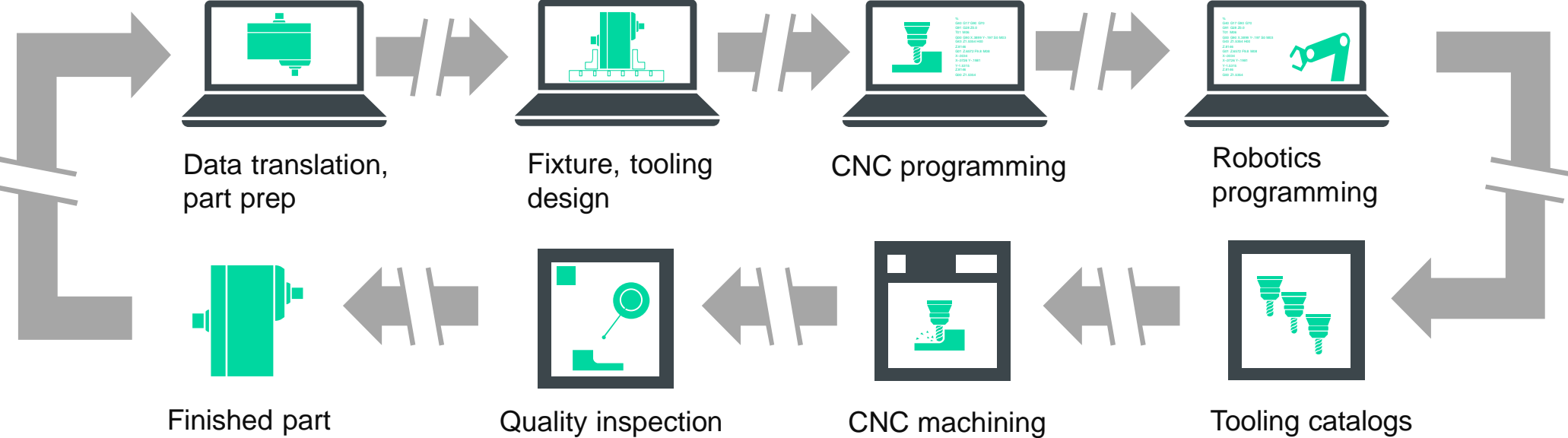




Siemens Integrated Part Manufacturing

October 2024

Traditional part manufacturing processes



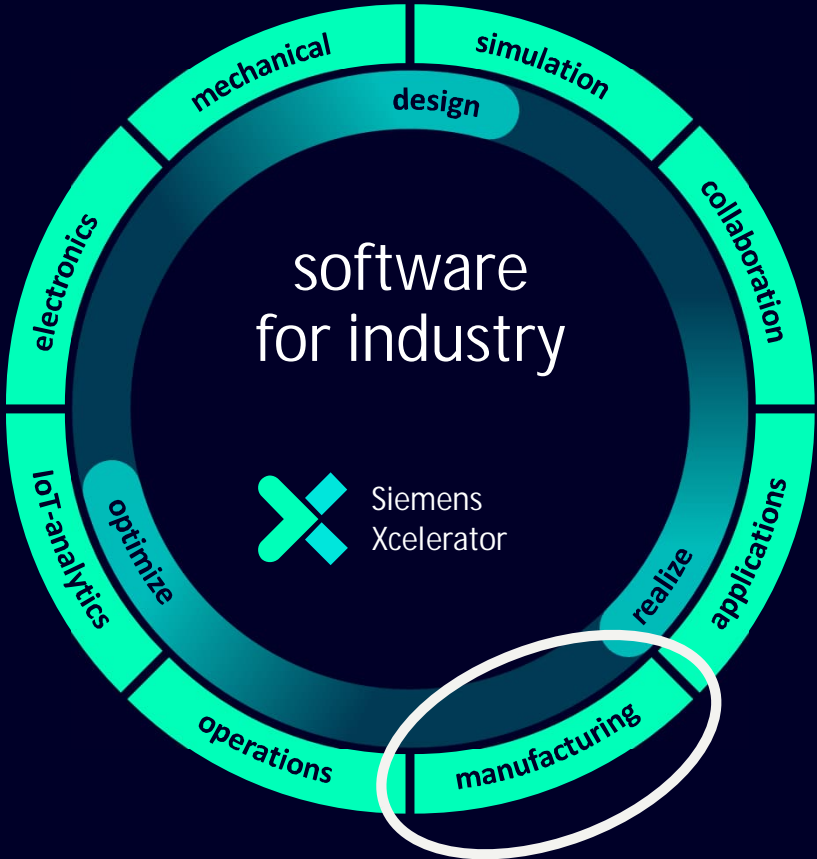
Conventional methods

Multiple data transfers

Uncontrolled siloed data

Disconnected process chain

Part manufacturing is an integrated component of Siemens Xcelerator



Xcelerator Part manufacturing solution

A scalable & modular set of integrated applications



Part design & preparation



Tooling / fixture design



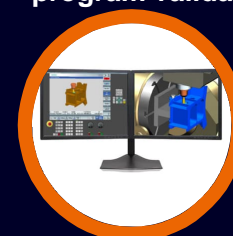
CAM / AM



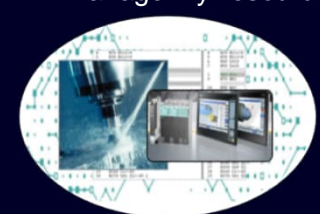
Shop floor connectivity



Shop floor program validation



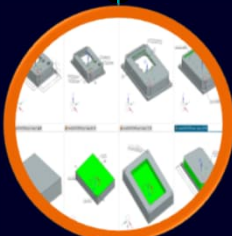
Sinumerik CNC
Manage MyResources



Schedule ,Data and Process management



CMM programming



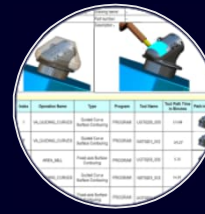
Staged models



Process planning



Tool & Resource libraries



Shop floor data access



Tool management

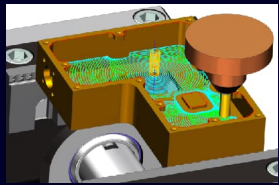


CMM inspection execution

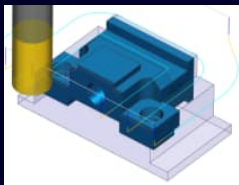
Planning

Production

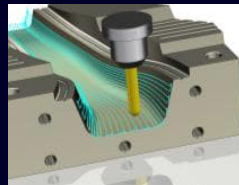
NX Integrated CAM – Modular applications & bundles for maximum flexibility



