Digital Process Development The ModulBlok case





Presentation

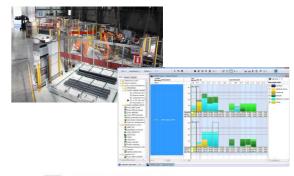
Eng. Andrea Peressi

In Modulblok since 2007, initially with the role of Production Planning Manager.

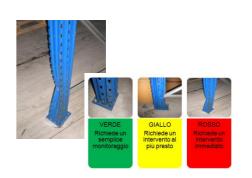
Due to previous experiences, since 2008 I started managing innovative projects in IT as IT Manager.

During this time, I had the chance to take part in in various technological and IT innovation projects as well as innovation projects in lean production and lean office projects with different roles.

Then, in January 2016, I was appointed Head of the Shelving and After Sale Inspection Service.









Premise

- A few years ago, Modulblok embarked on a path of innovation that has proven to be remarkably successful.
- Modulblok is not a special company: it thrives on the principle of improvement and order.
- We would like our case to be an example of the steps a small, medium or large organization has to undergo and that must be recognized, improved and standardized:
 - Reacting to the unexpected with dedication and effort
 - Improving the control
 - Using Data for Informed Decisions
 - Training people for the future, not just the present.
 - Regularly reviews processes to eliminate waste
 - Digitization to establish and maintain standards.
 - Anticipating Problems, Controlling Events
 - Creating a New Zero Point



AGENDA

- Company Overview
- Complexity
- Continuous Improvement
- The tools throughout the workflow
- Examples from the integrated system: SINT.MB
- Benefits
- Conclusions



Modulblok S.p.A. Overview



The company

- Industry: Production of industrial layouts
- Annual Turnover Y2021: 34 ML €
- 140 employees
- 2 plants (24.000 m² covered) on an area of 48.000 m²
- 4.000 job orders/year
- 70.000 p/n managed/year out of 370.000 active p/n







The Products

Automated Warehouses

Self-supporting Warehouses

Pallet racking

Cantilever

Mezzanines

Light Shelving













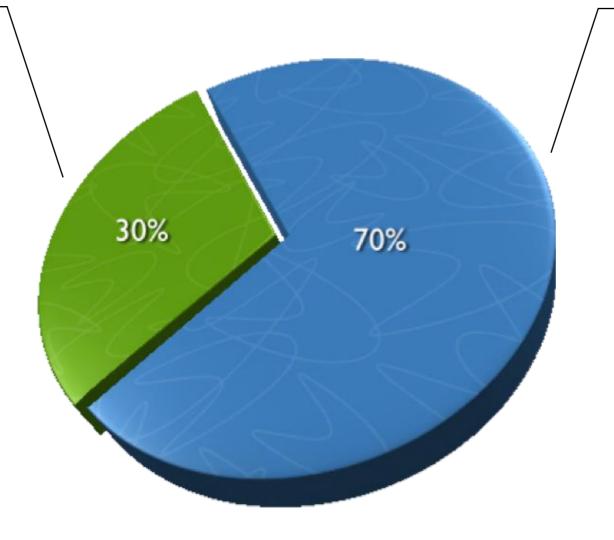
The Italian market

Automated Warehouses



In the Automatic Warehouses area, the players are manufacturers of plants and systems for warehouse logistics characterized by a high level of knowledge, know-how and technical expertise.

The final products of this segment of the market are represented by complete systems including, in addition to shelving, automatic modules and electrical mechanisms for the handling and management of stored materials. The demand for efficient and automated warehouse solutions drives the profitability of this sector.



N° of market demands per segment

Industrial Shelvings



The Industrial Shelving area is characterized by producers of metal carpentry that, starting from semi-finished steel products (strips, sheets, tubes), create static storage systems (shelving) through different processes.

The productions pertaining to this segment do not present any electrical and electronic component or element suitable for the handling of the stored goods.

This market segment is the most developed but less profitable.

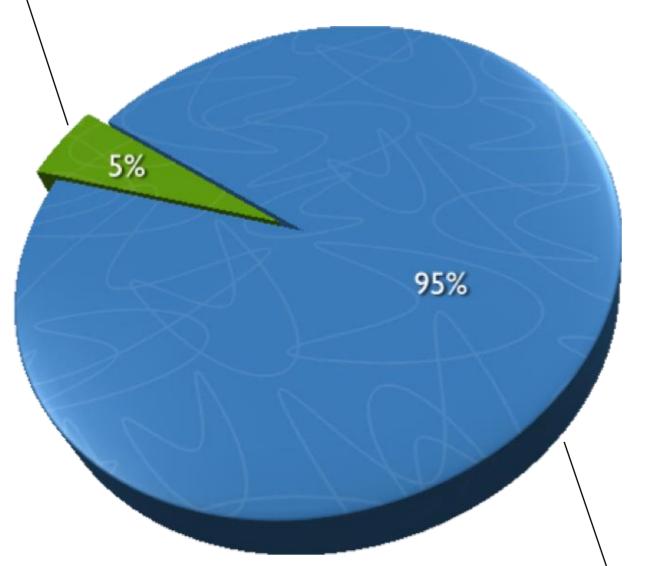


Business by projects

Special Projects

Although this segment constitutes a small percentage of our overall presence, it ensures the company's profitability through modest yet consistent profit margins.

Over the next five years, Modulblok is poised to further solidify its position in this segment, leveraging its distinctive internal expertise. N° of inquiries to Modulblok by segment



This segment not only ensures the sustainability and continuity of the company but also maintains a strong market presence. Additionally, it provides discrete opportunities for product innovation.

