



BLM GROUP

Wishlist of an industrial manufacturing machine tools ***producer***

DAVIDE GANDOLFI – ADIGE SPA - BLM GROUP

WORKSHOP NAZIONALE PER IL TRASFERIMENTO TECNOLOGICO E L'ALTA FORMAZIONE

LABORATORIO EMBEDDED SYSTEMS & SMART MANUFACTURING (ESSM)

17.06.2022

About BLM GROUP



BLM GROUP HEADQUARTERS
Cantù, Italy

BLM specializes in the design and production of CNC tube and wire bending and tube end-forming equipment.



ADIGE CAMPUS
Levico, Italy

ADIGE manufactures tube laser-cutting systems and cold sawing machines for tube and bars. The product range also includes wire brushing, measuring, washing and collection systems.



ADIGE-SYS produces combination Tube and sheet laser systems, large diameter capacity Lasertube And end-machining tubes and bars equipment.

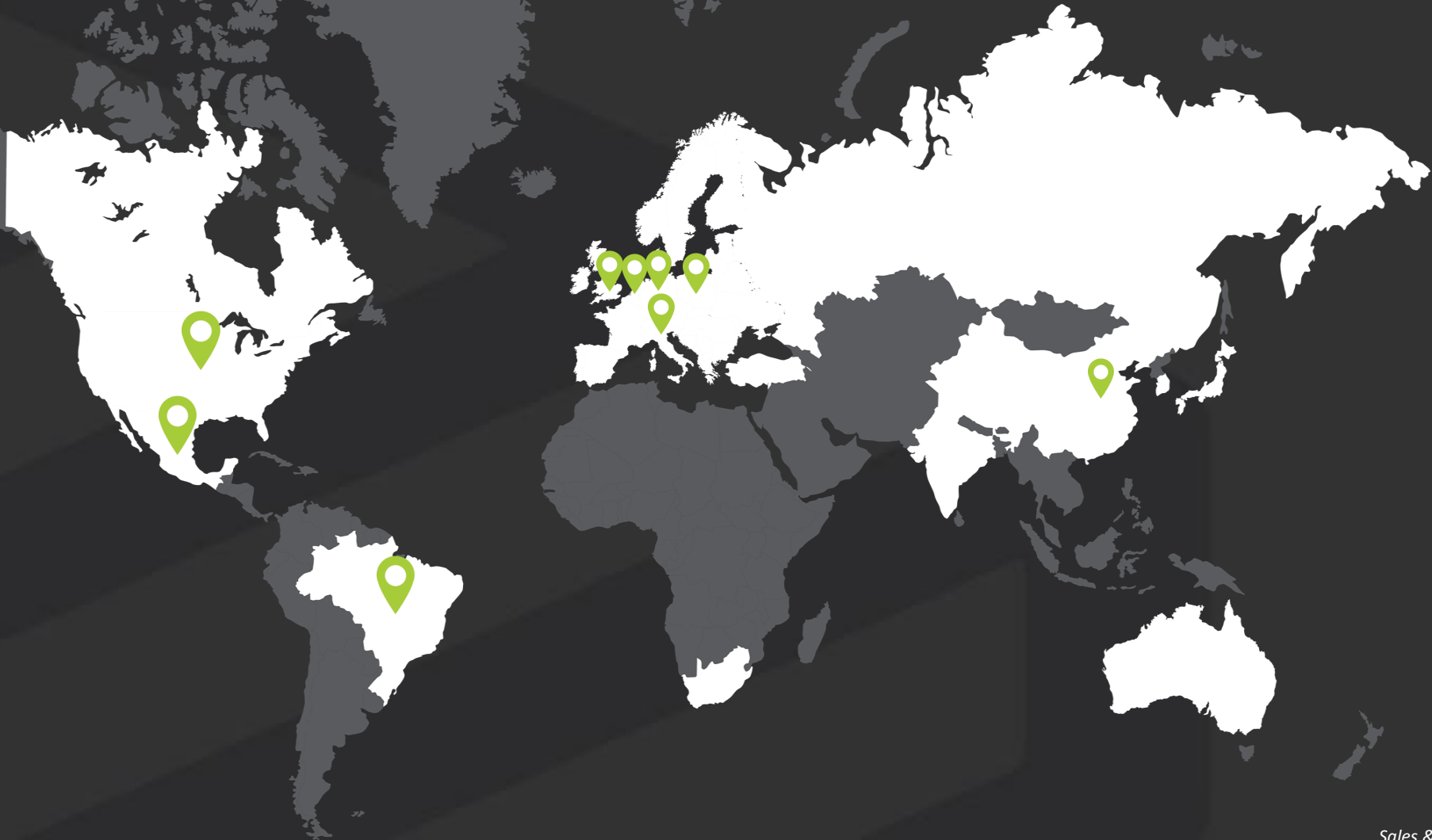
BLM GROUP develops advanced integration & automation between tube processing technologies.