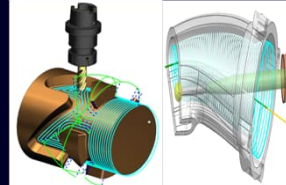
HFC & HDC methods



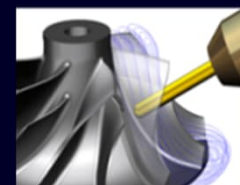
2.5 axis milling



3 axis milling



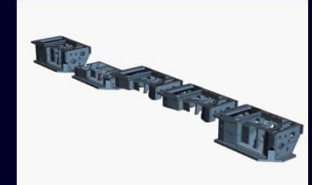
4 & 5 axis milling



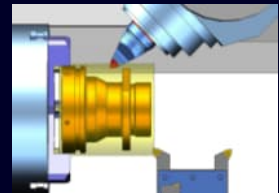
Turbomachinery



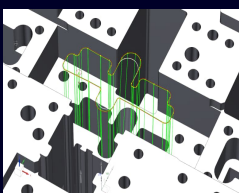
Additive Mfg



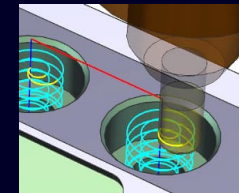
Machine line planner



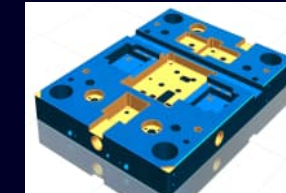
Multi function machining



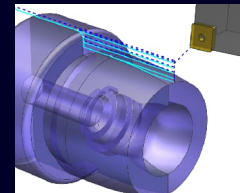
NEW: Advanced Wire EDM



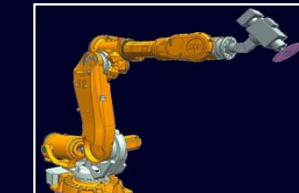
Hole making



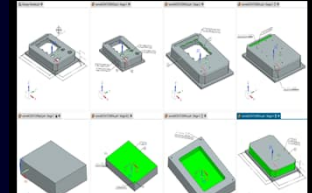
Feature based machining



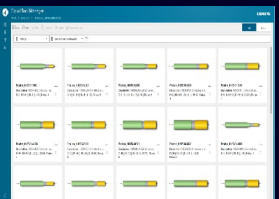
Turning



Robotic machining



NEW: Staged models



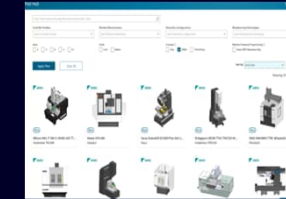
NEW: Tool libraries



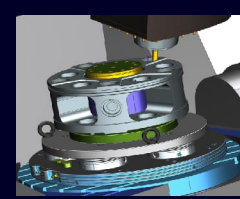
Shop floor & WI documents



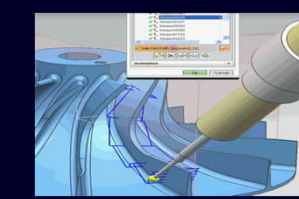
NEW: On machine probing



Post processing & post hub



Machine tool simulation & SMKS



CMM Inspection programming



NEW: NX Process planner

Value based licensing (Tokens)

NX Value Based Licensing (AKA tokens)

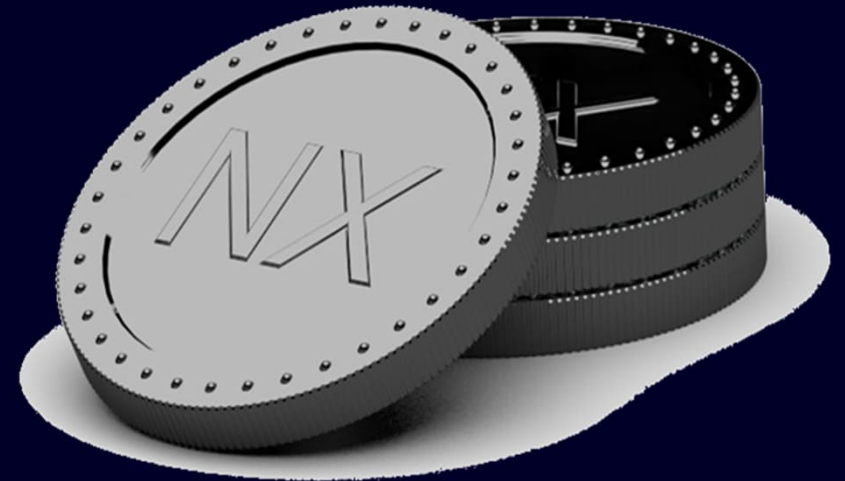
NX Value Based Licensing provides a very flexible and cost-effective method for you to utilize NX Product Engineering & Manufacturing add-on modules

Large number of products that can be run

- Over 100 products in the Design pool
- **Over 60 products in the Manufacturing pool**

Extreme flexibility

- Run what is needed from the large pool of available products
- Run occasionally-needed products without having to make a separate purchase
- Access to new products from day one
- Cost effective via subscription, high probability of expansion



NX CAM VBL tokens

Hybrid SaaS base license

- NX Base CAD/CAM
 - NX Base CAM
- NX CAM foundation
- NX Design standard (Mach1)
- NX Design advanced (Mach2)
- NX Design premium (Mach3)
 - Automotive bundles
- Siemens mechanical design bundle
 - Solid Edge Design
 - More...

CAM Base

Flow cut

NURBS output

Vericut outpt

Facet machining

GMC

Tool tilt

Variable axis mill

CAM Robotics

4axis Rotary

VSA

Turning

Additive 1,2,3,4,5

SMKS 3 & 4 axis

Work instructions

Verification

2.5 Cavity milling

SMKS Complex

2.5 Planar milling

Holemaking

CMM Inspect & execution

SMKS Additive

Probing

Surface milling

Contour profile

Prime turning

Sequential milling

Multi-channel synch

FBM Author

Turbomachinery

Sinumerik spline

NX Post configurator

Fixed axis surface milling

Planar deburring 3,4,5

Machine Simulation ISV

Post Hub Overview

<https://posthub.sws.siemens.com/>

A cloud-based solution for postprocessing with more than 1,200 postprocessors.

