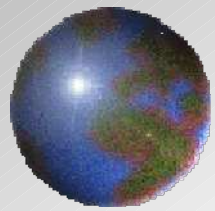


Dynavista

CAA V5 based

V10.2 / V11.2

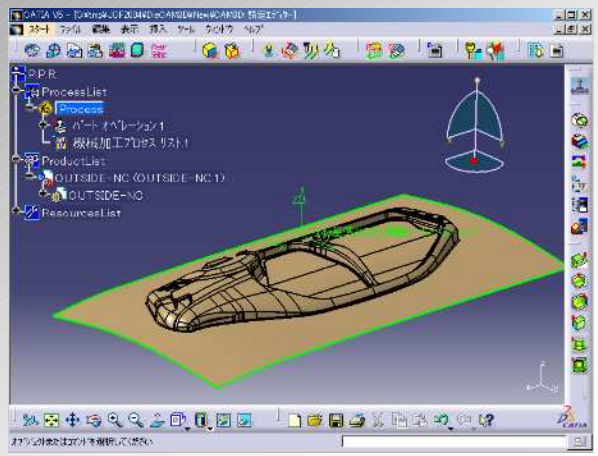
Die CAM 3D

October, 2011

UNIADEX, Ltd.

Die CAM 3D

Die CAM 3D/CAM 3D automates and optimizes machining for die product shape.



-Various machining operation with users machining know-how.

- Interference-free tool paths are calculated by taking tool changes and attachment changes into account.

- Efficient NC data optimizing machining sequence and air cut.

- Many support functions to improve work efficiency.

CAA V5 BASED

V5 prerequisites: MD2

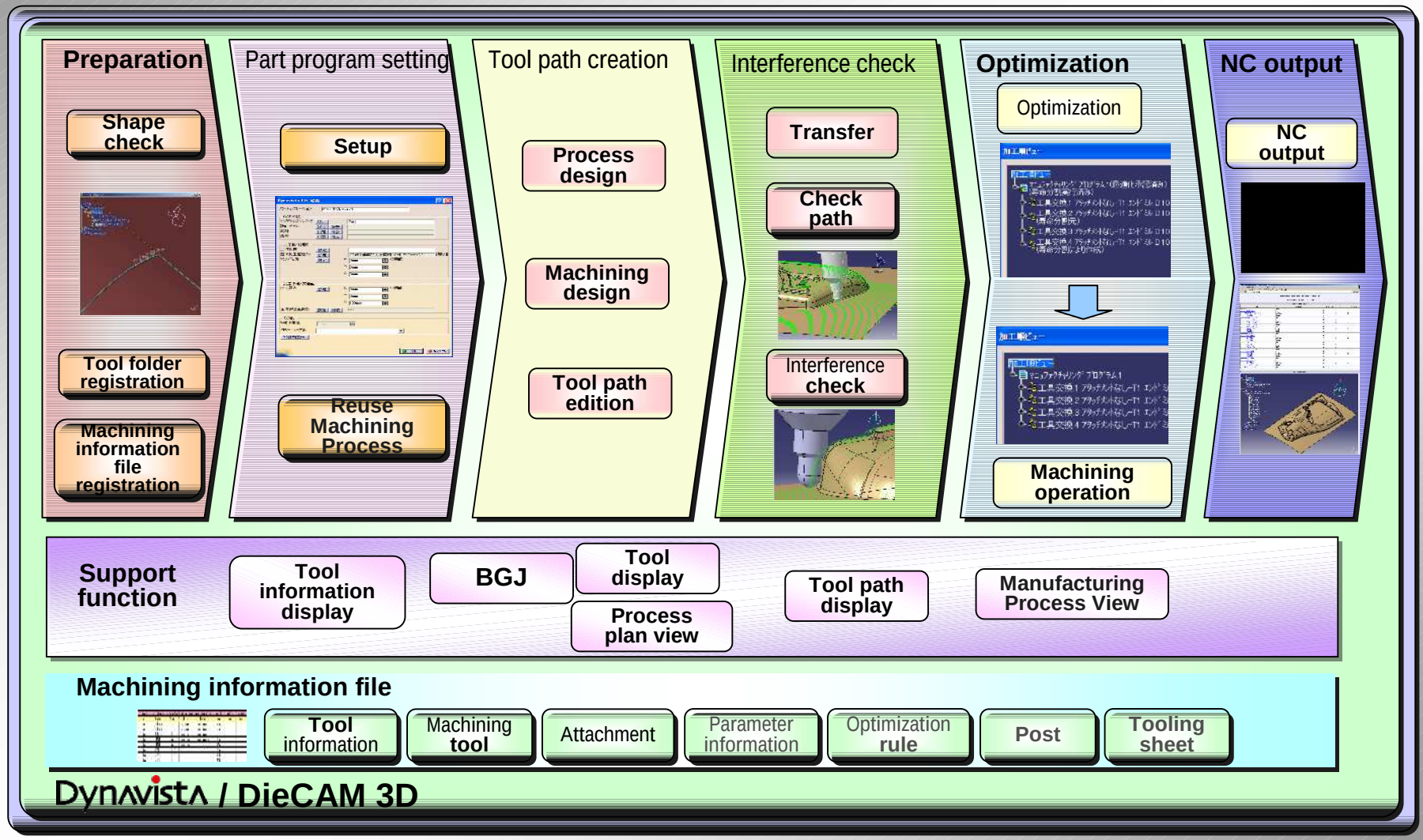
V5R18

V5R19

V5R20

Dynavista

Die CAM 3D command



Dynavista

Shape check

- Shape check

- It is possible to check whether the machining target shape is adequate for the CAM model or not.