BLM GROUP

Focus on internationalization

Sales and Service: close to you – wherever and whenever you need it



BLM GROUP

Focus on Research and Development



BLM GROUP

Product range

LASERTUBE | BENDING & END-FORMING | SAWING & END-MACHINING | SHEET LASER CUTTING | SERVICE



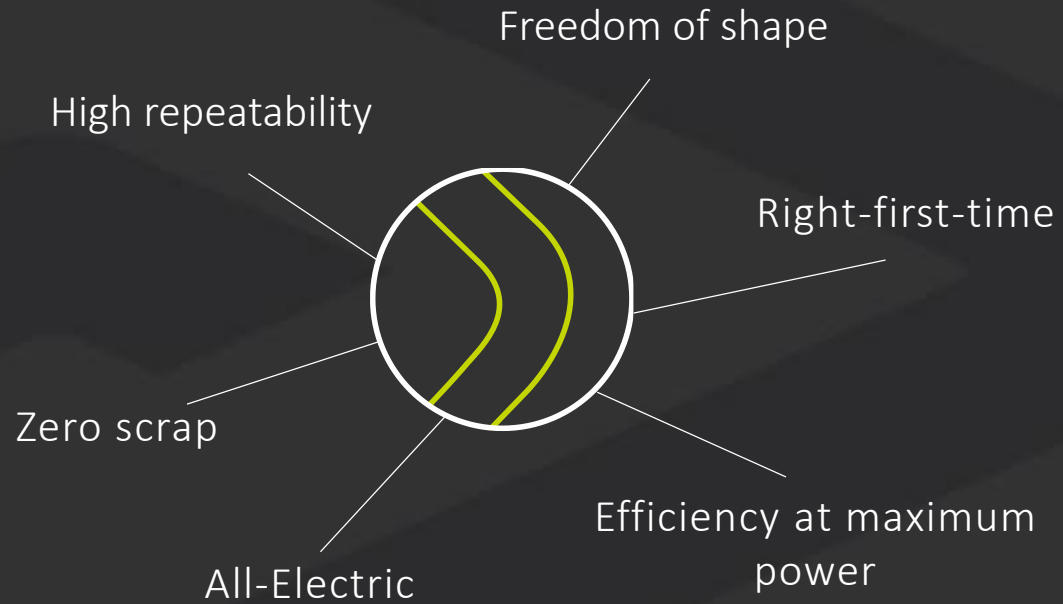
Application Fields

We provide manufacturing solutions for the production of existing and emerging products within the industrial marketplace.



Automotive - Indoor and outdoor furniture - Aerospace - Railway equipment - Architecture - Mechanical applications - Climate control - Cycles and motorcycles
Industrial and agricultural vehicles and products – Shipbuilding - Household appliances

TUBE BENDERS



16 models to meet any requirement

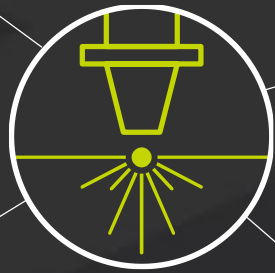


BLM GROUP

LASERTUBE CUTTING SYSTEMS

More than 2000 installations worldwide

Ø from 12 up to 610 mm



2D / 3D / 5D cutting

Tube & Sheet

Open and special profiles

10 models to meet any requirement



BLM GROUP



Lowest cost per part



Just in time production

ALL-IN-ONE PROCESS



Right-First-Time



Free design reach



BLM GROUP different technologies made for each other

The use of separate technologies has always caused difficulties. **BLM GROUP machines** are created to seamlessly marry these technologies taking in account the effects of each technology on the final product. All automatically.

