Web-Based CAD/CAM Automation
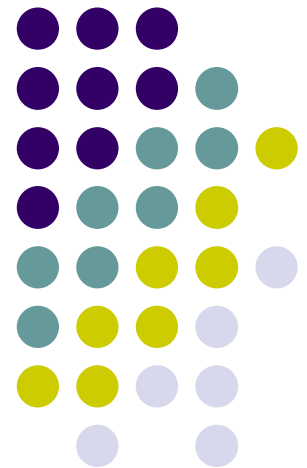
for

Tool Making Industry

Presented

By

James

NX CAD CAM Automation Service (NCCAS)

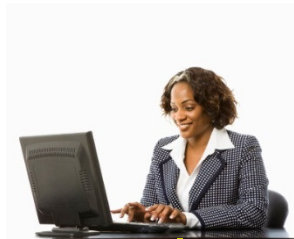Email: support@nxcadcam.com Web: www.nxcadcam.com

Abstract

The web-based CAD/CAM automation system for tool-making is a full-automatic system that enable the customer/designer to configure the design parameters from the website via internet or intranet, all subsequent processes will be automatically generated without any user interaction. The system will help to speed up the design/manufacturing process, reduce the cost, and shorten the delivery time.

The system is built on the NX CAD/CAM platform within the Teamcenter environment; it is a knowledge based system that embedded with engineering rules for product design and manufacturing. The system will also seamlessly integrated with the enterprise systems, such as SAP or ERP. It will achieve a synchronized communication within different departments (Engineering, Manufacturing, Marketing, Sales, finance, etc.), customers and suppliers.

Development tools include: NX OPEN API, C/C++, C#, Grip, TCL, ITK, Java, PostBuilder, etc.

Web-Based CAD/CAM Automation for Tool-Making
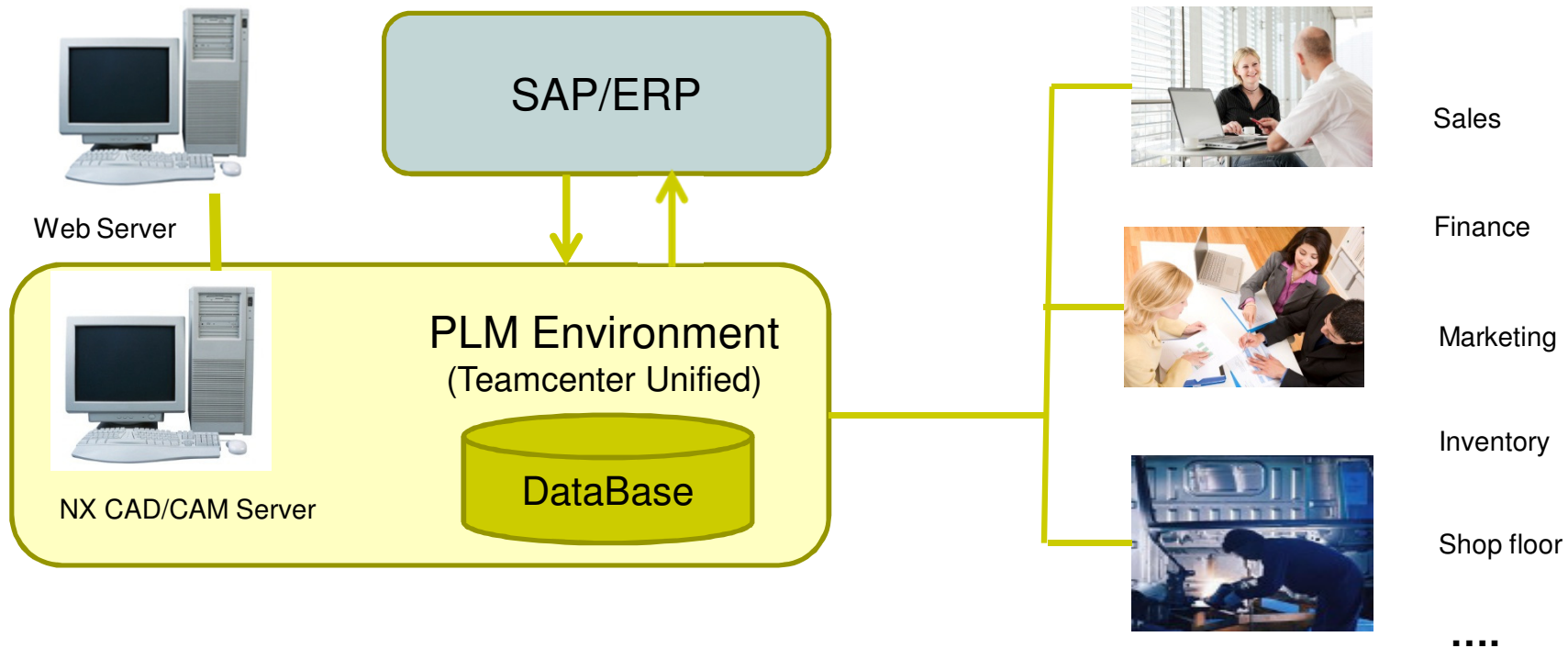# System Overview