Industrial Shelving



The Modulblok path

1976	Establishment of the sole proprietorship
2001	Transformation in S.p.A. (joint-stock company) and introduction of the first ERP system
2005	Initiation of semi-automated warehousing programming
2007	Kick-off of the schedulator and MES
2008	Adoption of the Lean Thinking and membership in the CUOA Lean Enterprise Center
2009	Successful implementation of the first SMED construction site!
2010	Expansion of Lean practices, including the first 5S in the IT area
2010	Integration of Lean principles into office operations and development of ideas for a new Lean computing structure
2011	Decision to adopt ERP LEAN for streamlined processes. Streamlining is the watchword
2013	Go live of Sage ERP X3: new lean ideas are growing!
2013	Dematerialization of workflow, KPI, costs: a Planning systems to support the MES
2013	New Lean Office project: manage the workflow in the Design Office with the support of SAGE
2014	Lean office in the structural engineering area
2015	Introduction of a new PLM and New Configurator, with integrated Project management
2015	The new communication: lean digital communication with SINT.MB
2019	Acquisition of LOGOUT srl, compay specialized in shuttle automation
2021	Implementation of a fully digital inspection service process via the EasyService software
2022	Today- The innovation at the forefront



The distinctive features of Modulblok

- Customer-oriented approach to both product and project
- Safety, technology, and process certifications
- Registered trademark ensuring the integrity of the company brand
- Wide range of products
- Profound technical design expertise
- State-of-the-art technological systems
- Certified production
- Commitment to employee health and safety
- Emphasis on Lean Production principles



COMPLEXITY



Our complexity

Modulblok is a typical "Customer Oriented" organization.

Maximizing benefits for our customers is a "must"!

This is why Modulblok is the typical "Make to order",... but also "Engineering to order".

In this scenario, we can normally manage:

- Aprox. 4000 customer POs/year
- More than 15.000 concurrent customer's order lines
- More than 25.000 active production orders
- More than 370.000 active articles with their respective variants
- More than 400 available colours
- More than 15.000 ton/years per shift
- Possibility to manage 3 shifts per day on bottleneck centres



Our Vision

The more complexity grows → the more it is necessary to improve workflows

Improved Workflows → Streamlined Workflows (LEAN)

Lean Workflows→ Need to standardize and measuring

Bur, what does the market expect from us?

We must «imagine»... and act quickly



CONTINUOUS IMPROVEMENT



First tools: new questions

Responding effectively and quickly to the new market requires:

- Greater flexibility
- Reduction of inventories and WIP
- Dynamic adaptation of the production capacity to the new levels of demand
- Better governance of forecasts and internal processes

This means increasing the REACTIVITY of the supply chain (the corporate logistics chain)

To achieve this, it is needed:

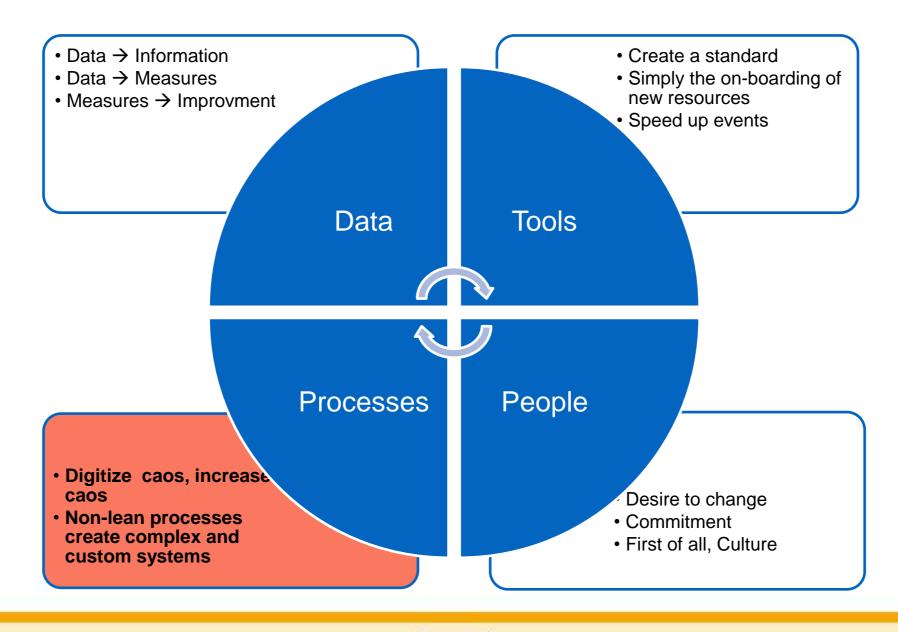
- Better control of the production
- Real-time monitoring of workloads
- Comprehensive planning with instant insights into potential delays
- Simulation capabilities for efficient management of capacity, personnel, and scheduling
- Enhanced visibility control for departments and processes
- Real-time communication, both internal and external to the company



The solution: Innovate

Simply to say.

The success of an innovation requires 4 important levers:





Technologies enabling innovation

- Complexity of information
- Quantity of information
- Complexity of processing required
- Flexibility in managing information







Technologies enabling innovation

- Lean MES
- Lean ERP lean with workflow mngt.
- Monitoring job orders
- Interactive, simulating planning
- Monitoring Quality of Processes, Products, Production
- Business Intelligence and KPI
- Document mngt. systems for KnowHow
- Integrating customers and suppliers
- PLM and Configurator
- Technical and sales Estimate tool







The tools throughout the workflow



Not just what, but also who

When determining tools for the improvement process, it's crucial not only to identify what to implement but also for whom and for what purpose.

In our scenario, the Head of IT also serves as the Head of Production Programming and maintains close proximity to the departments. However, what about the involvement of other corporate entities?

OBJECTS

3D MODELS DRAFTS ASSEMBLY PLANS

ARTICLE

- ARTICLE TECHNICAL DATA
- DATA BY JOB ORDER
- AGGREGATION BY MODELS
- CONNECTION WITH ERP + OTHER TOOLS
- SEARCH CRITERIA

LAYOUT

- 2D
- PLANNER (2DEditor)
 - * 2D
 - * 3D SIMPLE+INTERACTIVE

USERS

UGAV

SALES TEAM

TECHNICAL TEAM

ESTIMATES TEAM

AGENTS

ANYONE SHOULD CREATE LIST ESTIMATIONS

ADMINISTRATOR

MAINTENANCE TEAM

TOOLS

WEE

- BILL OF MATERIALS
- PLANT SYSTEM
- OFFER

2D CAD 3D CAD

ESTIMATE SYSTEM

- BILL OF MATERIALS
- SIZING OF THE PLANT
- DATA FOR DRAWINGS' COMPONENTS
- DATA FOR INITIAL LAYOUT
- OFFER
- INTERACTIVE EDITING OF ELEMENTS ON SIMPLE 3D MODEL
- CONNECTION WITH PDM
- CONNECTION WITH WORKFLOW AND DOCUMENT MNGT. SYSTEMS