SHEET METAL LASER CUTTING

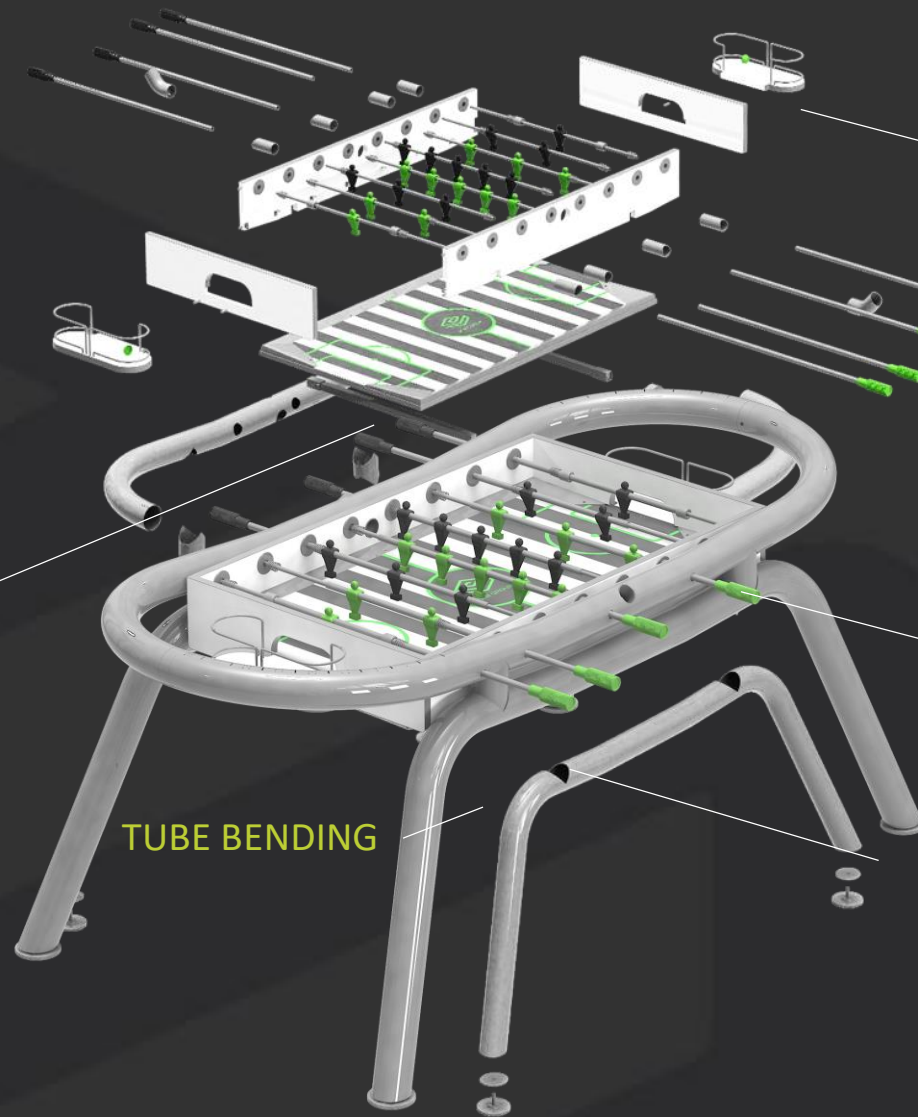
TUBE BENDING

WIRE BENDING

ENDMACHINING

TUBE LASER CUTTING

3D LASER CUTTING

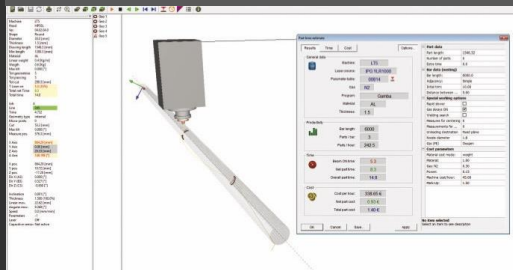


Managing daily production

QUOTATION MANAGEMENT



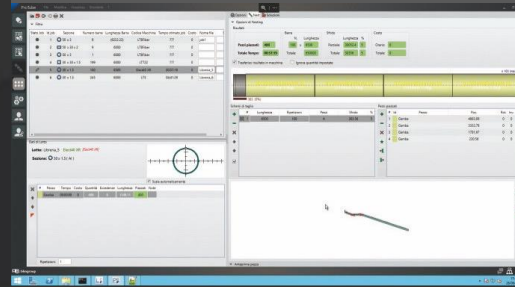
Instant quotation
Right when you need it



PRODUCTION PLANNING



Interactive way to schedule
your production



PRODUCTION EXECUTION



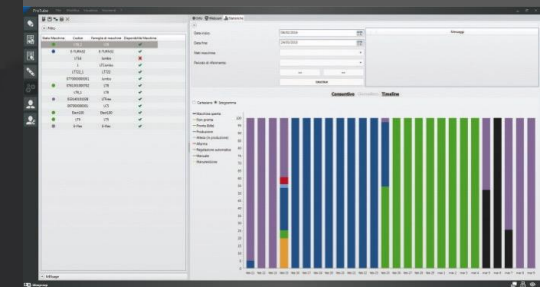
Real-time process
control

Stato Job	Id job	Nome PartProgram	Sezione	Codice Macchina	Quantità	Lunghezza	% pezzi prodotti
▶	5	Gamba	30 x 1.5	Elect40 XR	400	1549.11	<div style="width: 100%;"></div>
▶	6	Gamba	30 x 1.5	L75	400	1546.32	<div style="width: 100%;"></div>
▶	6	Fascia_Lib	30 x 1.5	L75	200	2466	<div style="width: 100%;"></div>
▶	6	traverso_L	30 x 1.5	L75	200	913.38	<div style="width: 100%;"></div>
▶	6	traverso_C	30 x 1.5	L75	200	163.95	<div style="width: 100%;"></div>