Internal Designer
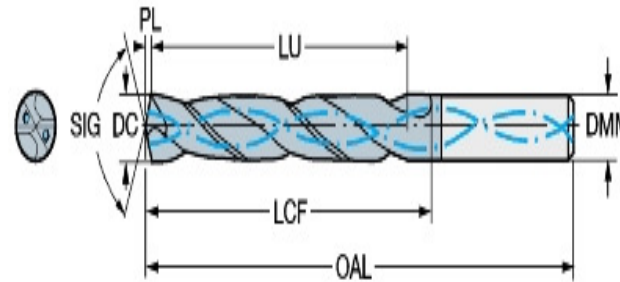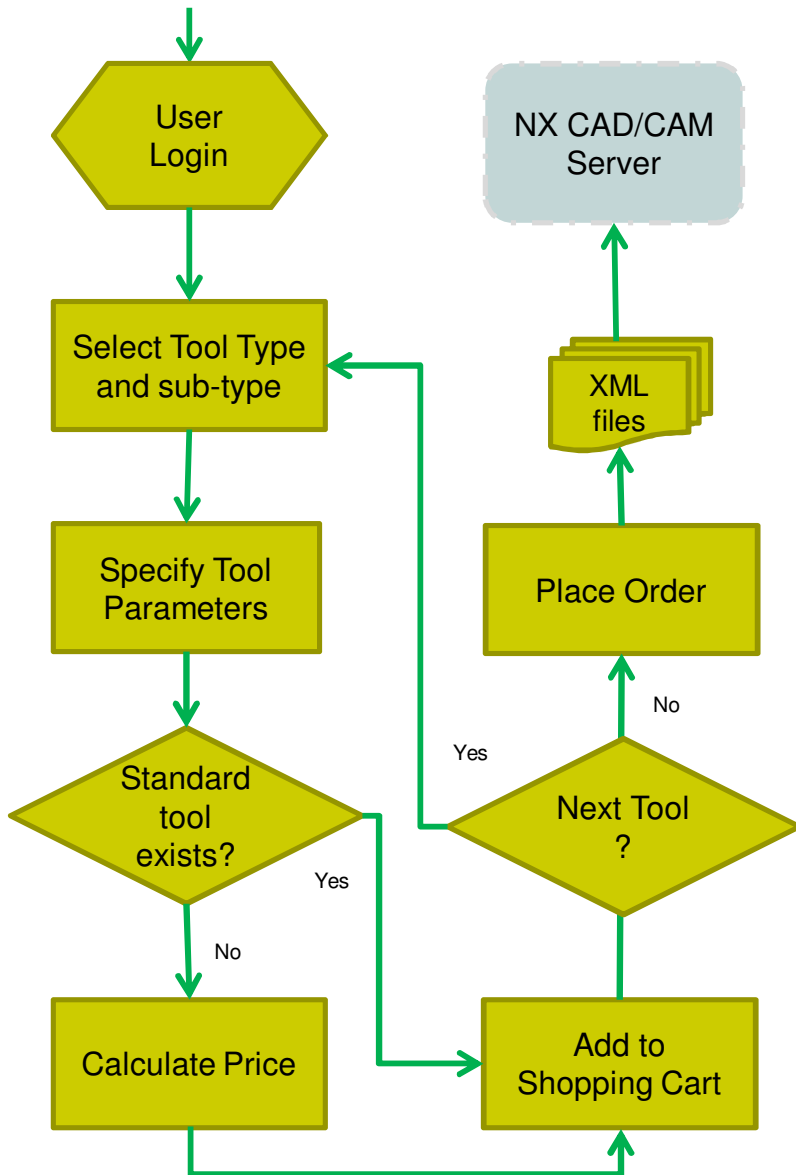
External Customer

