



L'INTELLIGENCE MANUFACTURIÈRE AU
SERVICE DE VOTRE ENTREPRISE
INTELLIGENT MANUFACTURING SERVICES
FOR YOUR BUSINESS

IMS - PRODUCT LIFECYCLE MANAGEMENT (PLM)



NTS PLM is a complete advanced product lifecycle management solution that centralizes complex product information.

What is PLM?

Product Lifecycle Management (PLM) has more to do with managing descriptions and properties of a product through its development and useful life, mainly from a business/engineering point of view. The process of managing the entire lifecycle of a product from its conception, through design and manufacture, to service and disposal. PLM integrates people, data, processes and business systems and provides a product information structure for companies and their extended enterprise. Complex engineered products, such as medical devices, automotive parts, machinery, industrial measurement and control instruments, communications and consumer electronics, aerospace components and military equipment, will especially receive the benefits of a PLM system.

NTS PLM is a one step tool for creating and managing your products:

- **Projects, Products and Processes**
- **Parts, Assembly**
- **eBOM, engineering bill of material**
- **mBOM, manufacturing bill of material (requires NTS Optimizer)**
- **Documents management**
- **Drawings, pictures, videos**
- **Parts compliances and standards**
- **Cad data for electronic assembly**
- **Revisions**
- **Engineering changes**
- **CAPA, Corrective and Preventive Actions**
- **Contact management, users, manufacturers, suppliers, ...**
- **Assembly Process**
- **Tools**
- **Shop Floor Model**
- **Much more ...**

*Control your products in a glance.
BOM, parts and resources usage easily
performed with less people.
Complex processes become easily
optimized for lean manufacturing.
Do much more with less.*

Why choosing NTS?

Because NTS does much more for your enterprise ...

Do you need product and process optimization?

Do you need product estimator?

Do you need product configurator?

NTS new technologies includes Product Optimizer and Estimator for complex assembly. It ensures accurate quotes and eliminate data-entry errors.

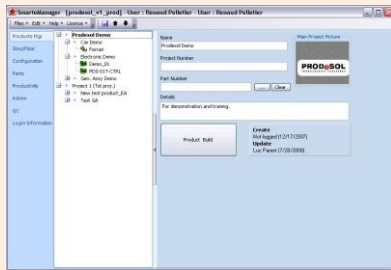
NTS can perform real time data collection and parts traceability with NTS – MES.

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2579, b. Chomedey, Laval (Québec) H7T 2R2 Canada

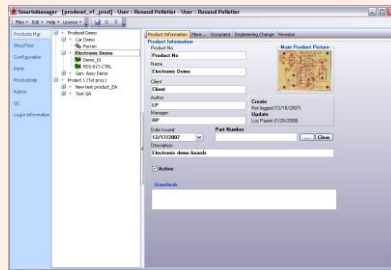
☎ 450 238 1448 ☎ 450 238 1447 ✉ info@ntsconsulting.ca 🌐 www.ntsconsulting.ca

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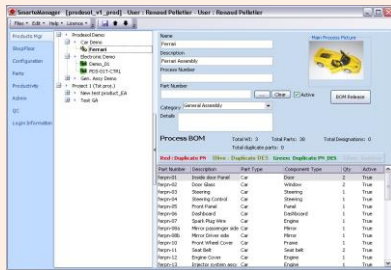
☎ (212) 022 48 11 34 ☎ (212) 022 48 70 56 ✉ ntsmaroc@ntsconsulting.ca 🌐 www.ntsconsulting.ca