PRODUCTION MONITORING

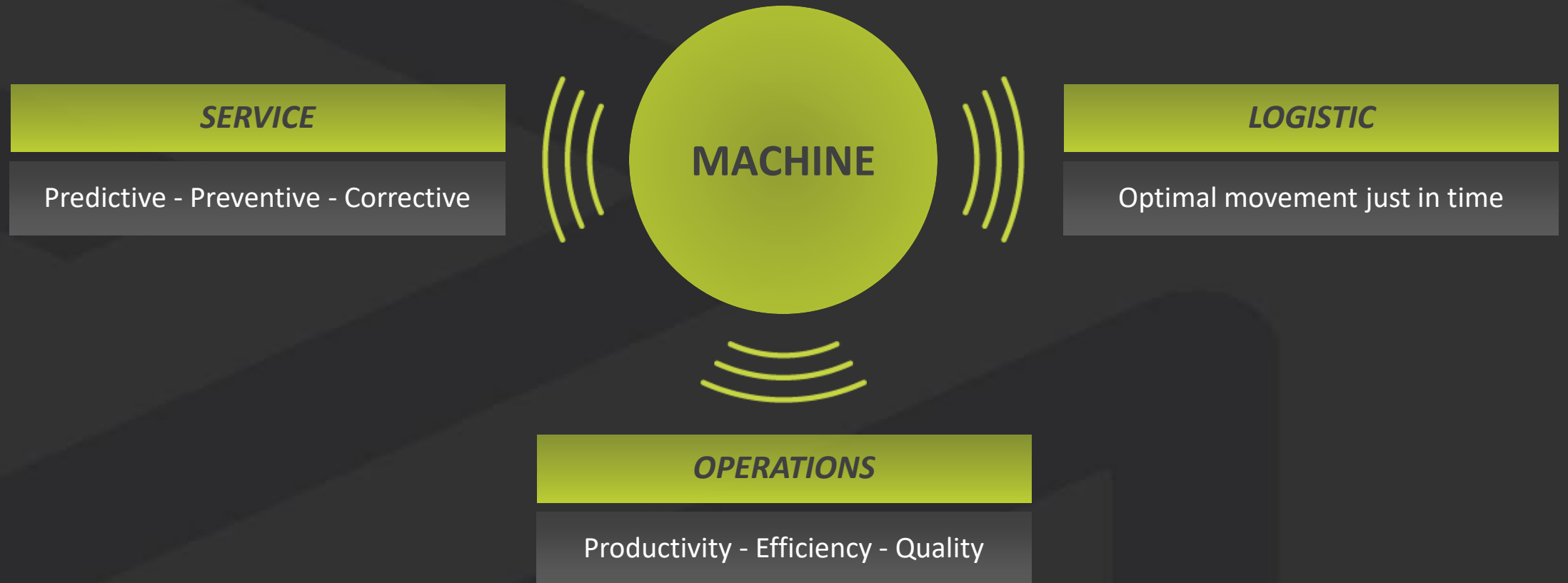


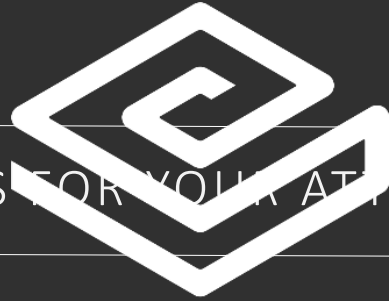
Ability to improve



Optimize the entire value chain

Focus on digitalization





THANKS FOR YOUR ATTENTION

BLM GROUP

- Dear Santa...

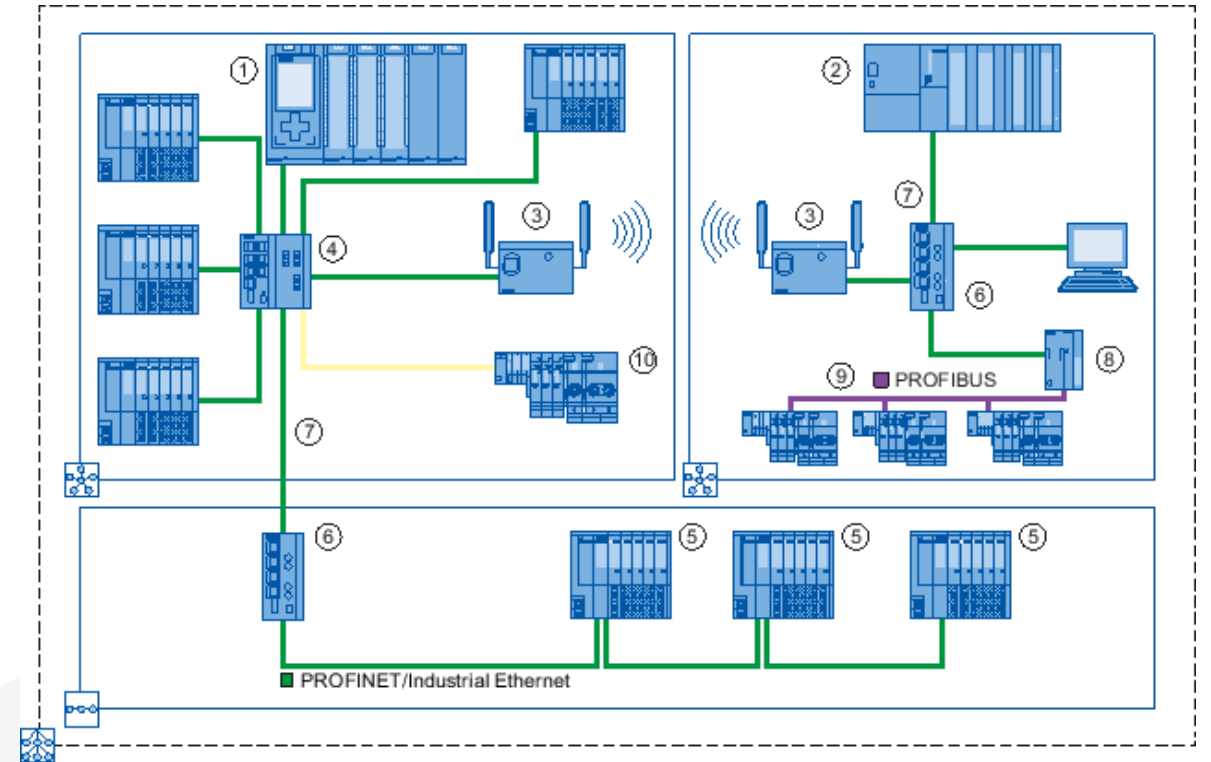
Laboratorio **Embedded Systems**
& **Smart Manufacturing** (ESSM)