Sales Person

Mobile Device

Internet or Intranet

Web Server

SAP/ERP

NX CAD/CAM Server

PLM Environment
(Teamcenter Unified)

DataBase

Sales

Finance

Marketing

Inventory

Shop floor

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Web-Based CAD/CAM Automation for Tool-Making
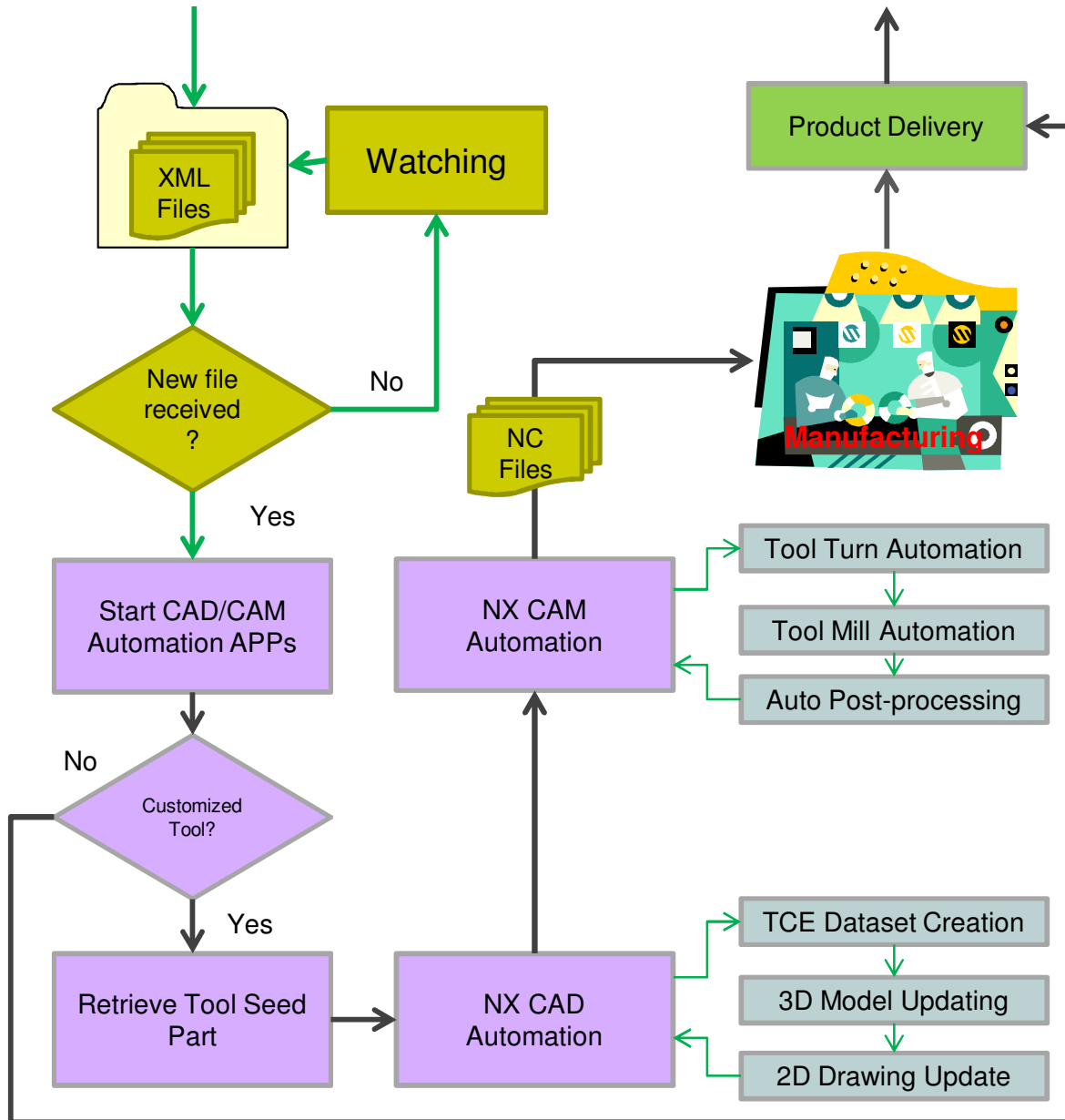# System User Interface

