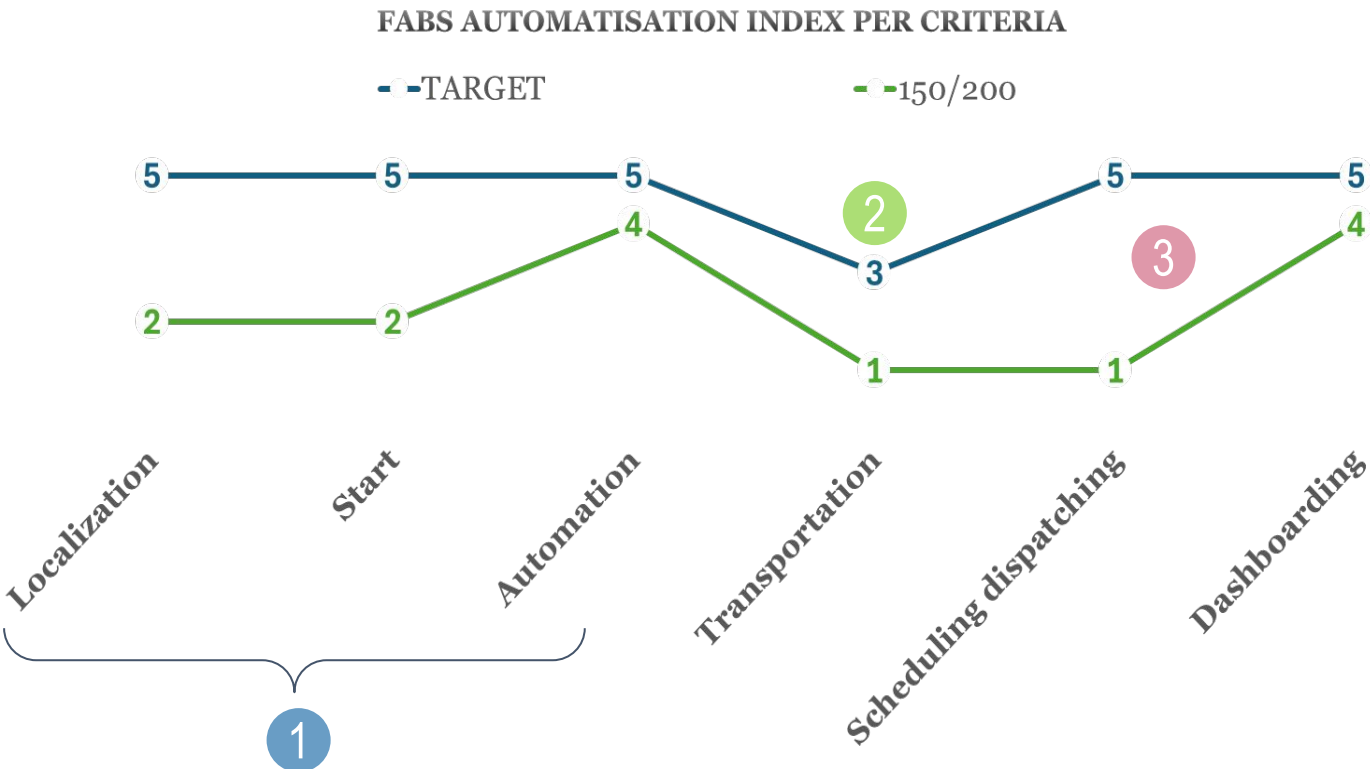


Vision & existing assets

Soitec is progressively implementing its automation strategy for 150/200mm fabs, using a step-by-step approach focused on low-cost, high-impact solutions

FAB MATURITY

150-200mm Fab vs Vision



Key elements to increase fab automation:

- 1 **1st steps to go further**
 - a. Localization
 - b. Full Auto start
 - c. Automation
- 2 **Tool auto loading**
 - a. Need smart storage solution @low cost
 - b. Need transportation solution @low cost
- 3 **Scheduling/dispatching deployment + Digital solution for productivity**