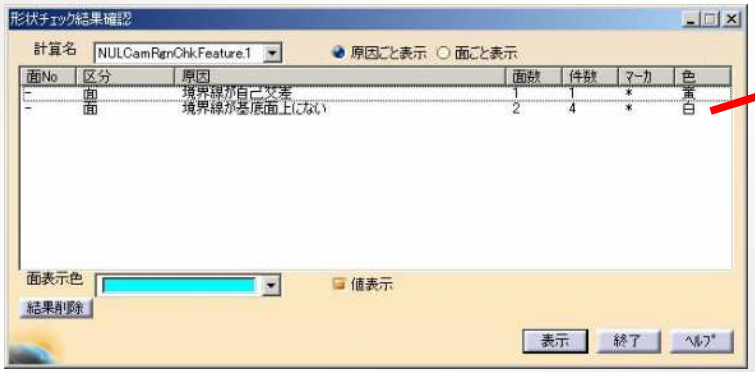
- Minimum necessary portions for surface modification can be shown.

Check items

Boundary: direction of loop, self intersection,
out of the base surface or not

Surface: normal direction, cyclic surface,
too many control points, large surface

Non-manifold: non-manifold or not

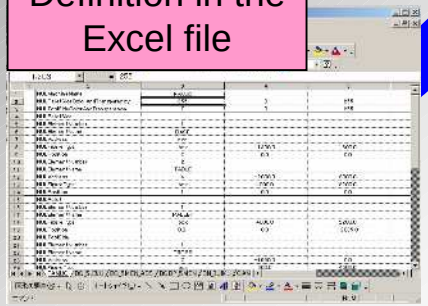


Dynavista

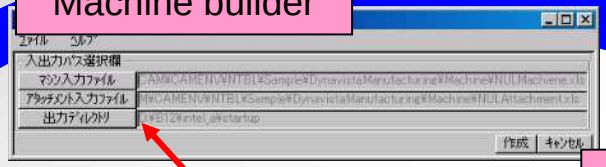
Creation of a machine tool

Machine information is defined in EXCEL file, then it is converted to CATIA data by "Machine builder" function.

Definition in the Excel file

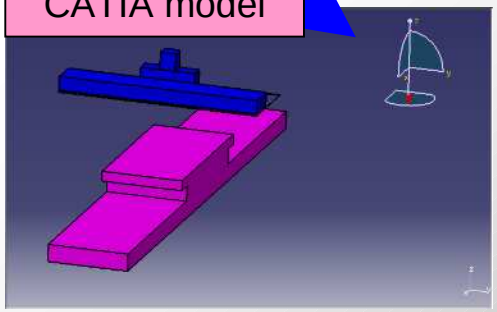


Machine builder

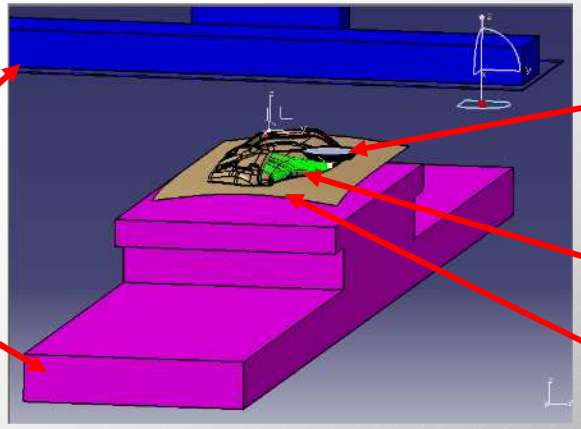


Excel fie will be compiled.