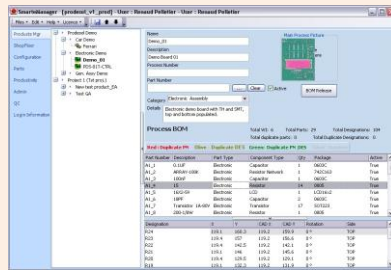
Project Manager



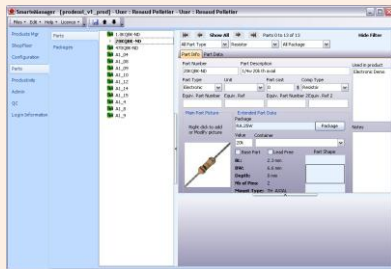
Products manager



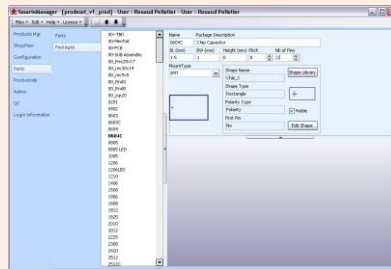
Process eBOM



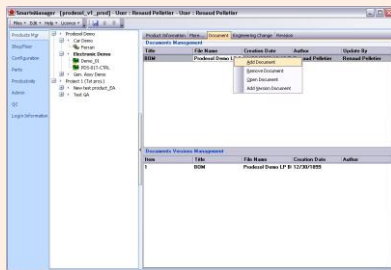
Process eBOM & CAD Data



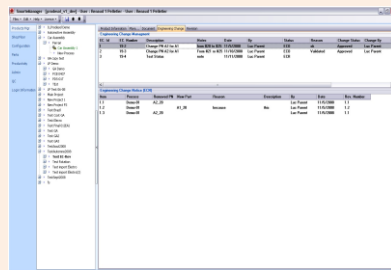
Parts & Assembly



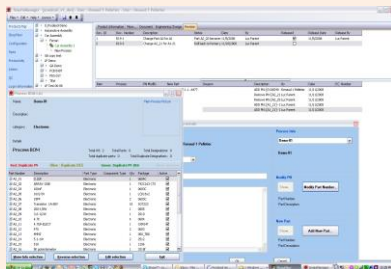
Electronic Packages



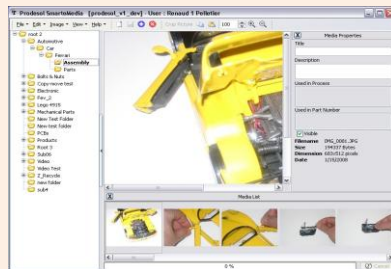
Document manager



Engineering Changes



Products & process revisions



Grafiks

Product Screenshots

Benefits:

- ✓ Reduced time to market
- ✓ Improved product quality
- ✓ Reduced prototyping costs
- ✓ Savings through the re-use of original data
- ✓ A framework for product optimization
- ✓ Reduced waste
- ✓ Savings through the complete integration of engineering workflows
- ✓ Server system for real time process update
- ✓ Collaborative work
- ✓ Commonality
- ✓ Increased flexibility

Features:

- ✓ Project Management with agenda and time tracking
- ✓ Product Management
- ✓ Process management.
- ✓ eBOM, General and Electronic assy
- ✓ Import and export to Excel
- ✓ Products Revisions
- ✓ Products Engineering changes
- ✓ Documents Management
- ✓ Parts compliances and standards
- ✓ CAPA
- ✓ Parts management.
- ✓ Electronic packages.
- ✓ Tools & Safety
- ✓ Shop Floor Model and Mapping
- ✓ Users
- ✓ Manufacturers
- ✓ Suppliers
- ✓ Pictures and video Manager (Grafiks).
- ✓ Client – Server Network

System requirements

MySQL Database, client – server network.
PC Pentium P4 or Equivalent
Microsoft Windows XP, Vista, Windows 7.
512 MB Ram (minimum)
Super VGA (800 x600) minimum,
1024 x 768, 19" monitor with Higher resolution
(recommended) for higher efficiency



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IMS - PCB ASSEMBLY PROCESS



PCB Assembly made easy with NTS IMS

What does IMS can do for you in PCB and Electronic assembly?

Everything from quote to shipping except machine programming¹. Costly SMT machines place about 90% of the today's industry components. This represents 75% to 90% of the placement, depending on the level of technology. It's also the highest portion of the total cost of the products. It's very important but what about the rest of the manufacturing process. SMT represents only about 10% of the processes in the complete PCB manufacturing process. The multiple processes involved increases the complexity and the possibility for defects and errors especially with multiple operator manipulation.