Trasferimento Tecnologico
e Alta Formazione



Embedded Systems

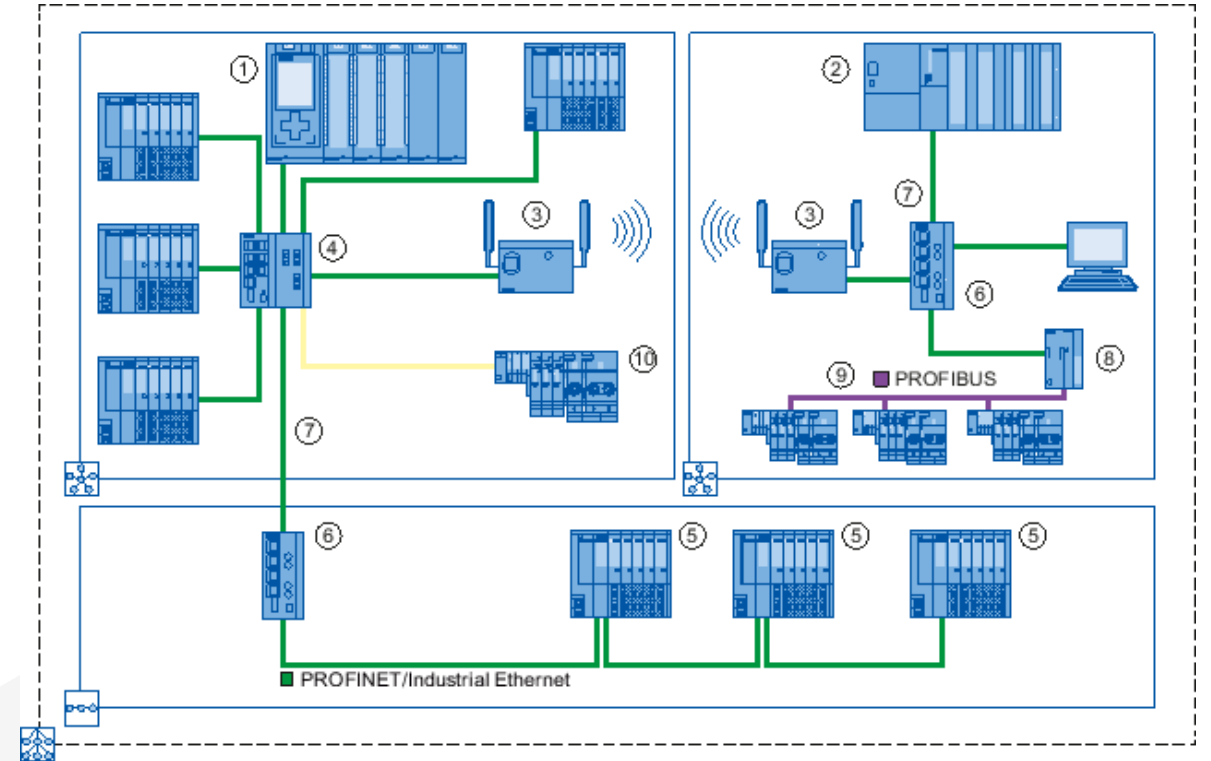
- A typical system for industrial applications is made up of several “embedded” components.
- Despite different connection topologies, the most used paradigm is the controller/device (a.k.a. master/slave, depending on fieldbus)



From <https://support.industry.siemens.com>

Embedded Systems

- Hundreds (or thousands) sensors are spread all over the machine, but they talk only to the controller and serve only one purpose.
- What if we could merge all the signals into a pool from which extract rich information?!
 - *Predictive maintenance*
 - *Production process optimization*
 - *Anomaly detection*
 - *Faulty parts detection*
 - ...



From <https://support.industry.siemens.com>

The controller is (usually) not the proper tool
→ waste of awareness

Embedded Systems

Our wish: to reverse the paradigm. The fieldbus communication should be broadcasted, moving from “point-to-point” to “**publisher-subscriber**”.

OPC-UA PubSub is a good candidate, but should meet real-time requirement of industrial fieldbus (see the recent rise of **TSN**).