FAB DESCRIPTION

150-200mm existing asset



Boxes:
8" Entegris E99
6" Entegris E90
Latch: Swing pin

Carriers: Entegris
8" Entegris 198/192
6" Entegris 182

1

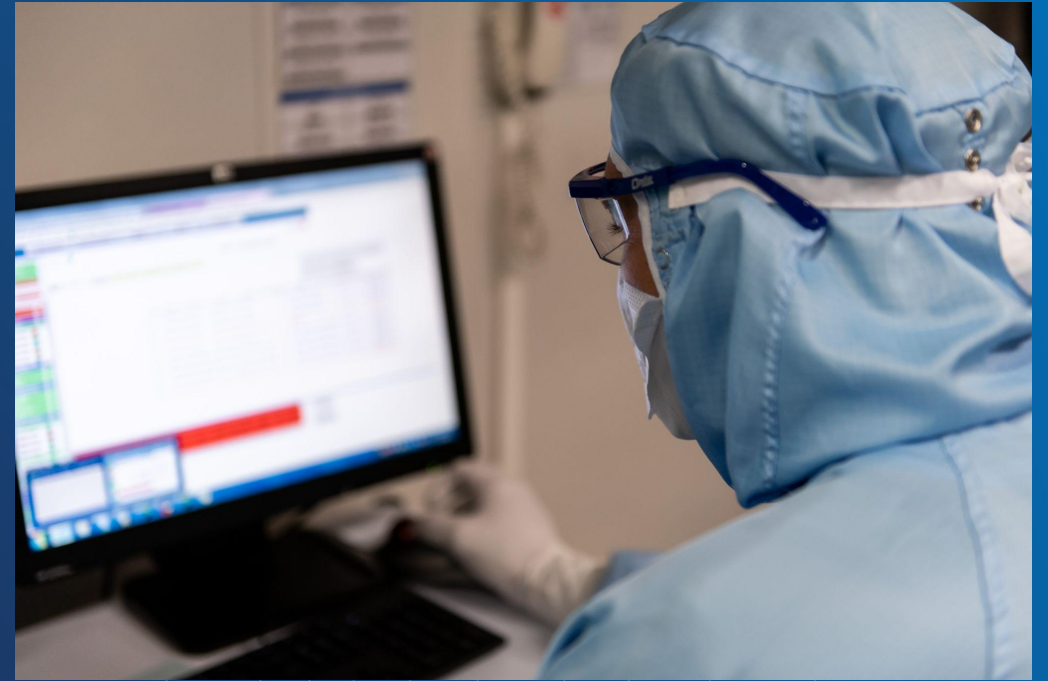
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SOITEC manufacturing asset to play with:

- 1 Lot identification thanks to barcode onto carriers
Latch style are swing pin
- 2 Lot storage on shelf
Manual barcode association with the shelf
- 3 Lot start can be done with manual barcode when
OEM did not provide solution