CATIA model



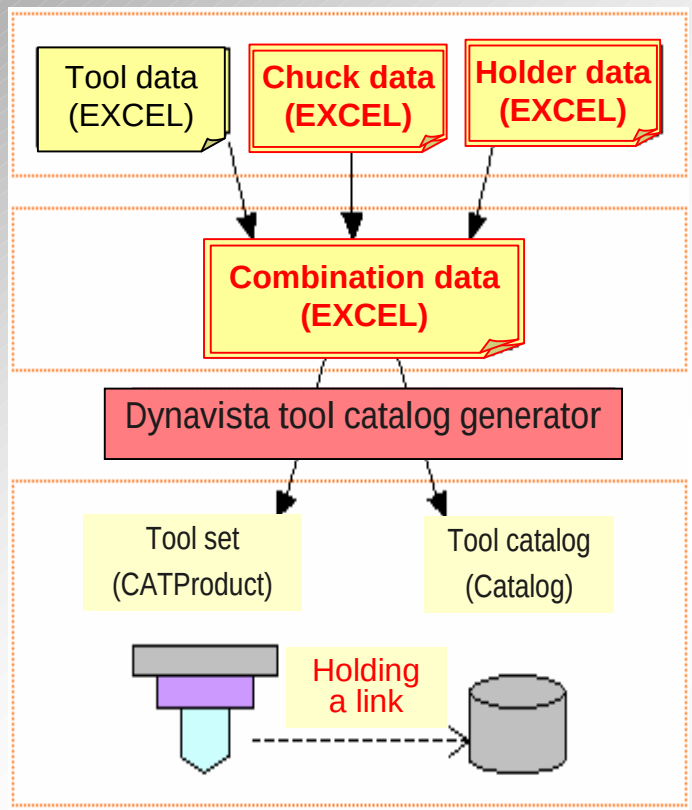
Interference between machine tool and tool set can be checked.
Machining simulation with the machining tool is possible

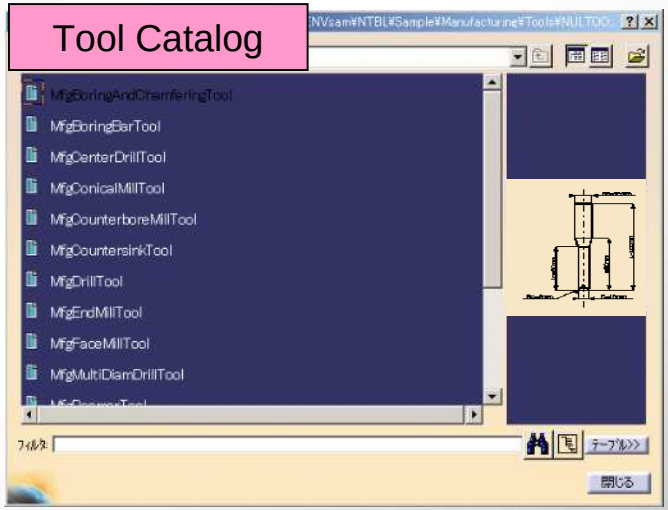


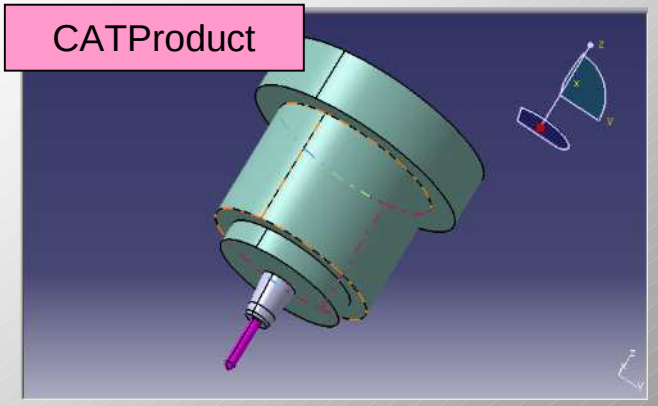
Dynavista

Machining information - Tool information -

Cutters, chucks and holders are defined in the EXCEL file.
Combination of cutters, chuck and holders is defined in the EXCEL file.
Tools are automatically registered as catalogs (CATPart or CATProduct) by “Create tool” function.





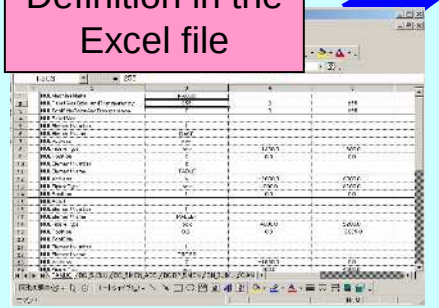


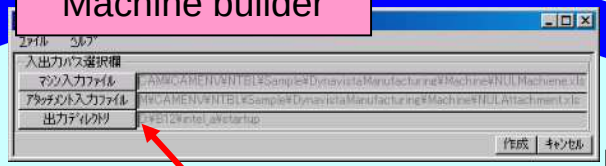
Machining information - Attachment -

The shape of a machine tool or the attachment can be created as a CATIA model based on the Excel file.

Machine builder

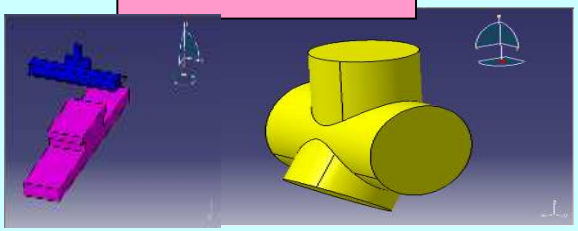
Definition in the Excel file



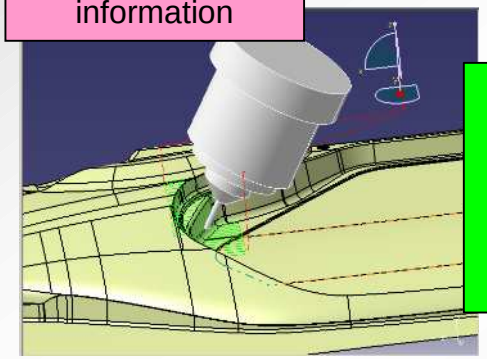


Excel fie will be compiled.