Contains free and fee-based postprocessor solutions.

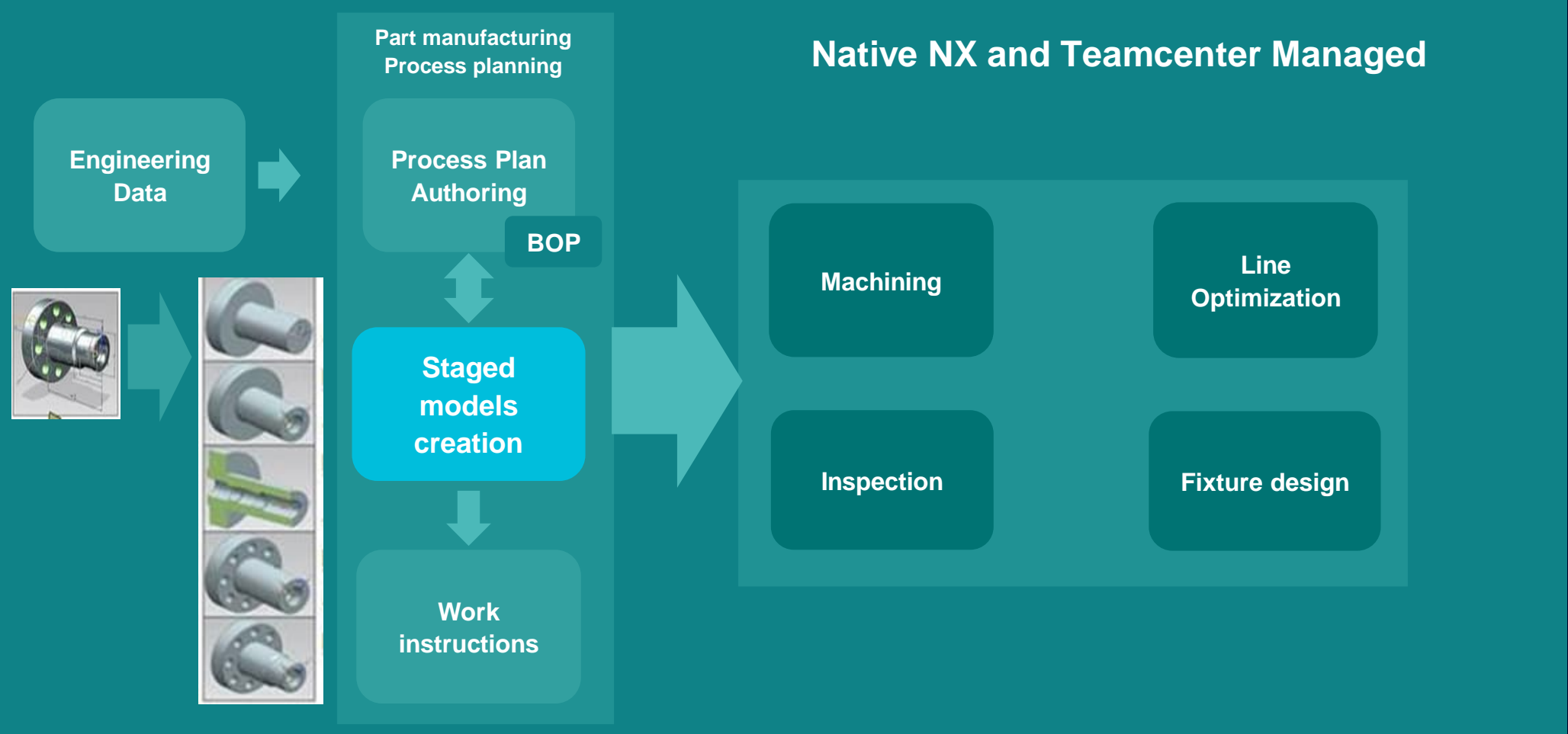
Customers can install machine kits (SMKS) and open sample parts directly from Post Hub. SMKS is license/token based.