CONFIGURATOR

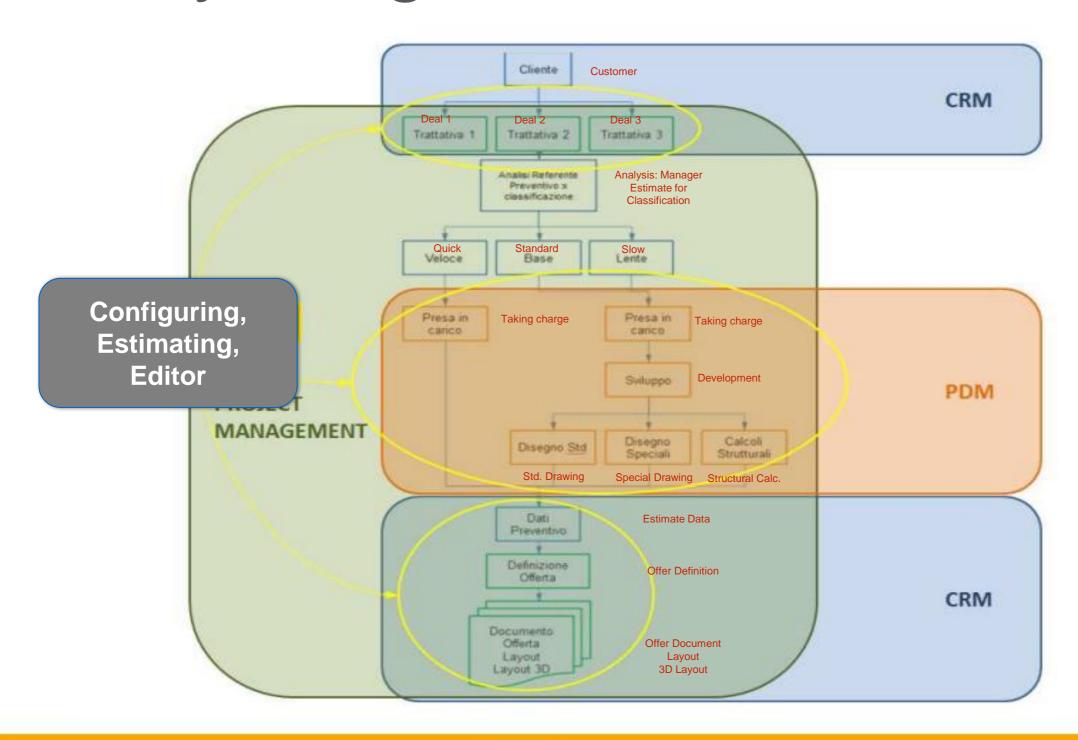
PDM CRM

WORKFLOW

PROJECT



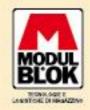
How they integrate in the workflow



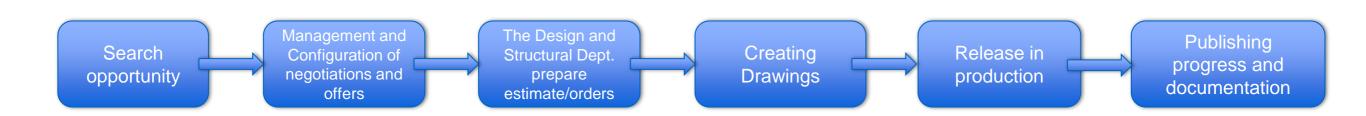


The ModulBlok integrated system

The transition towards simplification and comprehensiveness



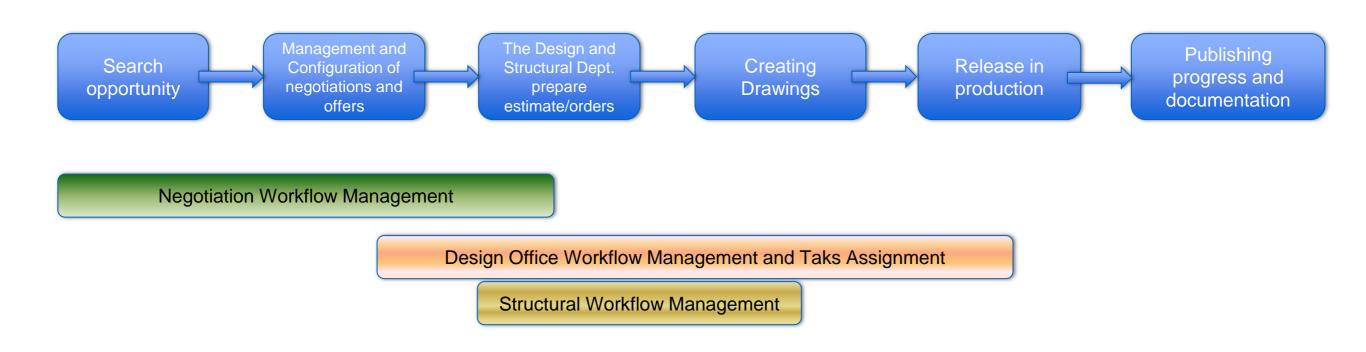
The macro step of the workflow





Each step, a diffrent management