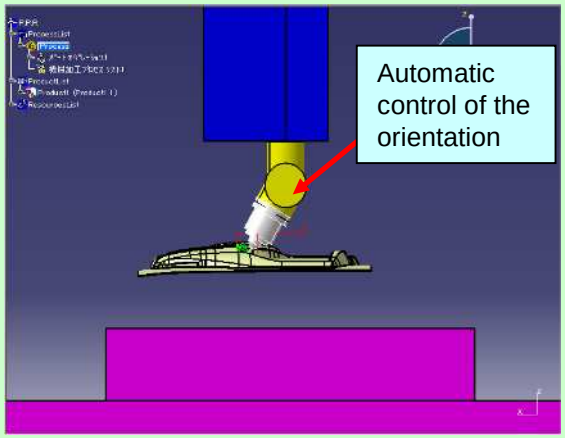
CATIA model



Tool path/tool information



Interference check or simulation is possible by the automatic control of the attachment and the machine tool

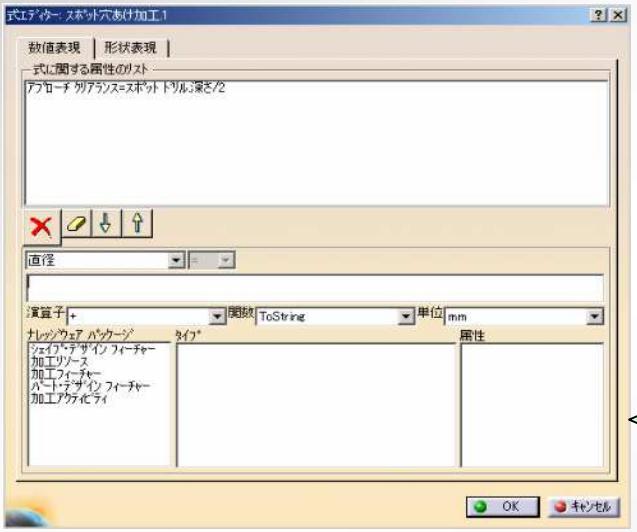


Dynavista

Machining information - Parameters -

- **Use of EXCEL**
  - As for parameters defined as a combination of tools and materials such as cutting conditions, and a pitch, values are specified in EXCEL file.
- **Operations based on the knowledge function of CATIA-NC**
  - Rules and formula are registered and used.
  - In case complex conditions are defined, the definition is simplified by the linkage with descriptions in the EXCEL file.