Add-on applications and support resources.

The screenshot displays the Siemens Post Hub interface. At the top, there is a search bar with the placeholder text "Enter Product Name/Controller/Manufacturer/Kinematics Type/...". Below the search bar are several filter sections: "Controller Families" with a dropdown menu, "Machine Manufacturers" with a dropdown menu, "Kinematics Configurations" with a dropdown menu, and "Manufacturing Technologies" with a dropdown menu. There are also checkboxes for "Axes" (2, 3, 4, 5, 6+), "Units" (Inch, Metric), "Licenses" (Free, SMKS, Third Party), and "Machine Powered Programming" (Show MPP Machines Only). Below the filters are two buttons: "Apply Filter" and "Clear All". On the right side, there is a "Sort by" dropdown menu set to "Build Date" and a "Showing 30 of 169" indicator. The main content area displays a grid of machine kits, each with an "SMKS" icon, a "New" badge, and a 3D model of the machine. The visible machine kits include: Mikron MILL P 500 U 20HSK A63 TT... Heidenhain TNC640; Mazak VCN 600 Mazatrol; Fanuc Robodrill D21MiB Plus 5AX 2... Fanuc; Bridgeport XR300 TTAC iTNC530 M... Heidenhain iTNC530; and DMG NMV8000 TTBC Mitsubishi M... Mitsubishi.

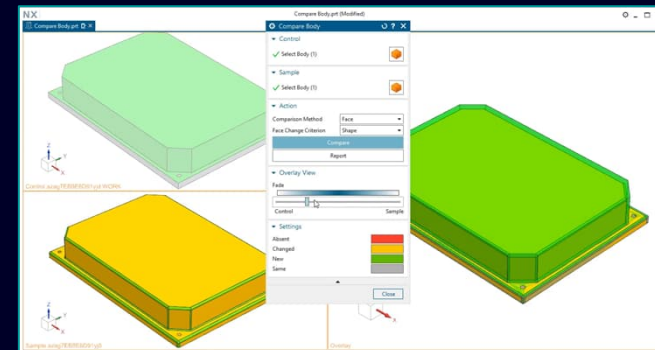
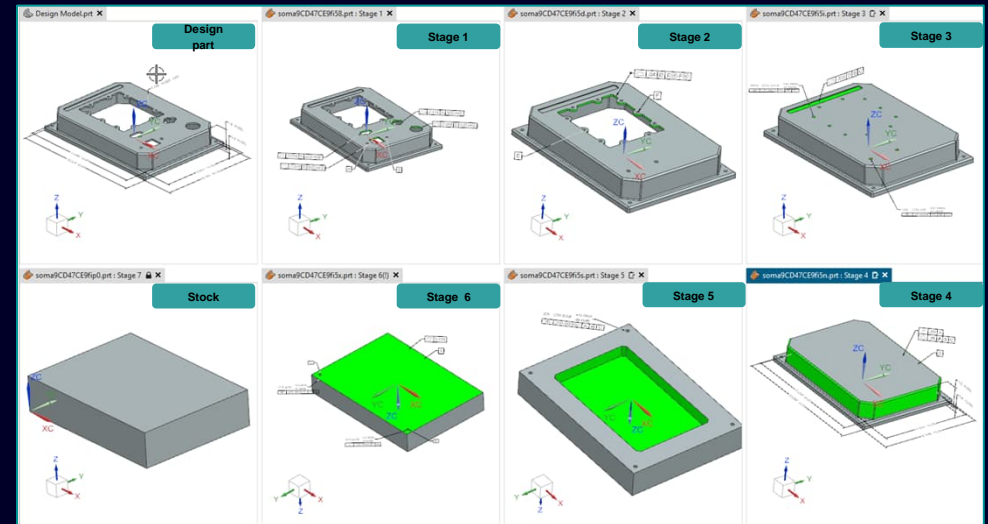
Staged models

Staged Models Role In Manufacturing



Staged models definition, creation and management

- Rapid definition of staged models through modification and/or creation approaches
- An interactive staged models set creation, ex. add stage, delete stage, etc.
- Leverage of modeling capabilities to define geometrical shapes on staged models, ex. copy geometry with associative link, synchronous technology, etc.
- Compare geometries between two stages