Prodesol SmarteSolutions can handle all manufacturing process including SMT assembly line optimization. It consists of:

- PLM to handle product information
- Modelers to define and optimize manufacturing processes
- Electronic workstations for shop floor operators and QC
- MES for process and parts traceability.

¹ We don't make SMT or other machine programming Few specialized existing software does it very well.

NTS PLM, is a first step tool for creating and managing:

- Projects, Products and processes
- Parts, packages. assembly,
- eBOM, engineering bills of material for general and electronic assembly
- Documents and standards
- Cad data for electronic assembly
- Revisions
- Engineering changes
- CAPA, Corrective and Preventive Actions
- Contact management, Users, manufacturers, suppliers, ...
- Assembly Process
- Tools
- Shop Floor Model

NTS ESTIMATOR is a one step tool for creating:

- Quotes, (labor and parts)
- Advanced Cost Analysis
- mBOM (Manufacturing BOM)
- Detailed manufacturing processes
- Optimized routing
- Assembly Lines with optimization and line balancing tools
- Methods (Visual work instructions automatic creation)

Manufacturing process becomes critical in today's highly competitive market. A good process is essential but an optimized process will produce competitive advantages. NTS ESTIMATOR is the complete tool for high mix assembly of all levels of complexity. The system will identify bottlenecks before it reaches manufacturing and no details, parts or steps will be left out.

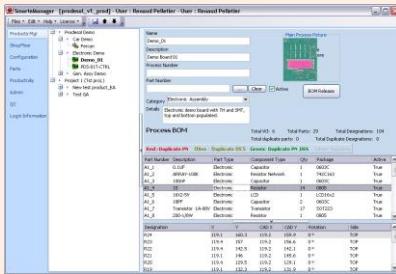
The immediate results are:

- MAXIMIZED EFFICIENCY
- 100% QUALITY
- REDUCED MANUFACTURING COSTS
- INCREASED THROUGHPUT

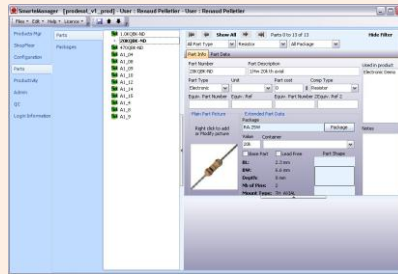


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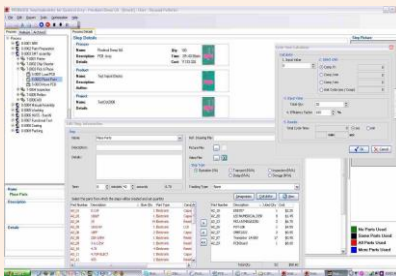
IMS - PCB ASSEMBLY PROCESS



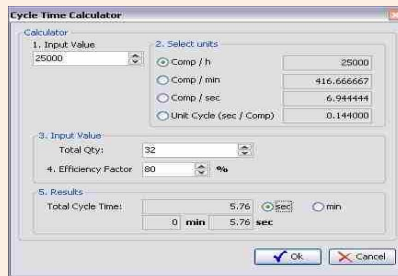
Process eBOM & CAD Data



Parts & assembly



Detailed step definition



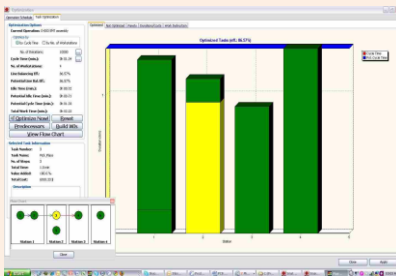
Cycle time calculator



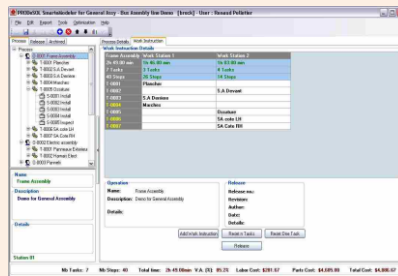
Routing optimization



Cost analysis, labor & parts



Line Balancing



Automated WI creation

Product Screenshots

PLM Benefits:

- ✓ Reduced time to market
- ✓ Improved product quality
- ✓ Reduced prototyping costs
- ✓ Savings through the re-use of original data
- ✓ A framework for product optimization
- ✓ Reduced waste
- ✓ Savings through the complete integration of engineering workflows
- ✓ Server system for real time process update
- ✓ Collaborative work

ESTIMATOR Benefits:

- ✓ Reliable advanced quote system.
- ✓ Accurate mBOM management.
- ✓ Maximized work center load.
- ✓ Maximized assembly process reliability.
- ✓ Maximized value added activities.
- ✓ Quick and Easy changes and improvements.
- ✓ Quick Bottlenecks evaluation and reduction.
- ✓ Maximized workflow.
- ✓ Error free electronic work instructions.
- ✓ Reduce operator training and learning period.

System requirements

MySQL Database client - server.
PC Pentium P4 or Equivalent
Microsoft Windows XP or Vista
512 MB Ram (minimum)
Super VGA (800 x600) minimum,
1024 x 768, 19" monitor with Higher resolution
(recommended) for higher efficiency

The next step after overall process optimization is the creation of specific process for shop floor PCB assembly using Prodesol SmarteModeler-EA. The information will also be available for shop floor workstation and Quality control module.

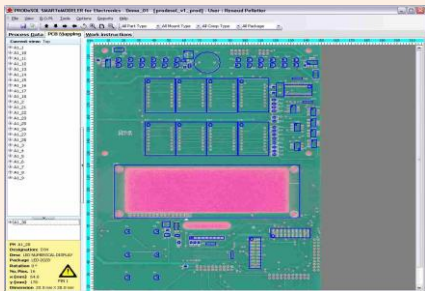


NTS PCB PROCESS MODELER is the module used to define process and work instructions for PCB assembly. It also does PCB manual assembly line optimizations. Parts packages and shapes are defined in PLM,

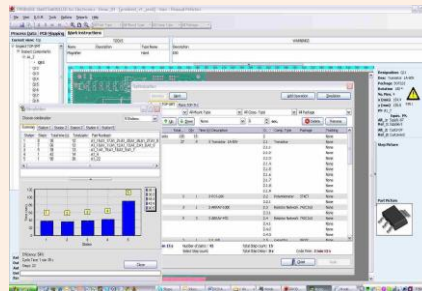
Few simple steps to create work instructions are:

- Select process already defined in PLM.
- Import a PCB picture (scan, pdf, gerber,...).
- Maps automatically (CAD XY required) the parts on the PCB (top, bottom).
- Create work instructions.
- Optimize duration and line balancing
- Release work instructions
- Print or use on the Station

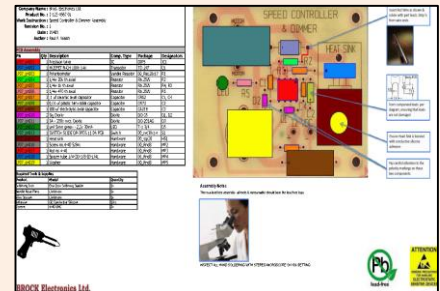
Important: Mapped data is used in PCB - Viewer and PCB - QC. It is the PCB detailed parts information necessary if you want to increase quality in PCB manufacturing detailed information.



Parts mapping

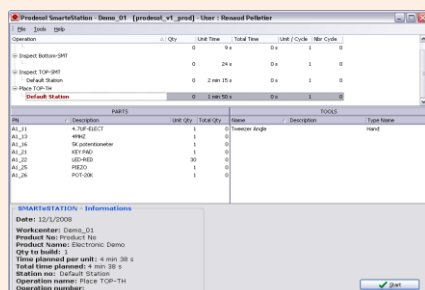


Process optimization

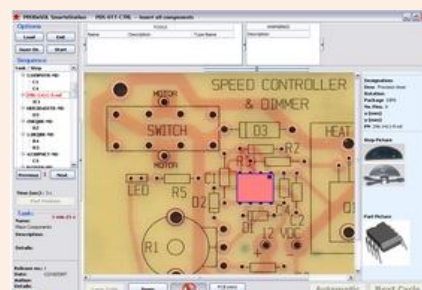


Paper Work Instructions

WORKSTATION is the module used by operators on the shop floor. It uses the work instructions created with the SmarteModeler. It includes powerful features that guarantee 100% quality and efficiency. It utilizes graphics, multi-lingual text-to-speech, parts laser pointer and pick-to-light bin rack system, to create a usable intuitive environment. It can be used locally or in remote location (ex. Smartemodeller in Toronto and SmarteStation in Mexico). Updated information in the SmarteModeler-EA is automatically updated in the SmarteStation.