We need “machine slaves” with this sort of communication options.

In this way, a PLC/CN can do its job while another unit (CPU/GPU) could mine the data through the help of **machine learning algorithms**.

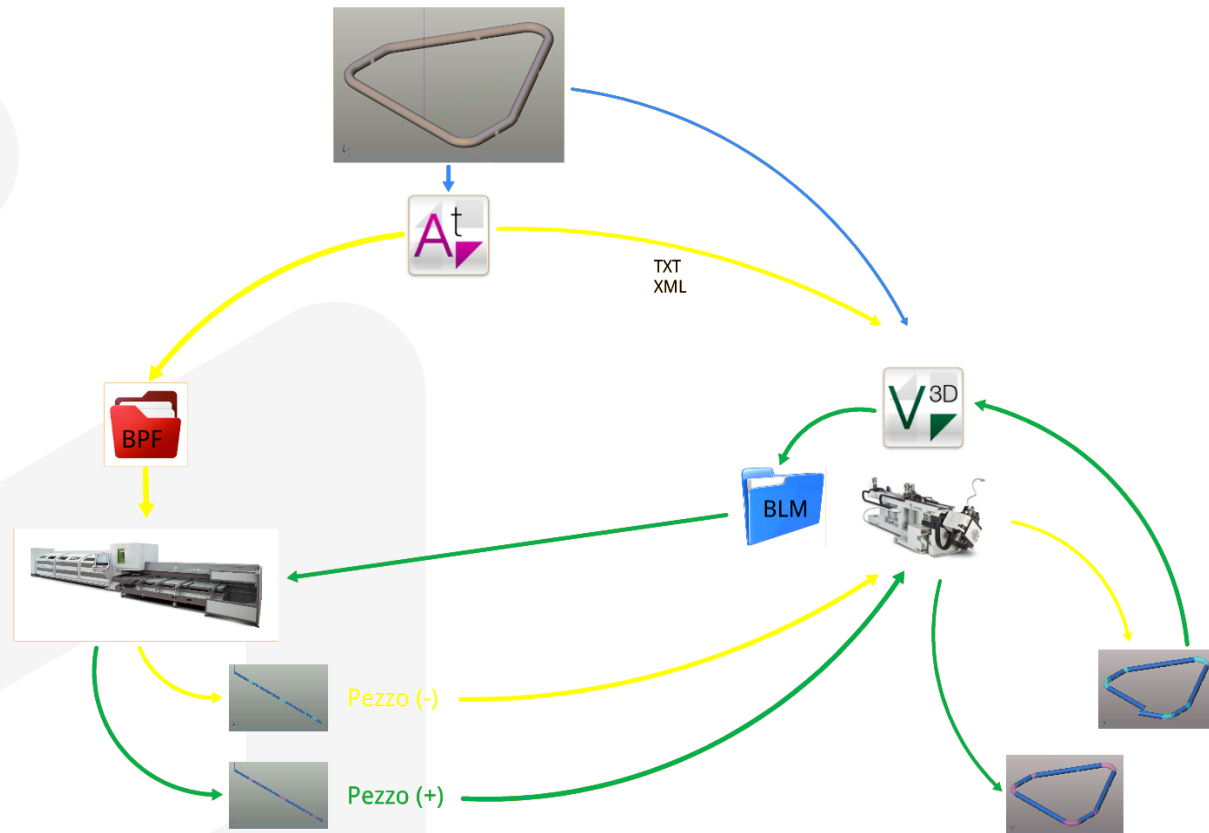


Smart Manufacturing

BLM Group cares about the full production chain of its costumers.

1) we developed the “**All-in-One**” solution, for cutting+bending multi-machine process flow.