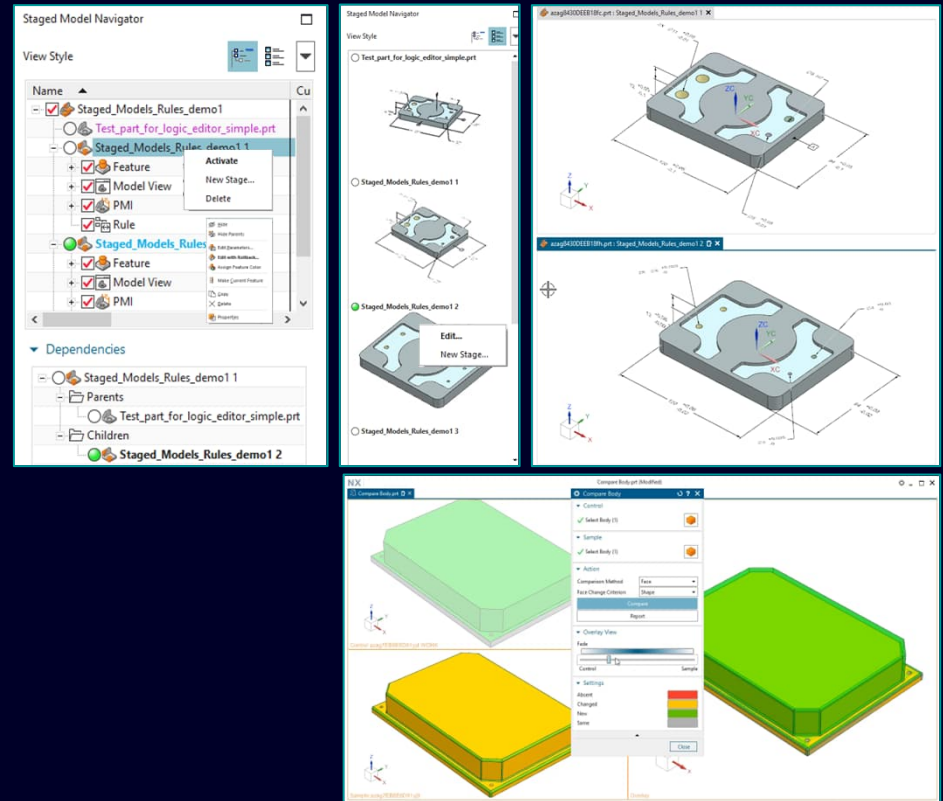


Eliminates many manual modeling methods to complete the staged models resulting greater productivity improvements

User experience

Simple to use for manufacturing engineers

- Staged models set concept that contains all stages and engineering data selected for staged models creation
- Associative links between stages are easily captured
- Staged models navigator to track content of all stages in a single navigation tool, ex. features, model views, PMI, Rules, dependencies, etc.
- Staged models navigation of stages and direct actions like activate stage, for example
- Reuse PMI to repurpose manufacturing information from design parts with associative links



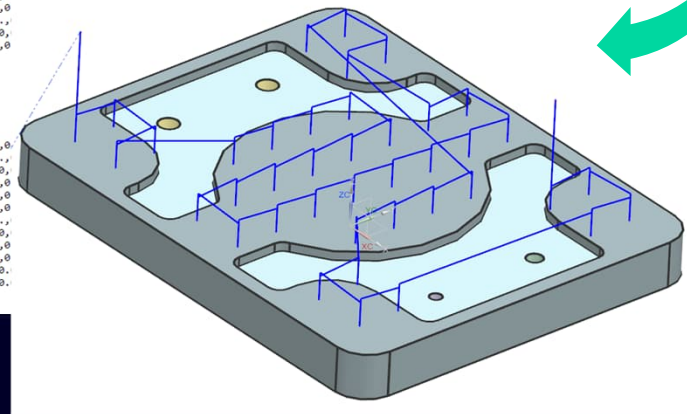
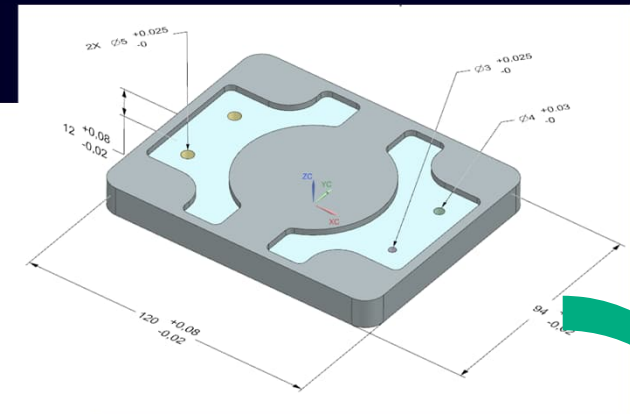
Consumption of staged models in production