Setup, parts, tools, quantity, etc



Workstation interface

Assembly details are defined in sequential steps. It shows detailed parts and package data and alternate parts.

Visual information is always visible for step and part picture, warning for pin 1 and polarity.



PCB - VIEWER is a PCB viewer for the process created with PCB - MODELER. It includes powerful parts filters and search functions. The interface is similar to the Modeler.

PCB – QC is an advanced PCB Quality Control Module. It uses the viewer features including the powerful parts filters and search functions. Quality control specifications are defined in PLM.

The main functions are:

Defects tracking

- Inspect each PCB and list all defects. USB microscope 20x to 400x is optional.
- Statistics, Pareto graphs and report are update real time.

Defects repair

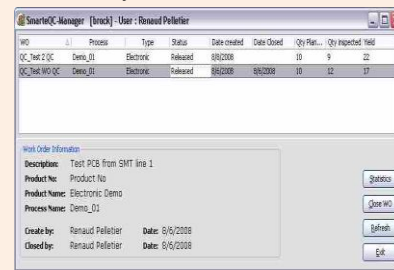
- Repair the defects found in defect tracking. USB microscope 20x to 400x is optional.

First article analysis tool

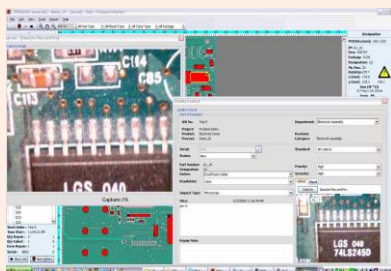
- Inspect first article PCB and list all defects.
- Statistics, Pareto graphs and report available real time to make the necessary corrections without delays.

Steps:

- Select the product and create a Work Order with quantity to inspect.
- Start inspection. Each PCB must have a serial number for tracking.
- Repair defects found
- Close Work Order in PCB – QC -Manager



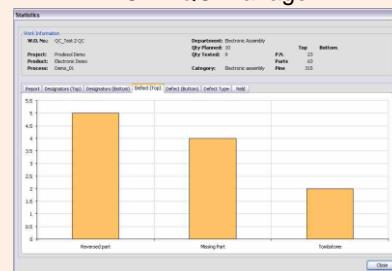
PCB - QC-Manager



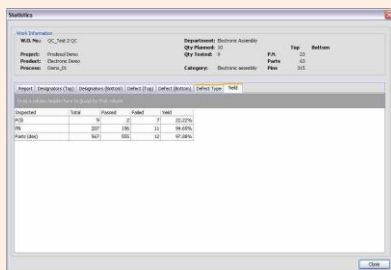
Defect tracking with microscope



Defects per designator

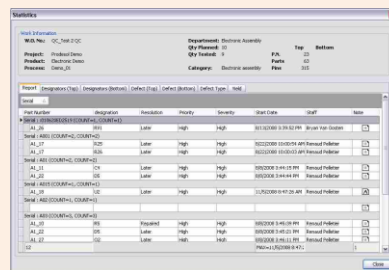


Defects type



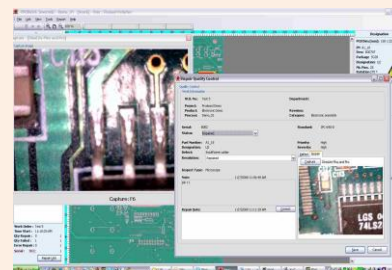
Designator	Total	Passed	Failed	Yield
PCB	50	42	8	84.00%
Part 1840	500	450	50	90.00%

Yield for pcb, pn and designators



Designator	Revision	Priority	Severity	Start Date	Note
PCB	001	High	High	2012/09/10 10:52:43	Shaper that System
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure
Part 1840	001	High	High	2012/09/10 10:52:43	Revised failure