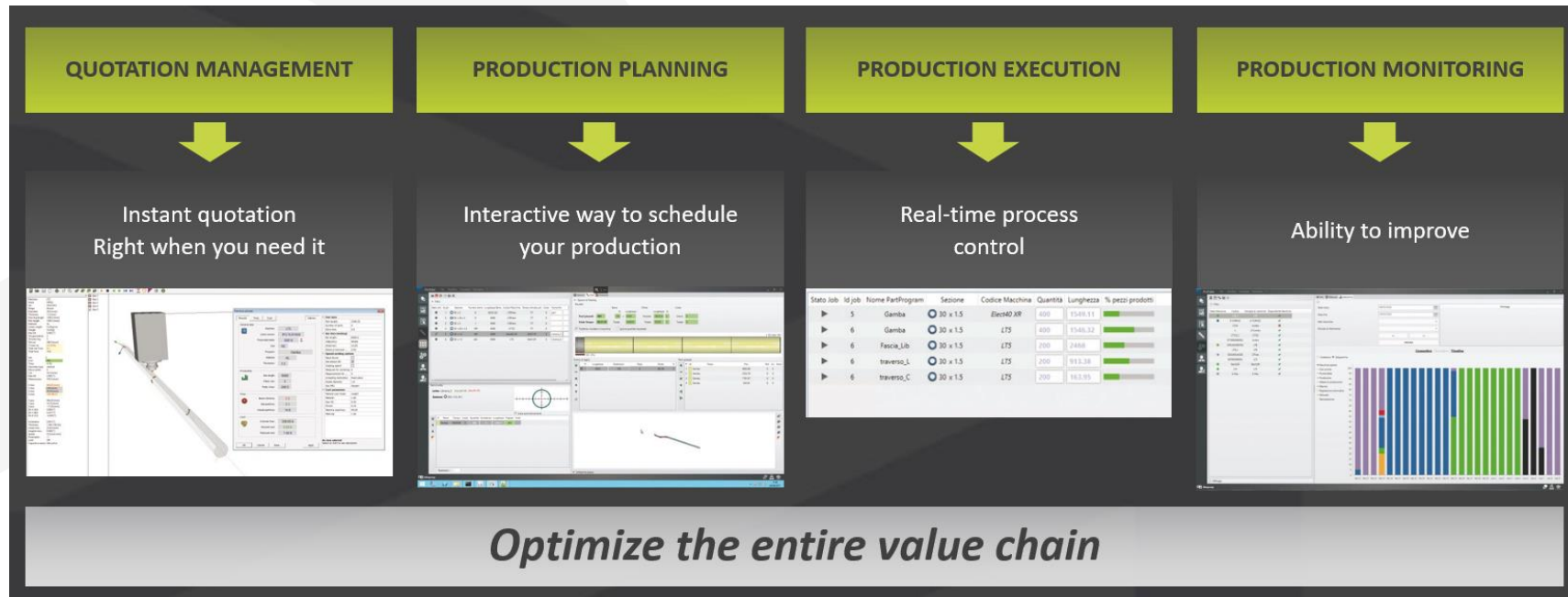
LaserTube can compensate Bender deformations... no need to act on CAD file!



Smart Manufacturing

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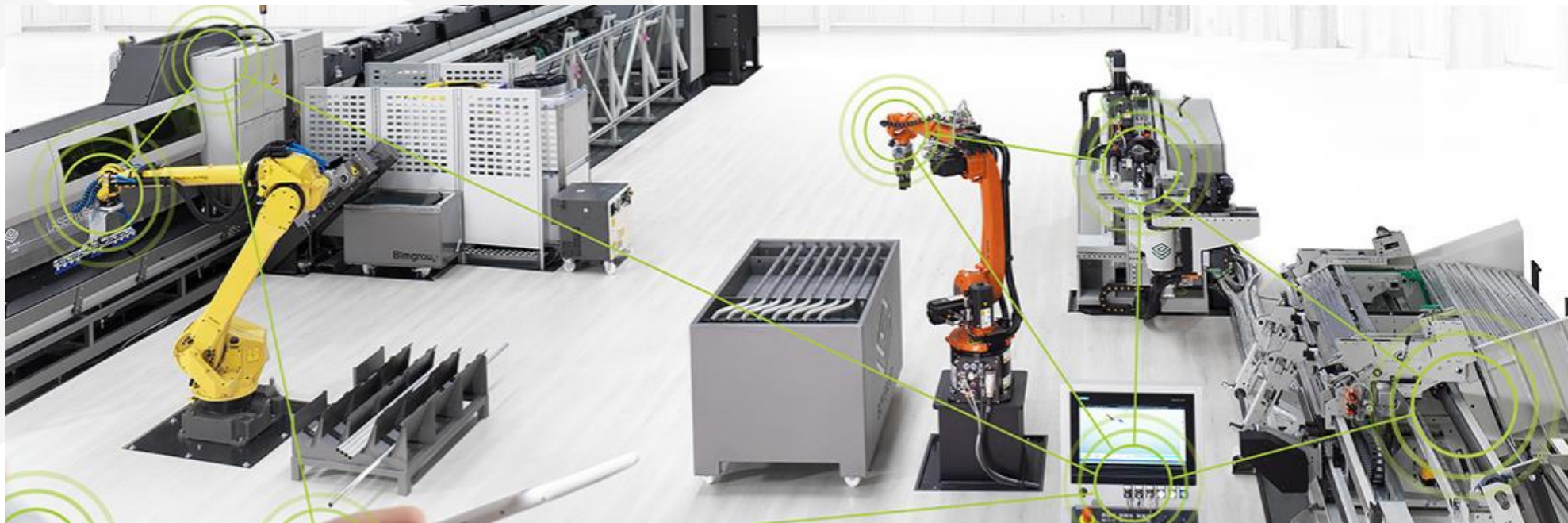
2) we developed a suite of SW tools for **MES** and **ERP** integration