Directly consumed by Siemens and external products like NX CAM, NX CMM, Part planner, NX MBPM

- Invoke downstream application directly from the staged models
- Set up creation on staged models directly in NX CAM, NX CMM applications
- Staged models can be exported for external applications

Helps automate downstream manufacturing process right through consumption of staged models and associated manufacturing information

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Summary of NX Staged Model benefits

Available in VBL token pool & add-on license

Easy to use staged modeling environment suitable for manufacturing engineers

Definition, creation and management of staged models focused on improving efficiency

Leveraging NX MBD in staged models environment drives rapid authoring of downstream manufacturing information on staged models

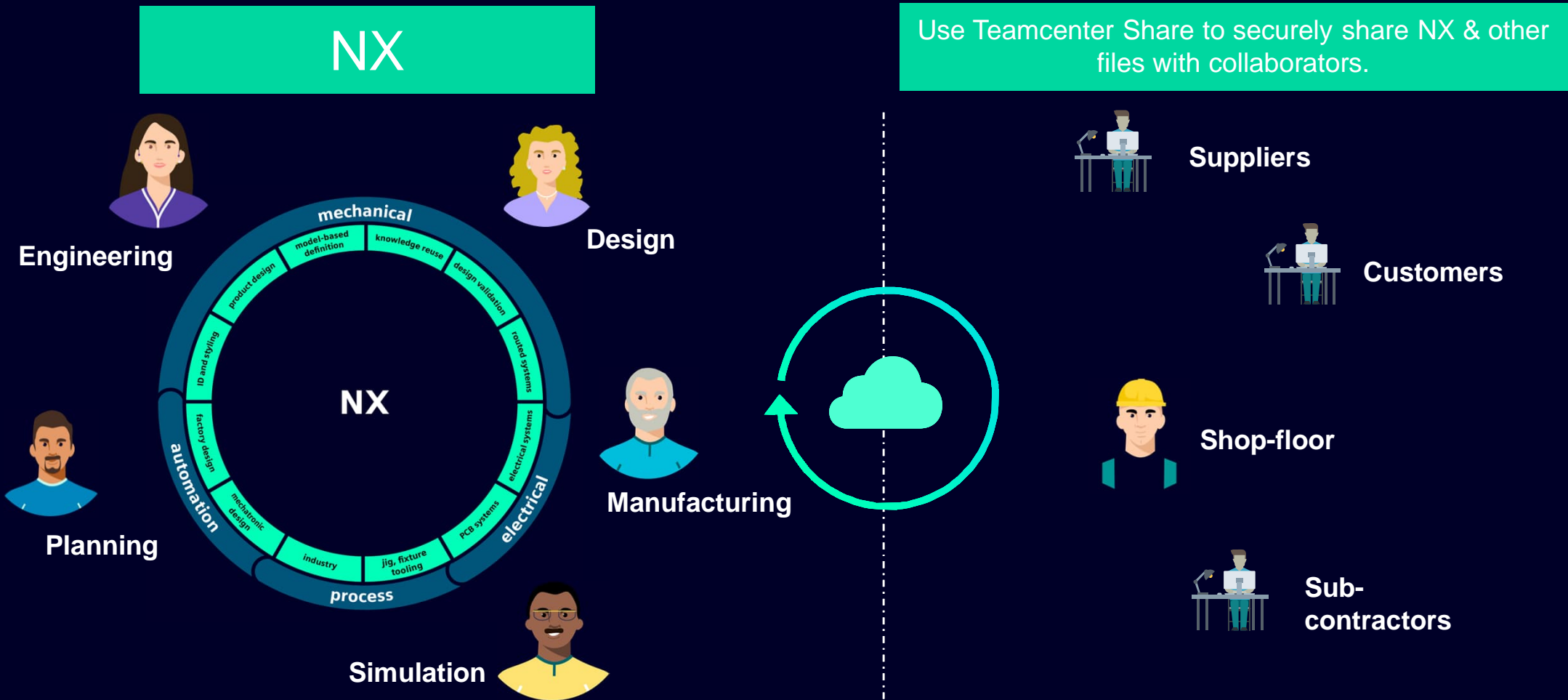
Staged models consumed directly in downstream applications helps automate manufacturing processes