Description:

Customer or designer login from the webpage, select tool type and configure tool parameters. if standard tool found, all existing documentations will be listed (2D drawing, 3D model, technical data, etc.). Otherwise, customized tool price and related documents will be generated.

After adding tool to the shopping cart, user can continue to select next tool or proceed to place an order.

After order is placed, XML files will be generated, which will include all necessary information. All XML files will be sent to a file folder on the NX CAD/CAM server. The file folder is being watched by the server.

Web-Based CAD/CAM Automation for Tool-Making
NX CAD/CAM Server

XML Files

Watching

New file received?

No

Yes

Start CAD/CAM Automation APPs

No

Customized Tool?

Yes

Retrieve Tool Seed Part

NX CAD Automation

NX CAM Automation

NC Files

Manufacturing

Product Delivery

Tool Turn Automation

Tool Mill Automation

Auto Post-processing

TCE Dataset Creation

**3D Model Updating**

2D Drawing Update

Description:

Once any new XML is received on the NX CAD/CAM Server, the CAD/CAM Automation tools will be executed. if it is a customized tool, a copy of the seed part of that tool model will be created in Teamcenter. The tool 3D model will then be updated according to the parameters and engineering rules, and related drawing and technical documents will be created and updated.

After CAD Automation, CAM automation will create tool path and NC tapes will be generated by Auto-post-processing. NC files and Fabrication order will be sent to shop floor to start the manufacturing.