Knowledge registration panel



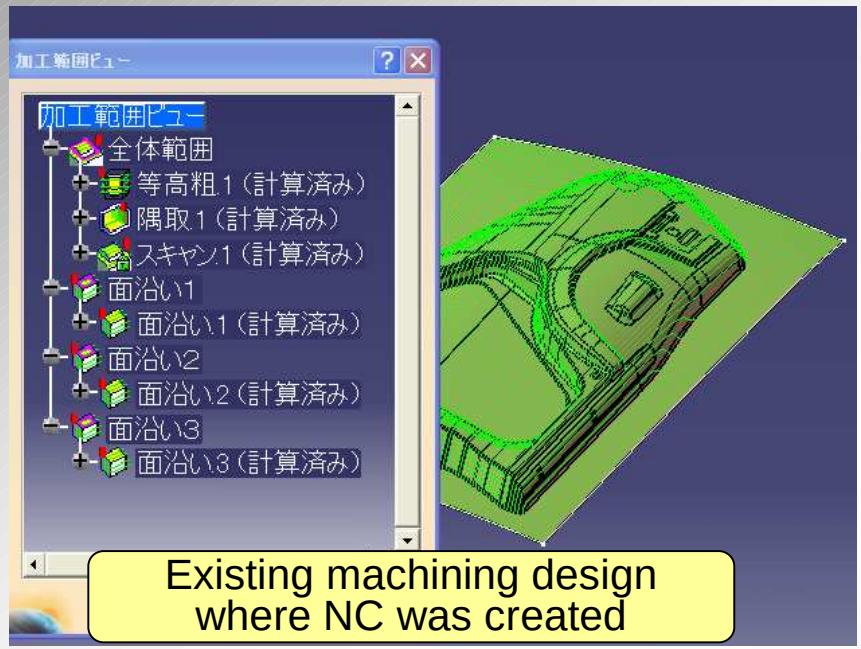
Description in the EXCEL file

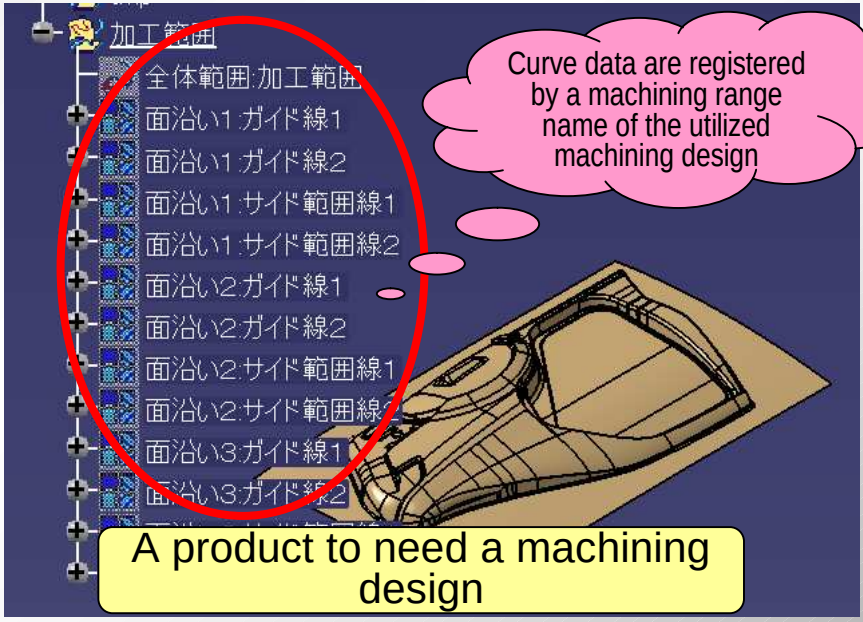
Keyword	Process type	Sequence	Machine	Attachment	Length	Stock	Hole1
Unit	String	String	String	String	mm	mm	mm
data	Scan	Rough	machine1	attachment1	100		
data	Scan	Rough	machine1	attachment1	200		
data	Scan	Rough	machine1	attachment1			
data	Boundary	Semi-finish	machine*	attachment*	50		
data	Boundary	Semi-finish	machine*		100		
data	Along-srf	Finish			50		
data	Along-srf	Finish			80		
data	Along-srf	Finish			100		

Referred

Reuse Machining Process

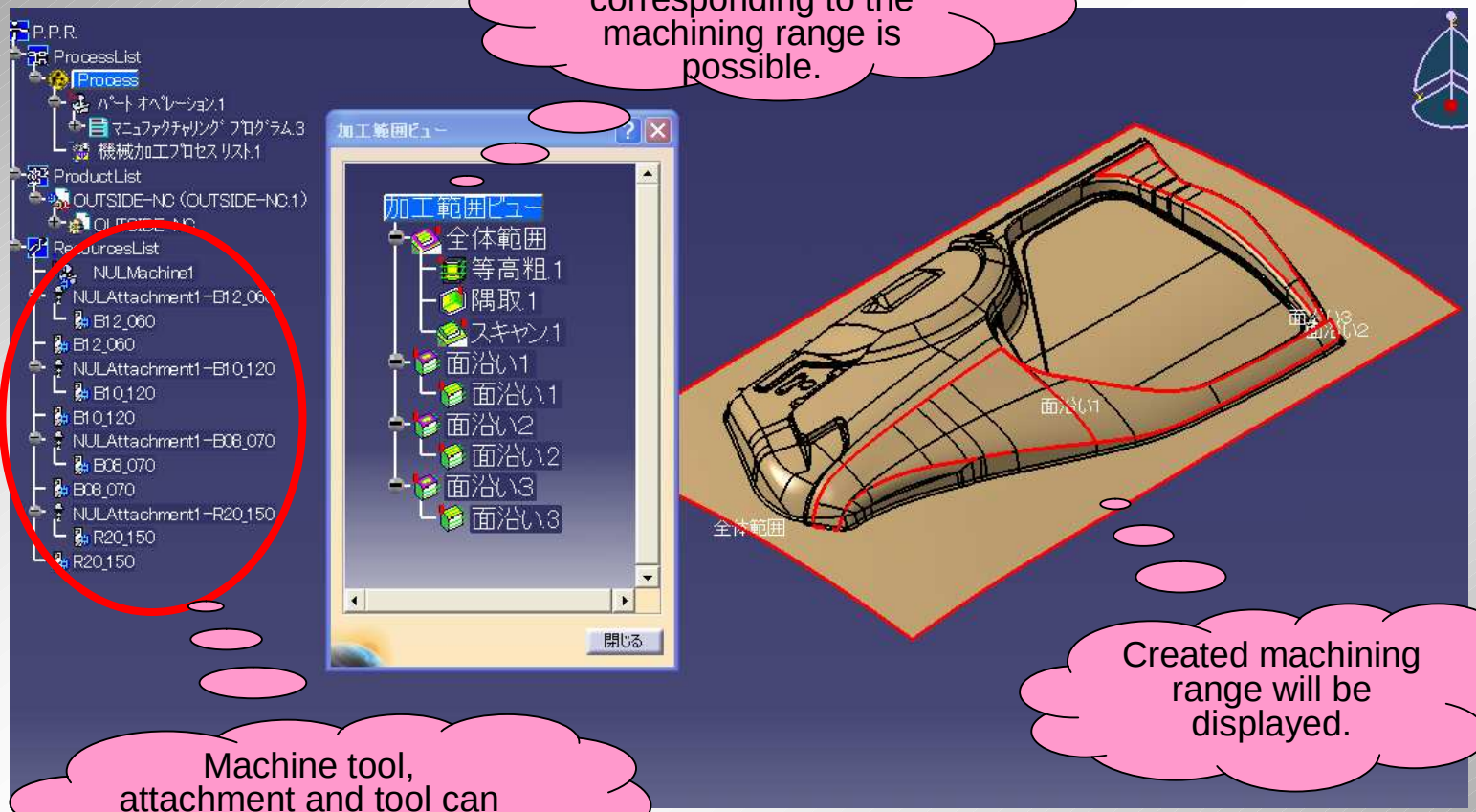
- A function is prepared to utilize a process design of a similar product.