Smart Manufacturing

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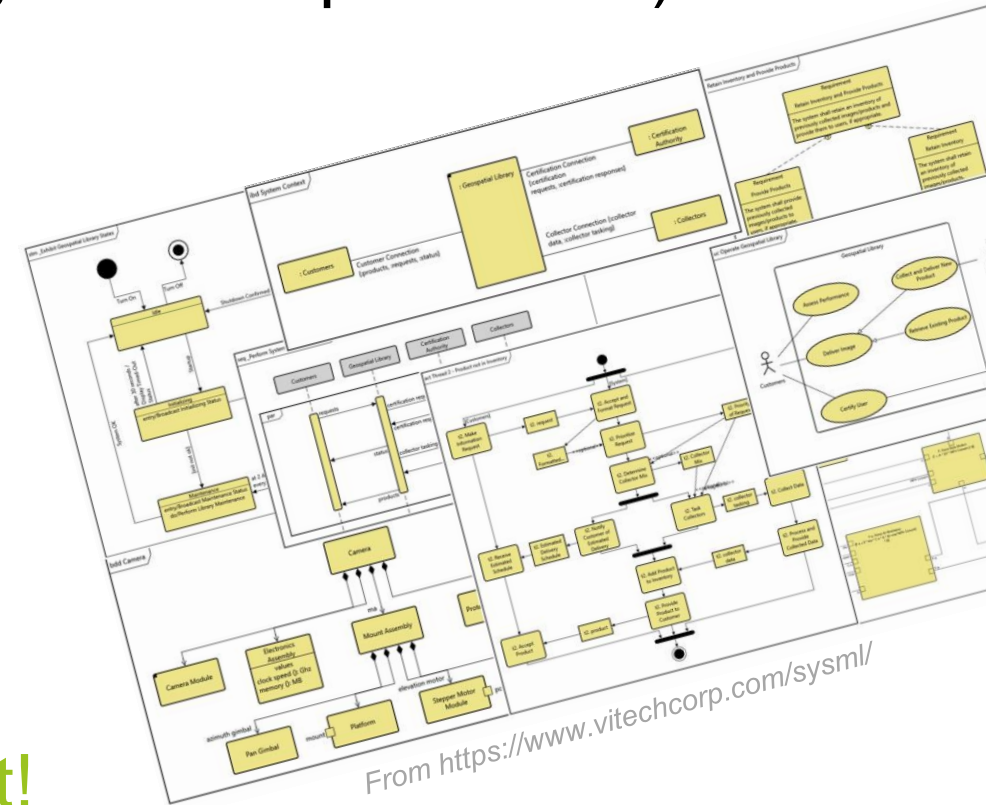
3) we go even further: we **customize solutions** with robots and automatic warehouses



Smart Manufacturing

What is missing?! A **standardization** (among different producers) of:

- processing system model
- raw material, batches and parts “parameters”
 - geometrical (theoretical/compensated)
 - handling
 - status (correct/faulty/to be reworked/...)
- machine bus or I/O
- machine data
- ...



From <https://www.vitechcorp.com/sysml/>

Good to know, you are **already working on it!**

Is SysML a promising solution?!

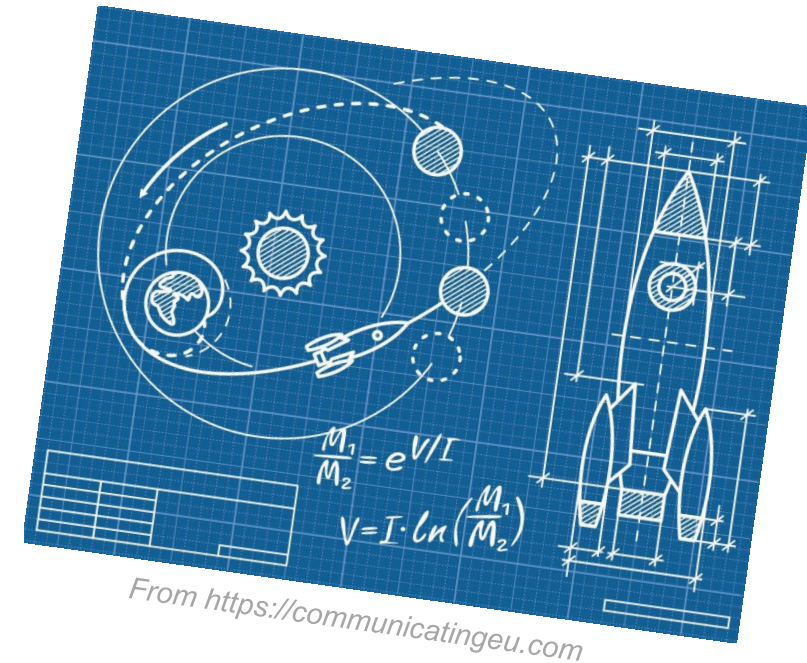
Can we create standard «blocks» and API?!

Technology Transfer

No one can be a know-it-all. It's hard to climb the (normally steep) learning curve!

We do not need rocket-science **blueprints**...

... we need **rockets!**



Technology Transfer

Technology Transfer is a process which must be carried out in **collaboration** between companies and institutions.

Laboratories and Applied Research Center can bridge the different focus (publications vs. revenue)

CINI, ESSM and ICE (together with other Italian excellences, e.g. SMACT Rovereto) are rapidly reducing the gap with the “**german model**” (see e.g. ARENA2036)



LET'S START BUILDING ROCKETS!

Thank you!!