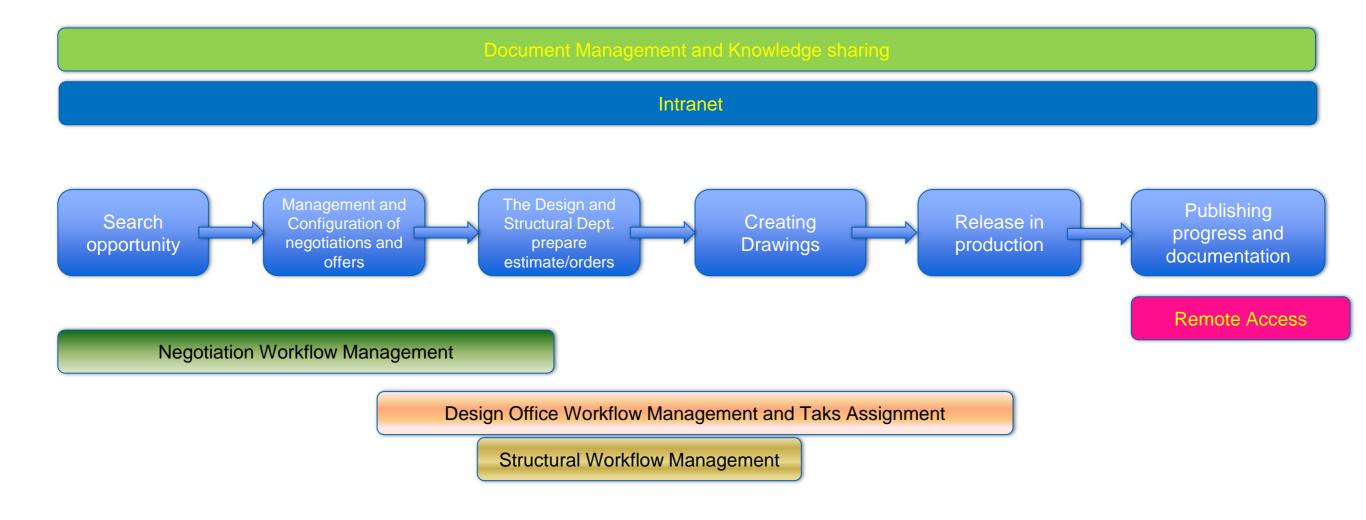
Management, seamless flow, meticulous organization, and robust support tools at every stage.





The tools for sharing

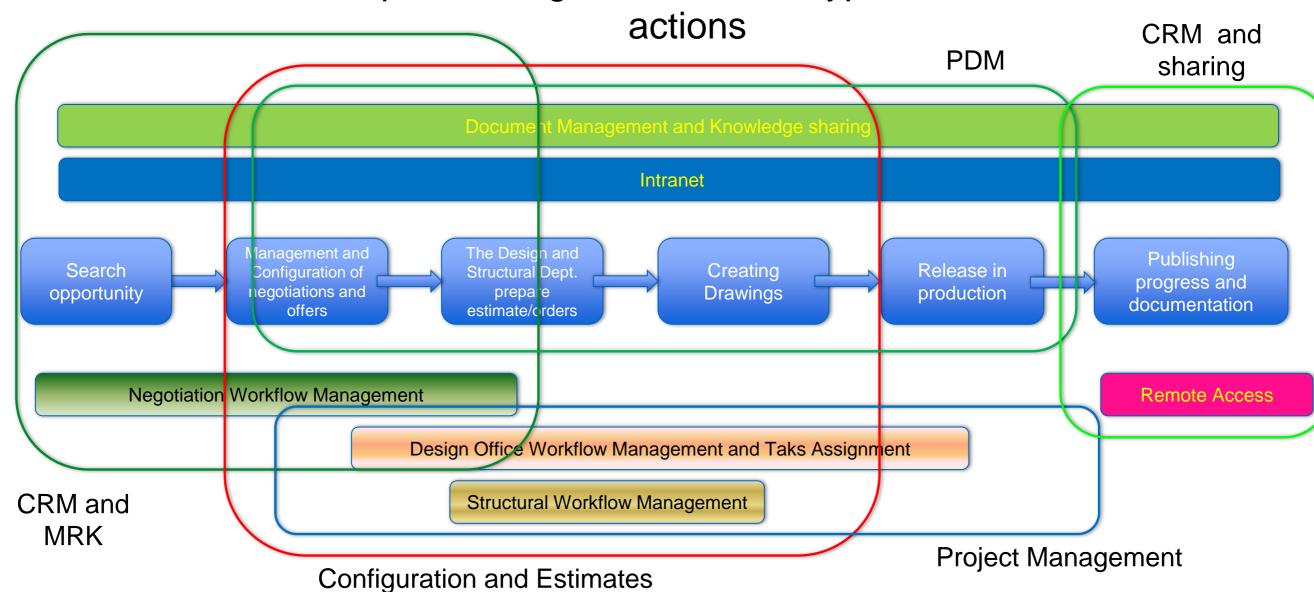
Sharing knowledge and projects requires a set of tools that are able to standardize the corporate «language»





Integrated systems?

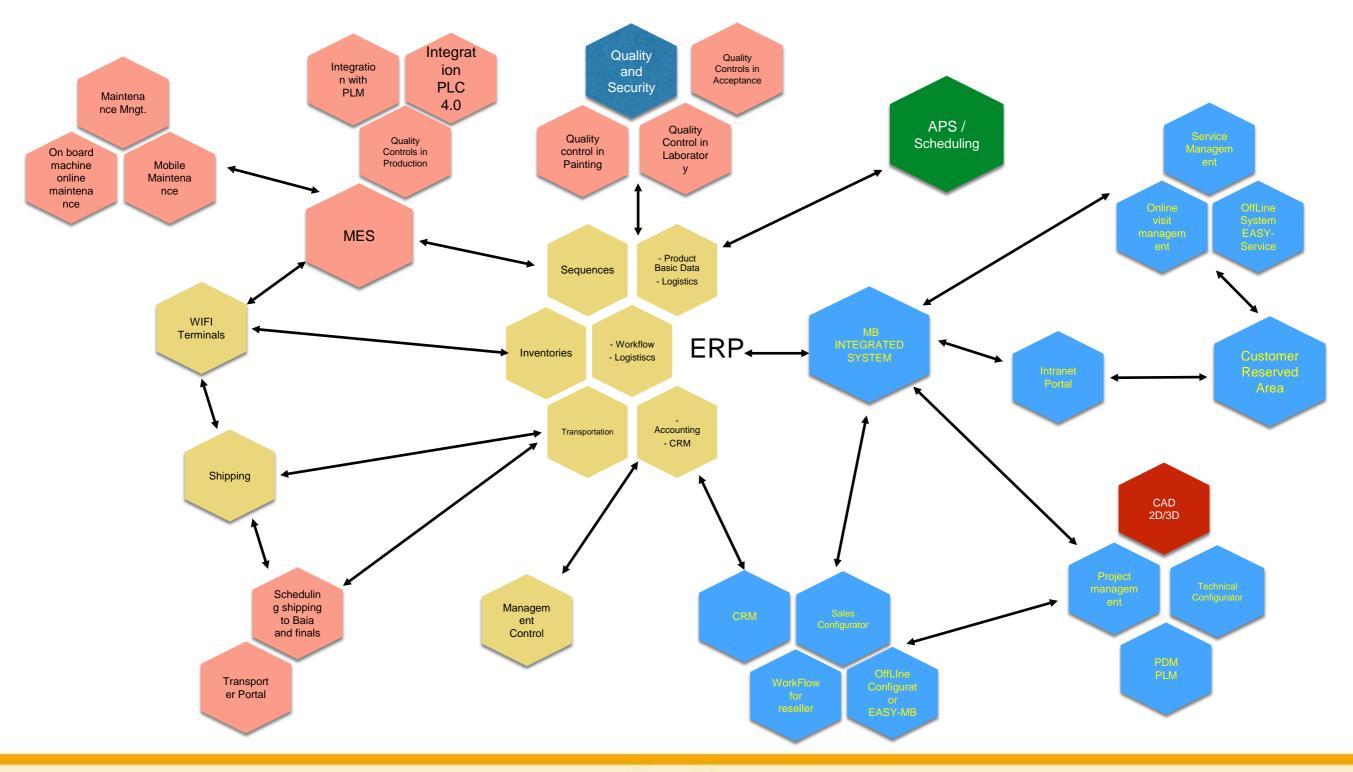
Each part belongs to a different type of tools and