Adaptive machining design

Reuse Machining Process

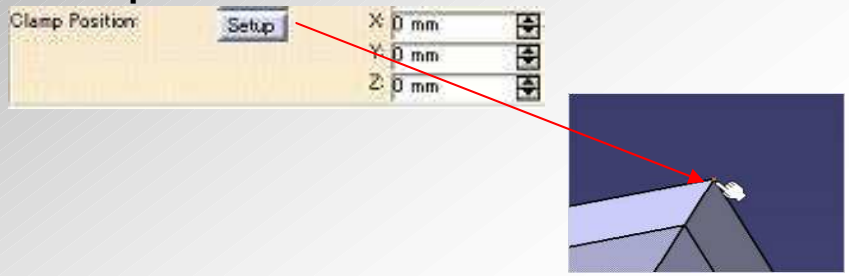


Dynavista

Setup

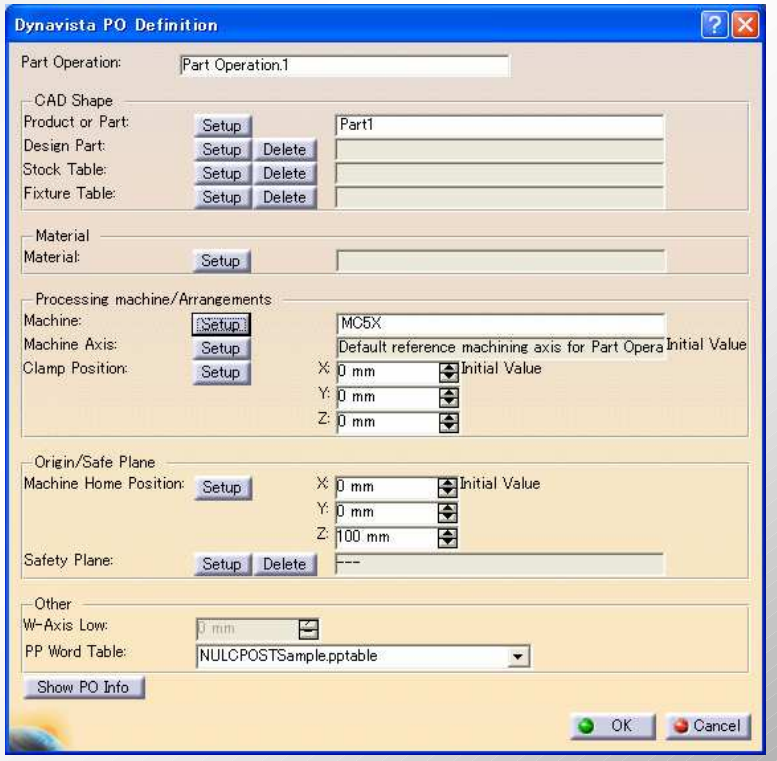
- Part operation definition dedicated to Dynavista

- CAD element can be specified by coordinate value input.



- Consistency is guaranteed for parameter change. (Whether to delete all paths or to delete and re-create is selectable)

- Part operation feature will be created.



Dynavista PO definition

* Part operation
A feature which has CAD shape, material, machining tool, machining base point and safety height, etc.

Dynavista

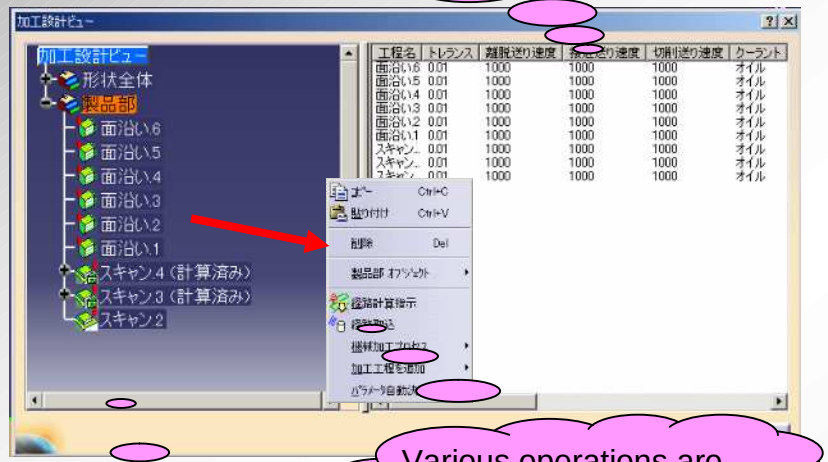
Process Planning

- Functions to manage machining process, machining area, thickness are provided.