Datasets and workflow are created in the Teamcenter environment. All documents are in digital format.
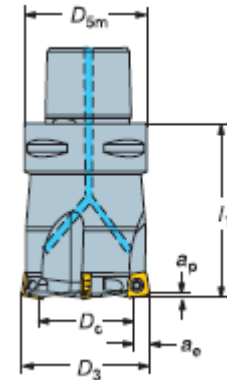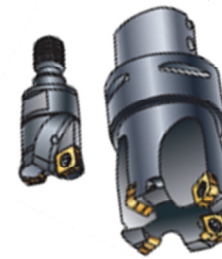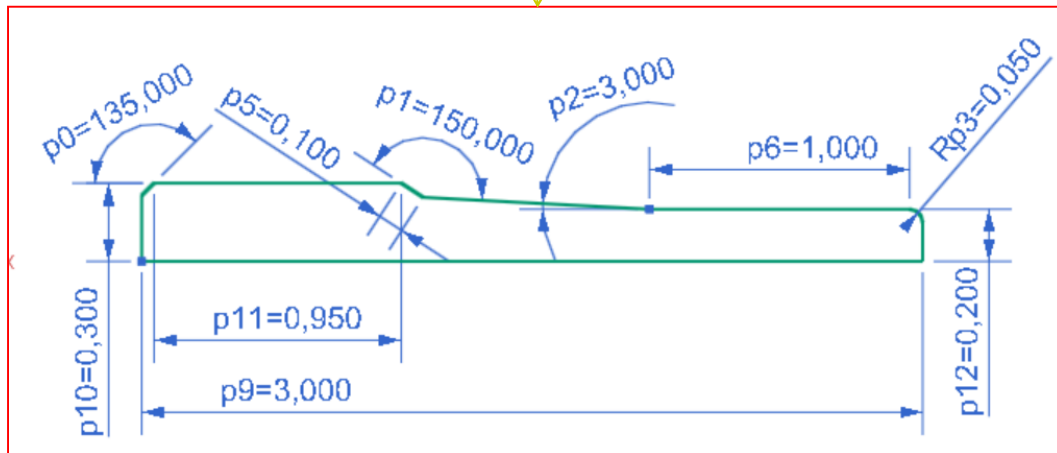
Application Example
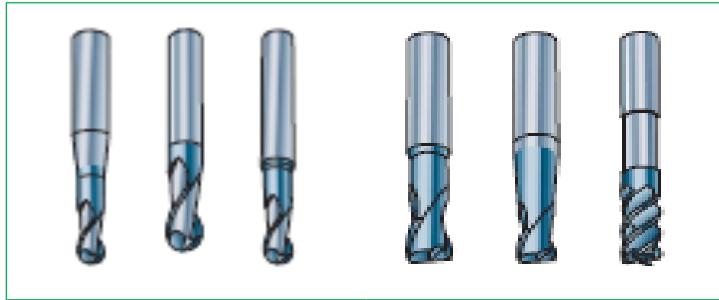
Mill & Drill tool Products: Similar shape with different configuration (Diameters, corner radius, flute number, flute length, shank diameter, shank length, chamfer size, etc.)

Parameterized Design

Good for CAD/CAM Automation: Easy to update 3D model with parameter changes, Similar Turning or Milling process, good for CAD/CAM automation with integrated engineering rules.

Hardware, Software, Programming

Hardware:
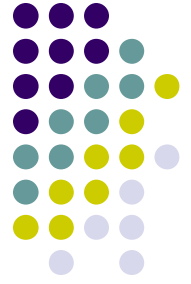1. Web Server
2. NX CAD/CAM Server

Software & License:
1. Windows 7 x64
2. Siemens NX 8.0 or above
3. Teamcenter Enterprise/Engineering

Programming Language:
1. Web development: html, Java, Asp.Net, etc.
2. NX CAD/CAM Automation development: C#, C/C++, Grip, NX Open API, BlockStyler, Menu script, Post-Builder, TCL, etc.
3. Teamcenter Rich Client Customization: TCL/ITK, Java, C/C++, etc.

About Me

Summary: *An engineering IT professional with 8+ years' experience in CAD/CAM/PLM software development/support, as well as 6+ years' hands-on experience of CAD/CAM applications (Modeling, Drafting, Assembly, NC Programming, CNC machine operation, etc.). International working exposure: 3+ years in China, 6+ years in Singapore, and 4+ years in USA. Excellent in English and Chinese, speaking and writing.*

<Software Skills>
- NX CAD/CAM customization with NX/Open API, ufun, C/C++, C#, Grip, XML, Menuscript, UIStyler, BlockStyler, PostBuilder, TCL, etc.
- Teamcenter Engineering support & Rich Client Customization with C/C++, TCL/ITK, Java, Eclipse, etc.

<Hands-on Skills>
- UG NX CAD Modeling, sketching, drafting, assembly for product design, plastic injection mold design, tooling design, jigs & fixture design, etc.
- UG NX CAM 2~9 axis Mill/Turn NC programming, manufacturing process planning, CNC Machine operation, NX postprocessor development, etc.