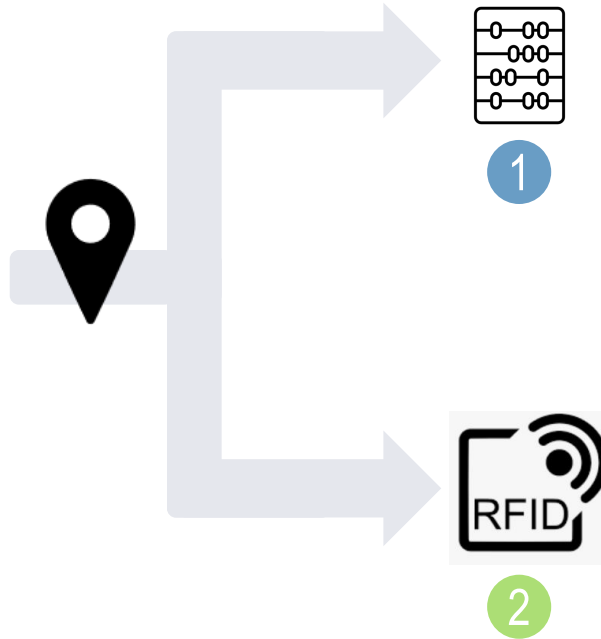
SECTION 03: Prerequisites

Localisation & Storage



Localisation

Storage &/or RFID

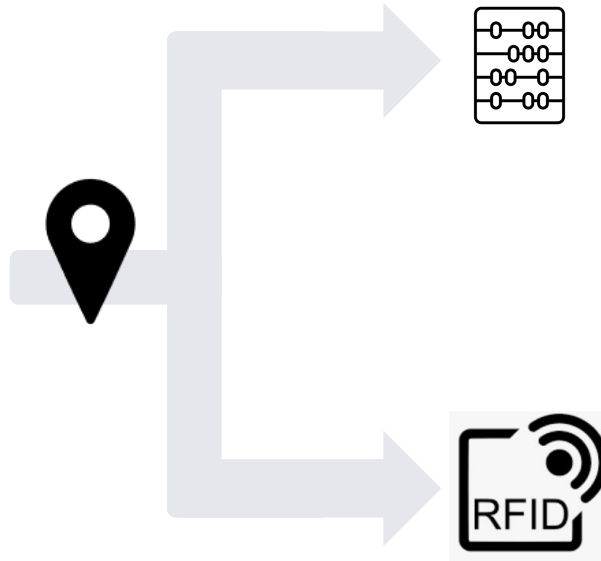


In order to increase fab automation we need to find trade off:

- 1 Make the storage accessible for mobile robot when full automatization is targeted in an area
- 2 Increase lot/shelf association to 100% accuracy when full automation is not targeted

Localisation

Storage &/or RFID



To get a competitive solution we need to:

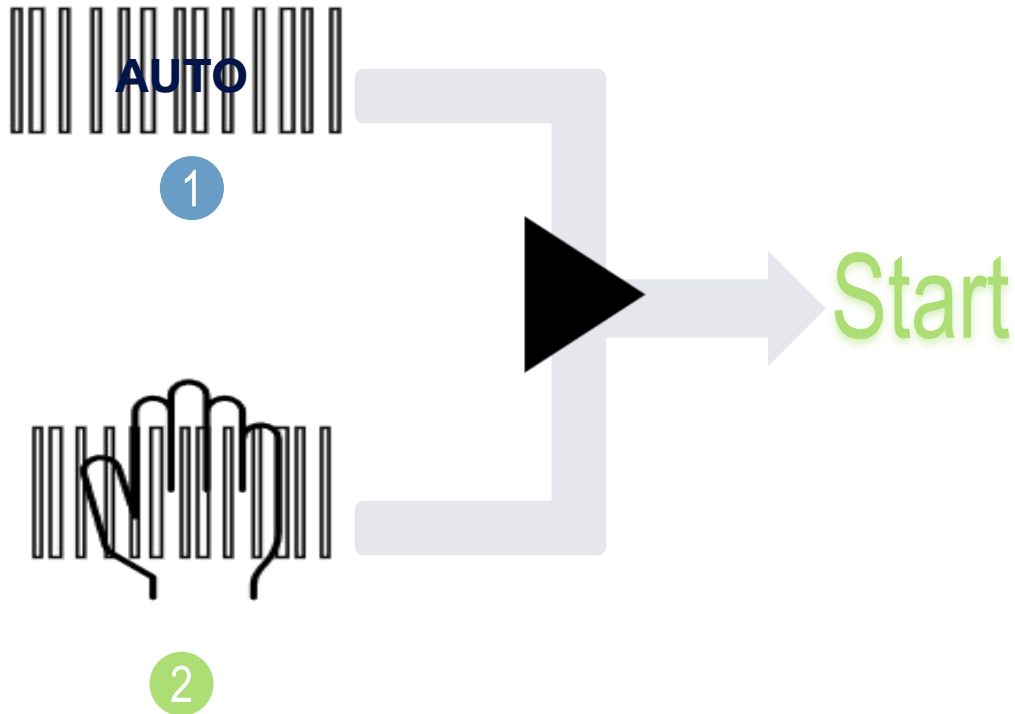
- 1 Challenge the need for SECS-GEM or 300mm like solutions
- 2 Find suppliers out of the semiconductor usual suppliers (logistic partner)
- 3 Find solution compatible with existing CIM solutions
- 4 Use the same storage density as of today