Process Plan view

Managing machining processes

Processes can be checked in the list.



Various operations are possible in the view.

Process can be managed for each machining area.

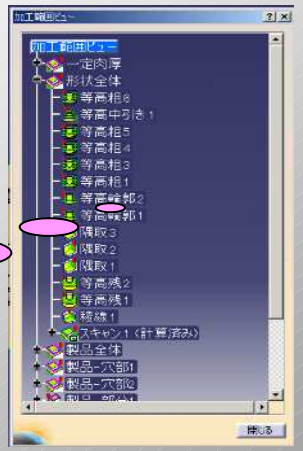
Thickness definition

Defining and managing thickness for each machining area

Each process generates a path considering the thickness

Machining Limits view

Managing machining range



Process can be managed for each machining range.

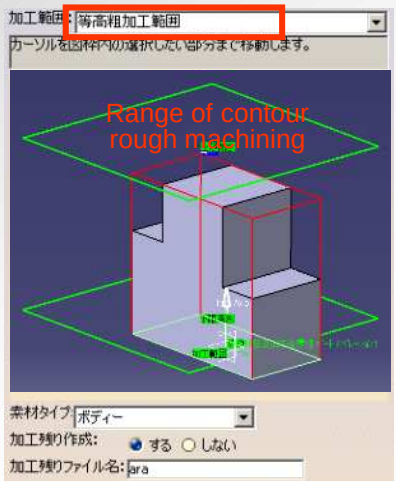
Dynavista

Machining design

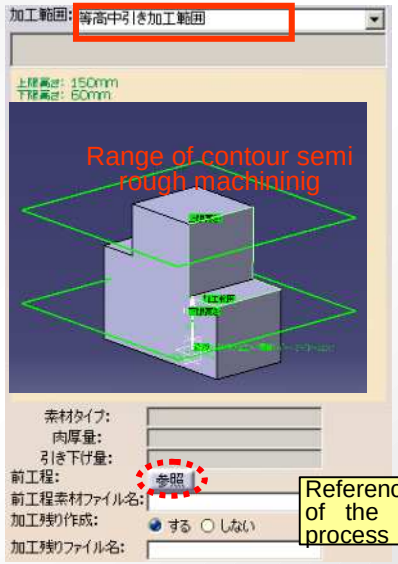
-**Rough contour and semi rough machining**
- Improvement of machining range inheritance -

Abstract
Selection of whether to “Inherit the machining range” or “Not” is added at referencing a pre process of the contour semi rough machining.