The models, drawings, and layouts should not only serve the purpose of PDM but also extend their utility to documentation, orders, and automated support functions. Let's concentrate on optimizing value-centric activities



The logic architecture in RealTime





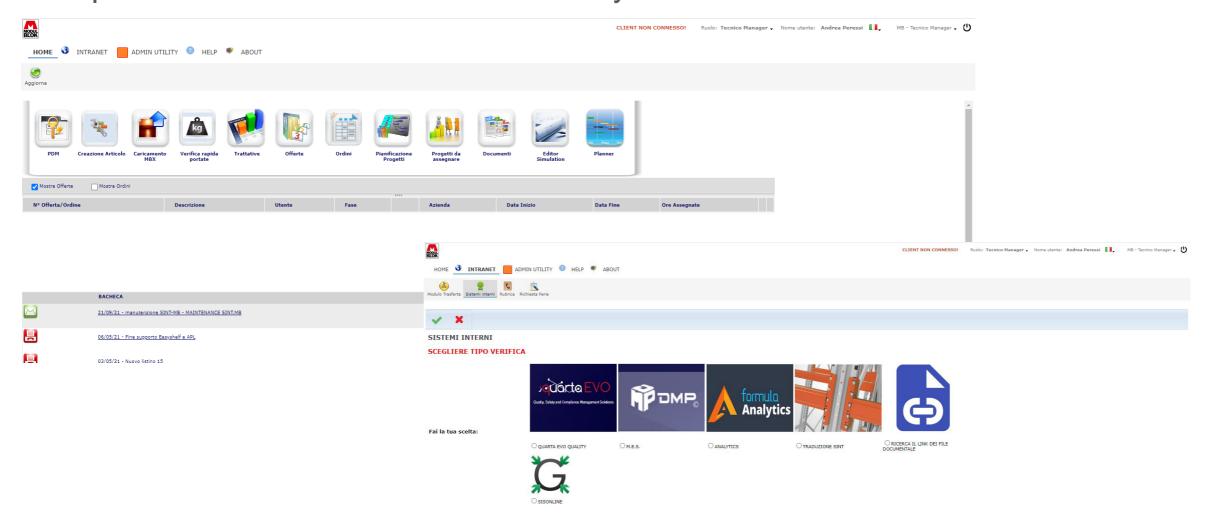
Examples from the SINT.MB Integrated system

using all the modules of the RuleDesigner Suite



The SINT.MB portal

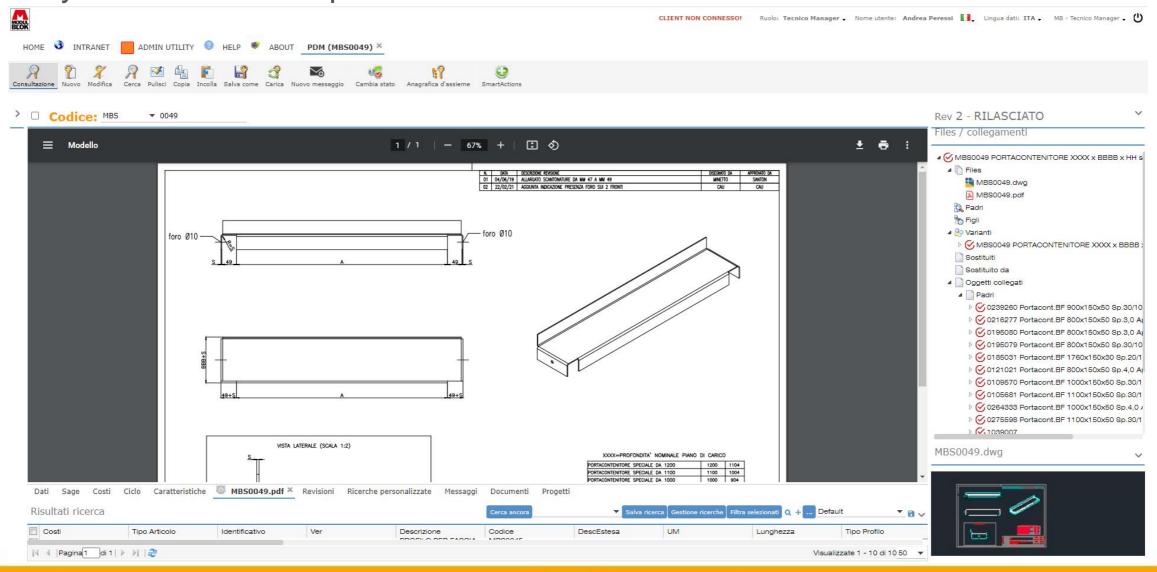
The true desktop of business processes should be simple, intuitive, user-friendly, and provide seamless access to other systems..