SECTION 03 : Prerequisites

Lot auto-start



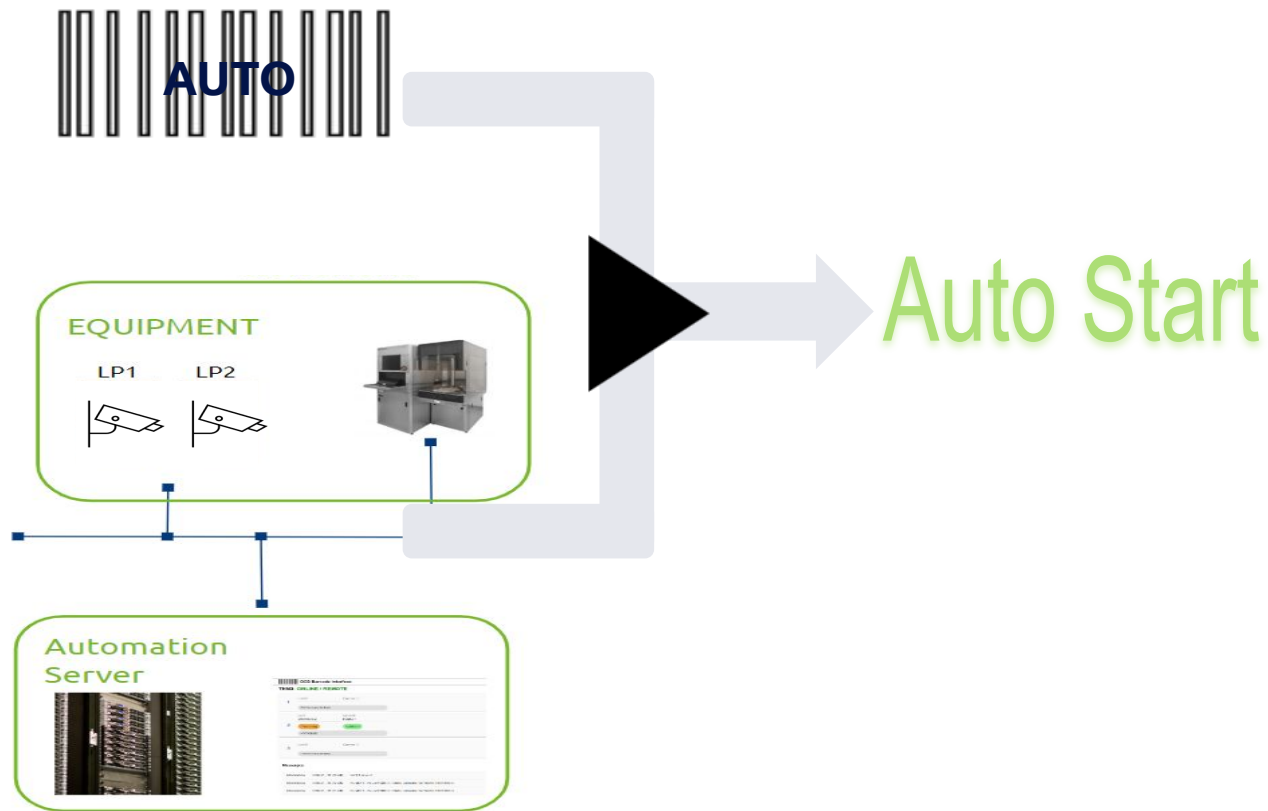
Lot auto-start



To increase automation we need to have 100% tools with auto start (Place & Go)

- 1 OEM solution is always preferred when possible
- 2 In house solution when not possible

Lot auto-start



In house solution to decrease cost is:

- 1 Compatible with CIM infrastructure
- 2 Easy to maintain (switch, camera, MAC Address)
- 3 Easy to set up (low number of RJ45 plug, electrical connection)

SECTION 03: Prerequisites

Automation



Automation

Visual inspection example



In order to reach full fab automatisation we need to remove manual step

- 1 Increased detection capability thanks to home made AI
- 2 By giving expert the training and capability to label defect
- 3 By using open source AI solution with cloud computing

Automation

GenAi



EDM



Chat Bot



CMMS

In order to boost productivity, GenAI use case under study are:

- 1 Ease access to informations to decrease training period and know-how difference
- 2 Improve knowledge sharing for problem solving

SECTION 04:

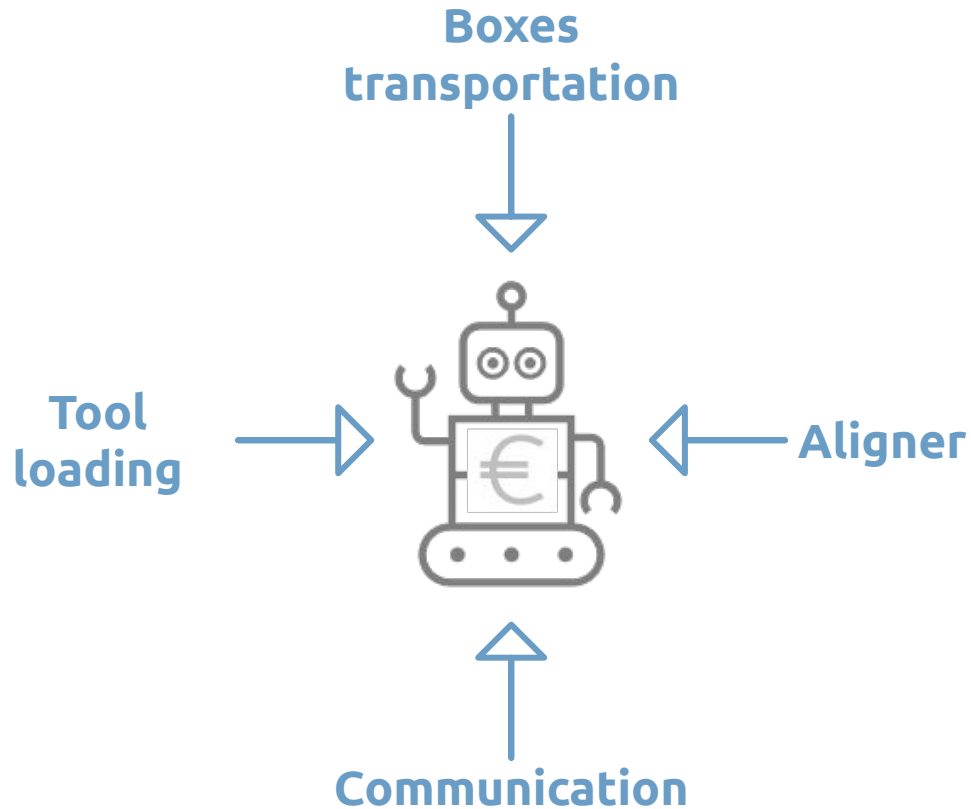
Tool autoloading

Transportation from storage to tool loader



Tool autoloading

Transportation from storage to tool loader



High value / low cost solution for tool autoloading require to:

- 1 Merge tool loading & transportation
- 2 Merge aligner when needed into mobile robot
- 3 No 6 axes integration onto mobile robot to decrease COO
- 4 Use of an AMR with low footprint
- 5 No equipment upgrade for communication

Tool autoloading

Transportation from storage to tool loader

Thanks to the first step, we can deploy autoloading automation in bay when :

- 1 Throughput is compatible (high throughput require bufferisation)
- 2 Smart storage is possible closed to the bay

And reach full automation when paired with

- 1 Auto scheduling / dispatching
- 2 Material Control System



SECTION 05

Key takeaways



*Low-cost modernization of 150/200mm fabs through digitalization and automation
is key for boosting productivity and staying competitive*

150-200mm fab automation

Key elements to increase 150-200 mm fab automation with low cost / high value solution

1

LOCALIZATION

Solution Hybrid storage

- RFID localisation on existing shelf
- Localisation thanks to low cost / high value storage



Co-build
with local ecosystem

2

START

Solution 100% autostart

- Complete integration into CIM system to
- decrease cost
 - ease the progressive scale up



Make

4

AUTOMATION

Solution AI

- Wafer inspection step
- Gen AI to improve productivity
- cloud computing
- open source solutions



Make

3

TRANSPORTATION

Solution Storage to tool

- No 6 axis robot
- integrate aligner/box opening
- no equipment upgrade



Co-build
with local ecosystem

5

SCHEDULING & DISPATCHING

Solution Auto scheduling & dispatching

- Buy semiconductor ecosystem solutions



Buy



Jerome SCHWARTZMANN

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