Report

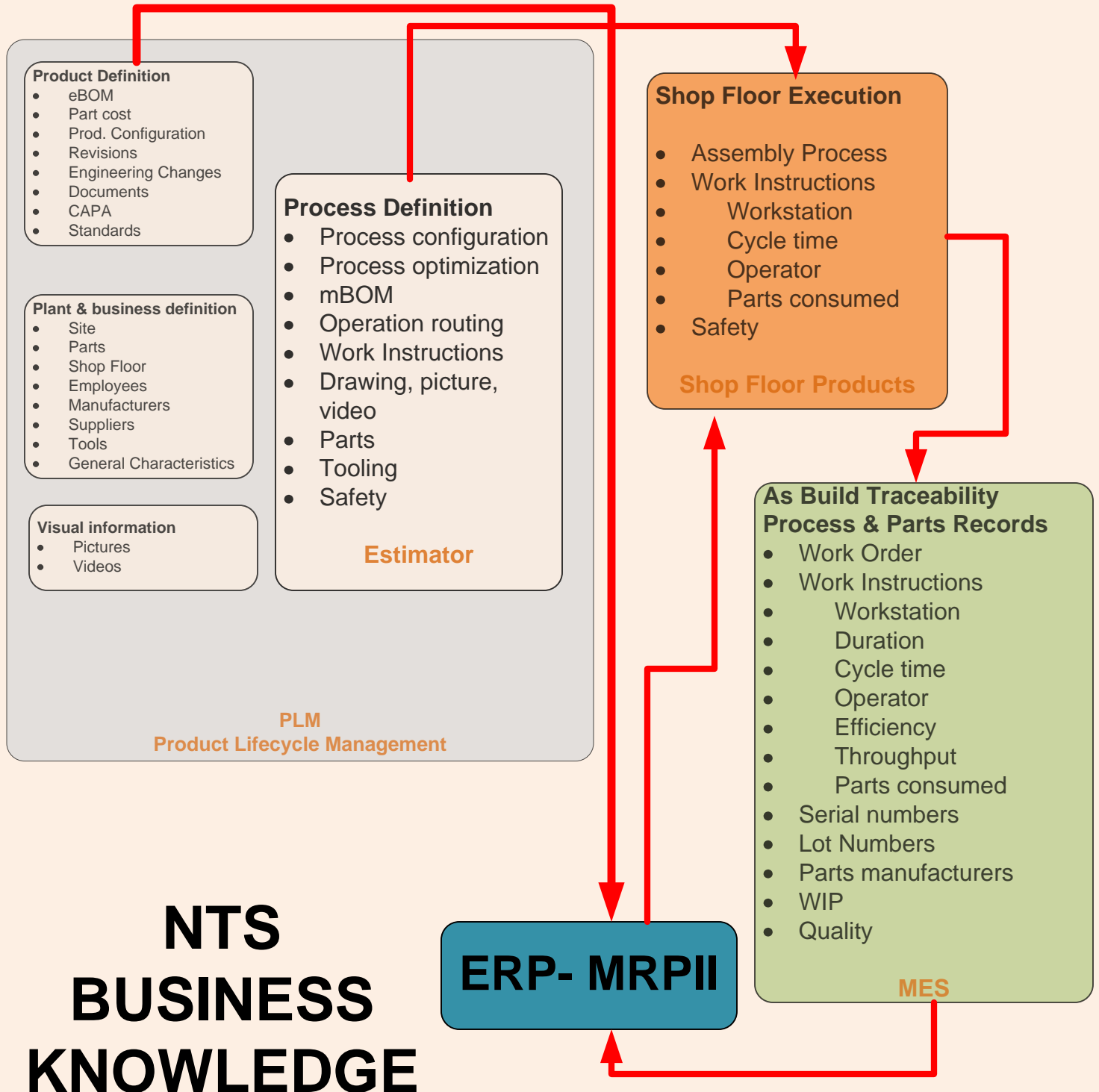


Repair with microscope



NTS Products Configuration

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NTS BUSINESS KNOWLEDGE