The PLM-PDM management

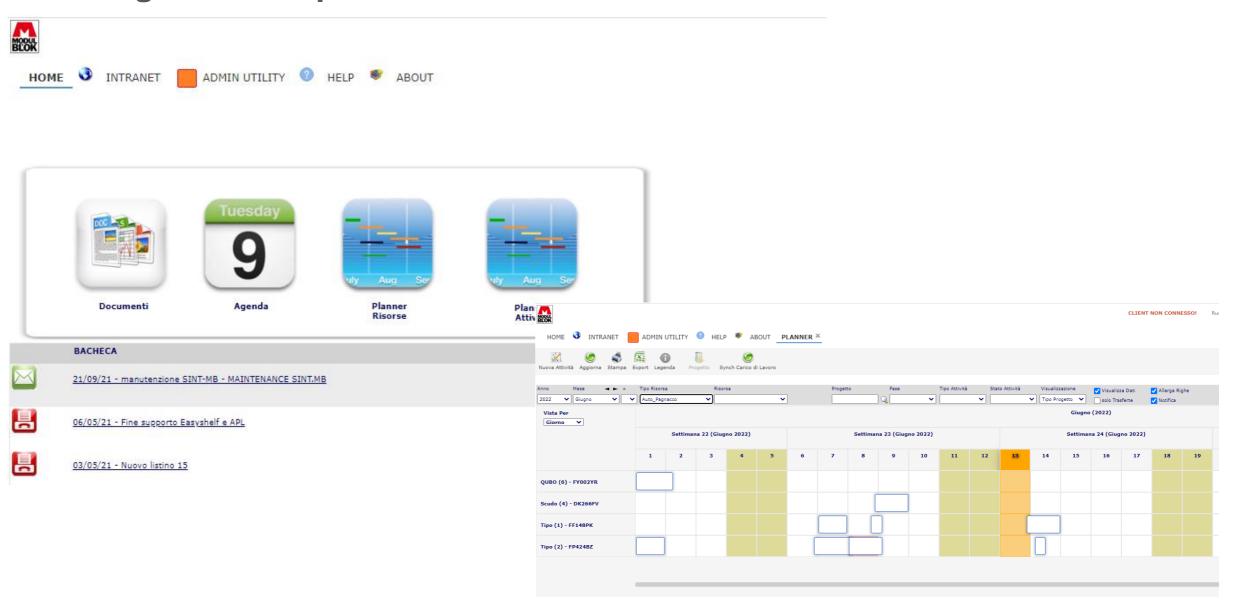
Knowledge sharing, standardization of product development methods, and revision management are essential for companies. A singular repository ensures all business systems draw upon it, guaranteeing the security, uniqueness, and accuracy of technical and production data.





Intranet and internal processes

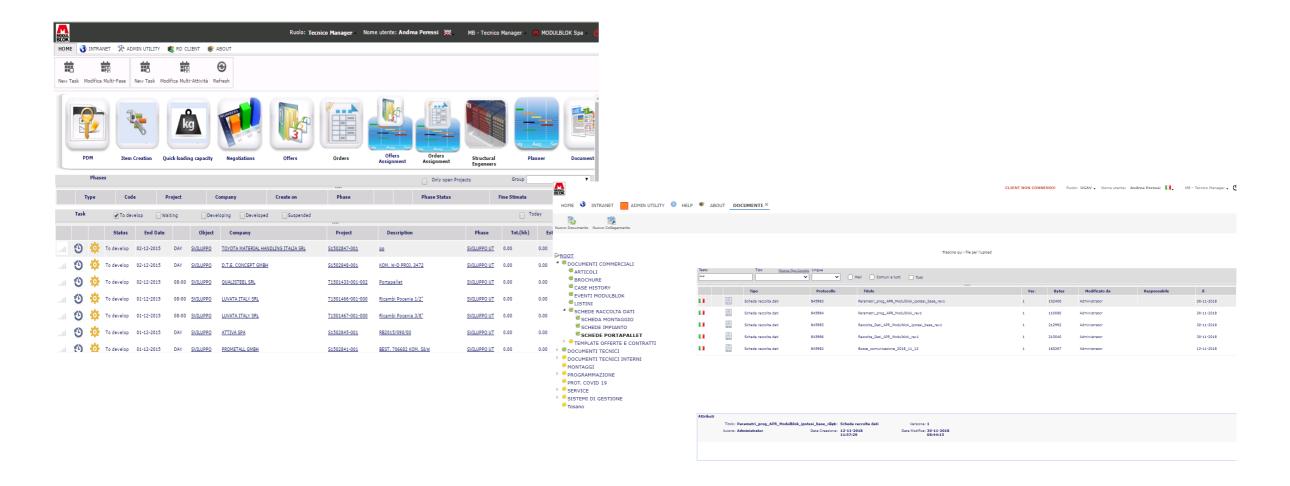
Management of agendas, calendars, user records, information, room and car booking news are published in a short time.