Teamcenter share CAM use-case



Teamcenter Share enables customers to securely share NX and other files with external collaborators



Teamcenter Share for Part manufacturing benefits

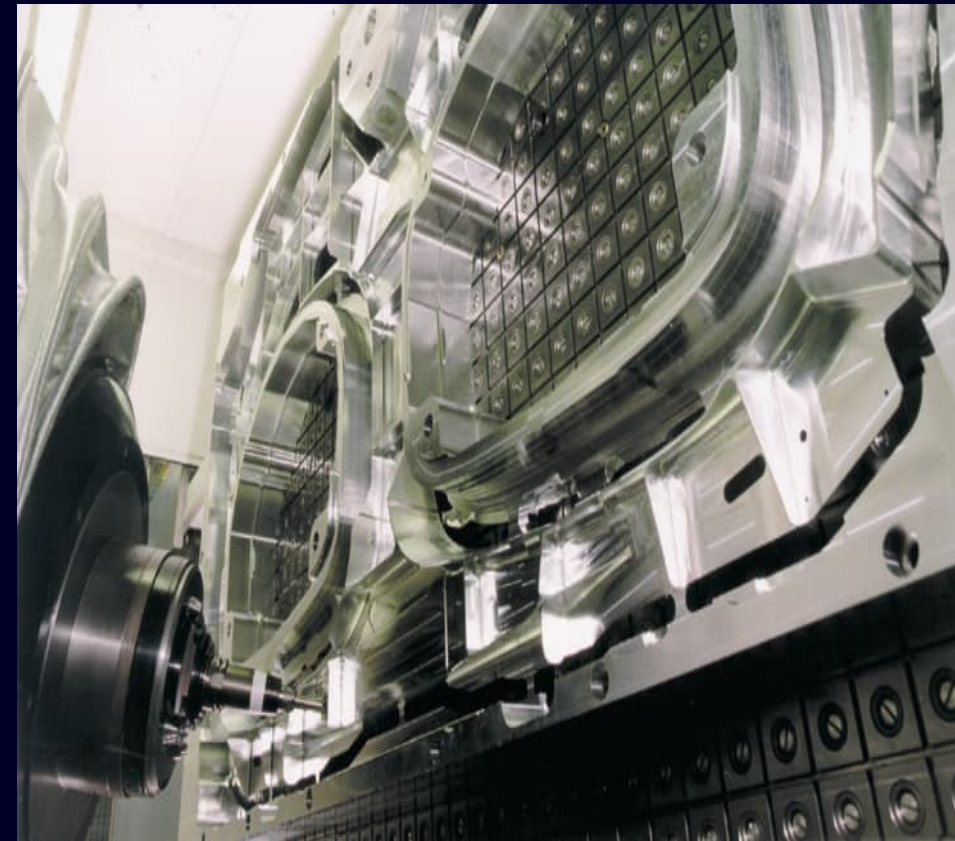
You can access Teamcenter Share directly within your NX CAM session, so this enhanced way of collaborating and sharing is just one click away.

Ensure consistency of work by sharing the correct version of the data models

Enable collaboration with the extended team on digital machine shop projects

Understand context of work through markup and interrogation of machining models, processes and operations

Connect the shop floor to revision controlled NC data , shop docs, work instructions using any device



The benefits of an integrated solution platform



A single integrated solution from Design through Tooling, Manufacturing & Inspection

Faster development: no delays, translations, or data re-creation between stages

One master data format for all applications

Cross discipline visibility for better communication & collaboration

Part manufacturing data management

Included collaboration via Teamcenter share

Associative data accelerates, simplifies changes

Connects the shop floor to work packages with traceability

Lower administrative costs, one common UI , one vendor

#NXMakesItReal