Managing documents and communication

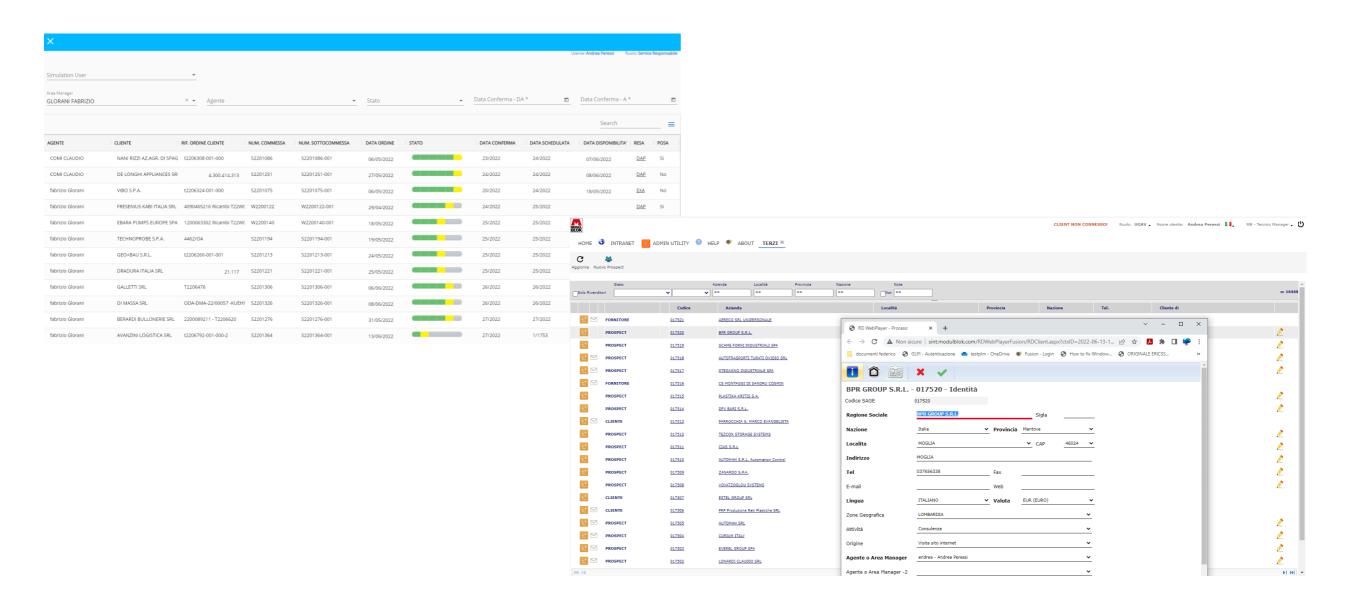
SINT.MB fosters connectivity among individuals within and outside the company, seamlessly integrating PDM, PLM, Documentation, Offer Creation, Configurator, Graphic and Interactive Estimator, CRM, and Order Portal. This unified connection ensures protection and enables real-time Knowledge Management.





CRM

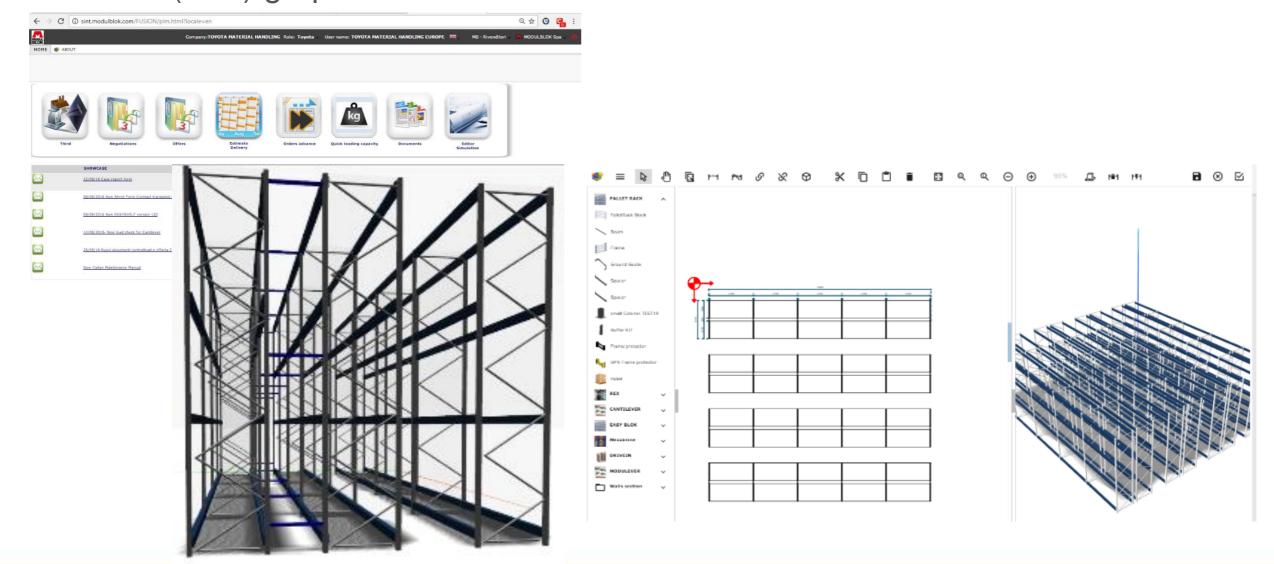
Customer management, their history, appointments, portfolio: all necessary data from anywhere in the world.





Integrated estimates

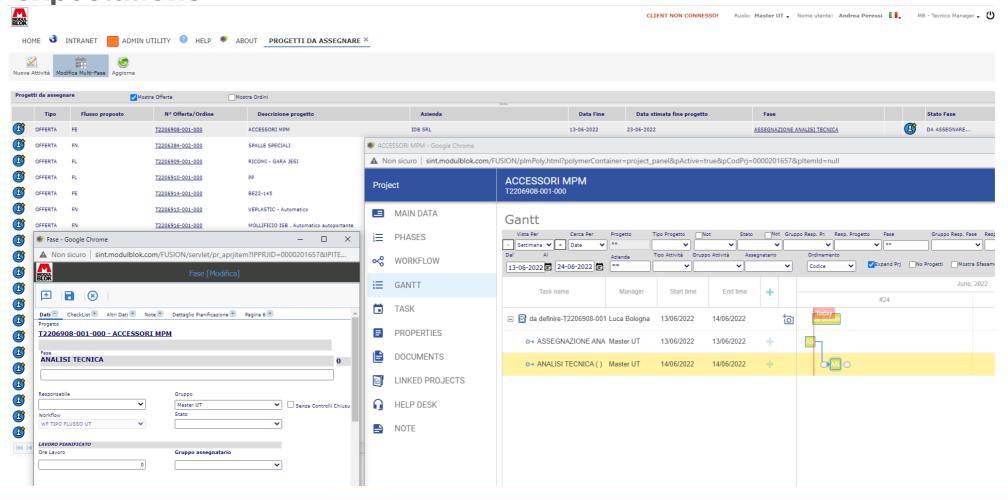
Can knowledge management be seamlessly integrated with sales? Commercial tools and configurators often lag in integration with company systems and fail to keep pace with technology. In practice, however, it is viable to develop interactive, distributed (web) graphic tools.





Project management

Effectively managing a project becomes challenging when it involves multiple entities and necessitates iterative development loops. Proper planning of human resources requires meticulous management of states and accurate time declarations. Having insights into the final estimate and timelines from the technical office enhances the ability to strategically plan deliveries to meet customer expectations.

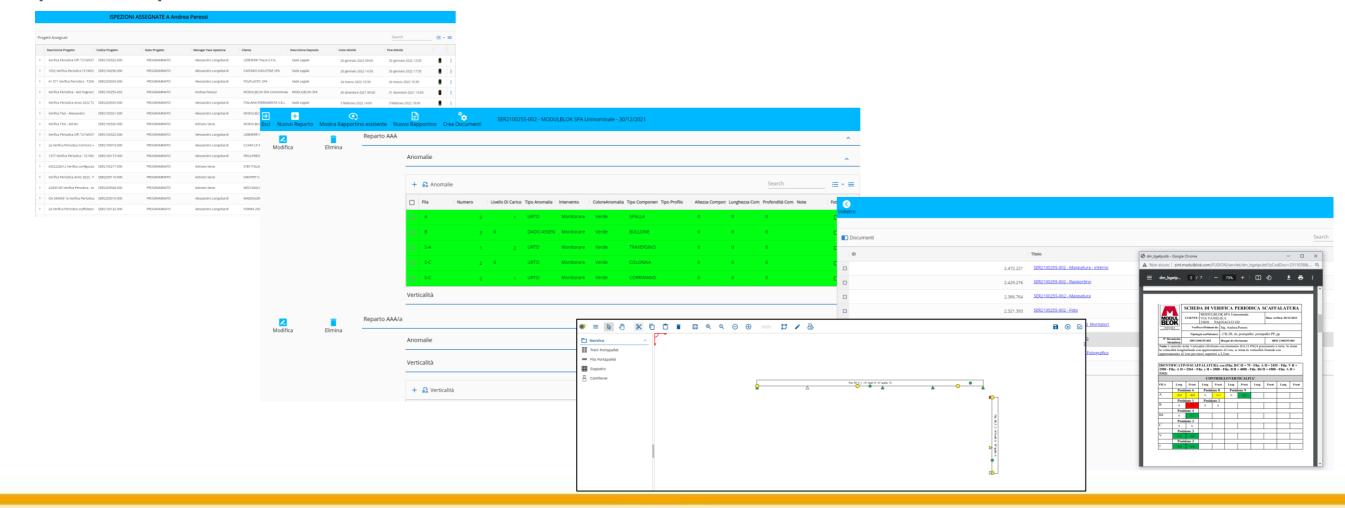




Managing Online and Offline Inspection Visit Services

Integrating services into business processes? Absolutely!

Inspection visits are integral to the Modulblok process and demand a unique yet distributed approach—online and even offline. The aim of process improvement is to eliminate paperwork, expedite processes, enhance the frequency of visits, and provide premium customer service.

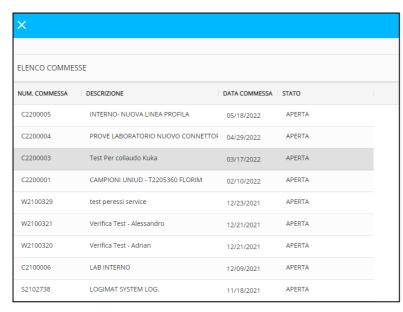


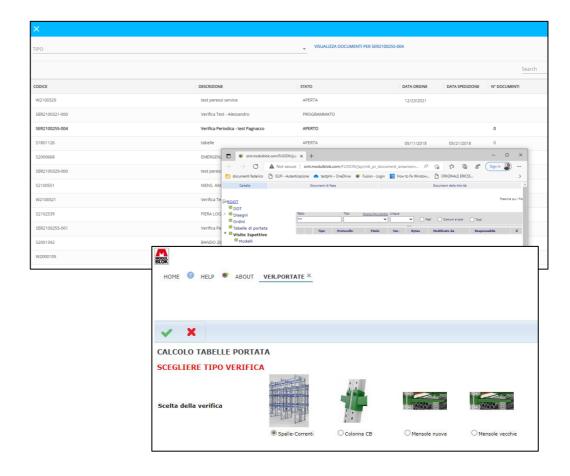


Customer and Supplier Area

Sharing tools, information, progress and document updates with the customer is part of the services that can be offered, guaranteeing the security of data and external access.











BENEFITS AND CONCLUSIONS









The Benefits

- Quick response time
- Control of processes and costs
- Real-time decision making
- Guaranteed and distributed Know-how
- Standardization of processes
- Cost reduction (-30%)
- Lead time reduction (-40%)
- Increase in service level (+35%)
- Repetitive and controllable process both internally and externally to the company



Why digitize an integrated flow?

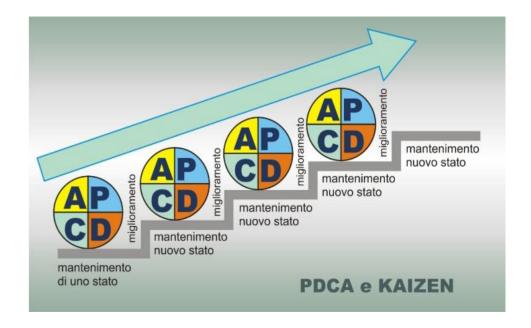
- When scrutinizing the flow in a streamlined manner, digitalization concurrently slashes communication costs, enhances data security, and refines standardization.
- Effectively managing an integrated flow provides real-time control, enabling the company to shift from a mindset of "what can I answer" to "okay, where can I further enhance," ensuring a swift and adaptable value flow.
- The computerization of an integrated process mirrors an integrated digital twin of reality. Simulating and designing in the digital realm facilitates improvement initiatives.



How does software create lean standards?

When the integration of systems takes place with a project of analysis and streamlining, in addition to the direct economic and management benefits, whose returns have been seen in a few months, there are also indirect benefits often unexpected.

- Effortless on-boarding of new staff
- Process repeatability
- Quick Analysis
- Rapid communication
- Shared tools



The above are among the emerging standards that swiftly become the new norm of thought and behaviour.

Embracing these standards fosters mindset that encourages continuous enhancement.

This is the perspective individuals should adopt to sustain ongoing improvement initiatives.