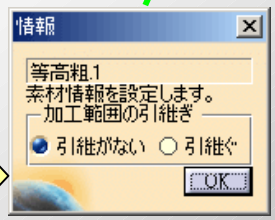
Pre process



Before reference



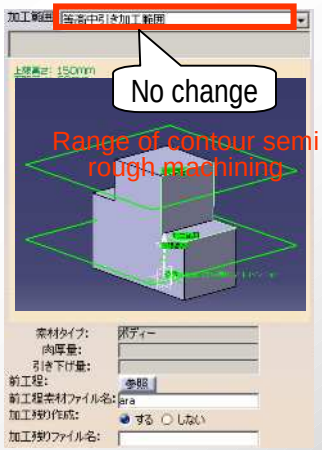
Reference of the pre-process

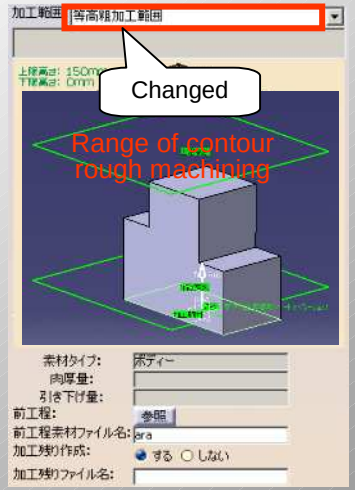


Inherit

Not inherit

After reference





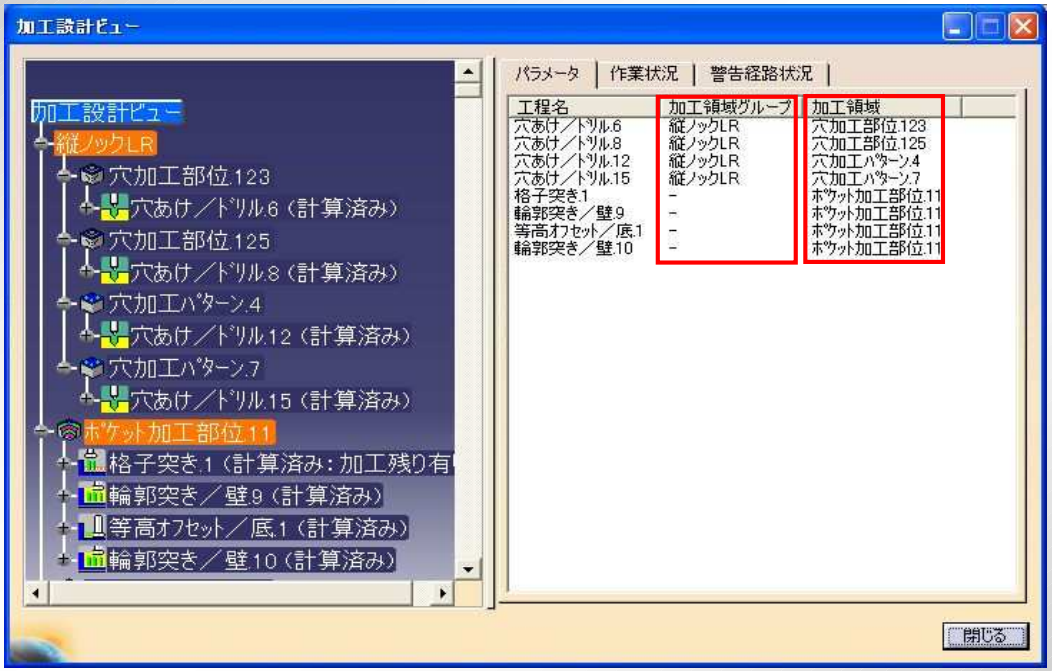
Dynavista

Process Plan View

- Display of machining area group name and machining portion name

Abstract

Display of machining area group name and machining portion name are added to a parameter column of a machining design view.



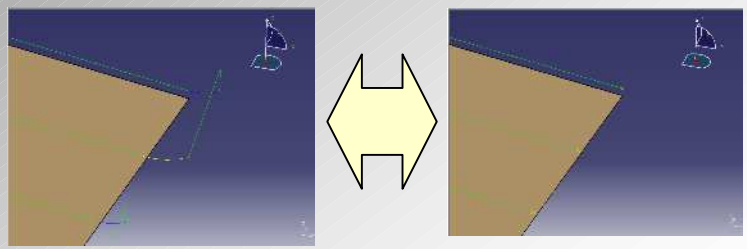
Purpose

Man-hour of “specification of portion” will be decreased by the display of “”Machining portion name”, “Machining area group name” and “Machining area name” at parameter column in the machining design view.

Tool path edition

- Wide variety of editing functions from whole tool path to tool path points

Edit Air cut

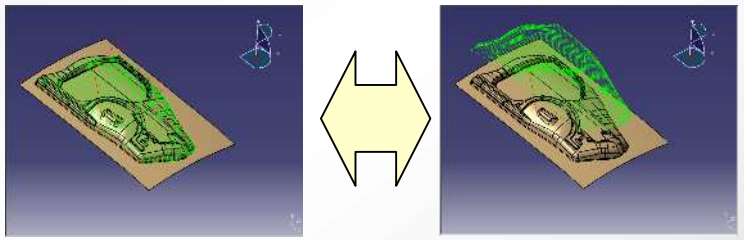


Followings can be added or removed.
- Approach
- Retract
- Pick feed

Add air cut

Delete air cut

Edit path



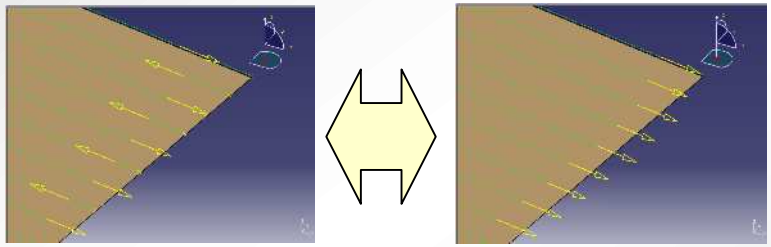
Edition of the whole tool path

Move | Rotate | Clip

Copy | Mirror copy

Mirror is possible for a machining axis

Edit element path



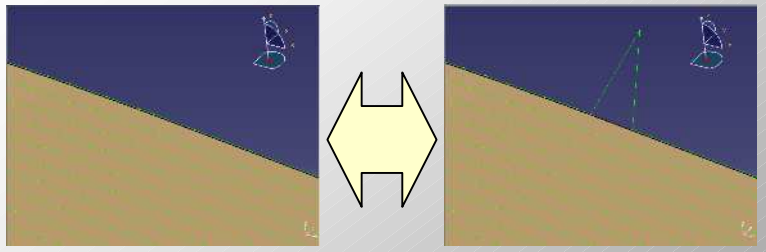
Edition is allowed for each elementary path in the tool path

Delete | Reverse direction | Change of order

Shortest reordering | Arrange direction | Reverse order

Recursive operation is possible

Edit path point



Edition allowed for each tool path point

Extend | Move | Move

Add | Copy | Measure

Closest point on the path: measurement of the closest point between any point on a path and the path or a shape.

Dynavista

Tool path edition

- Deletion of a basic tool path and its recursive operation

Abstract

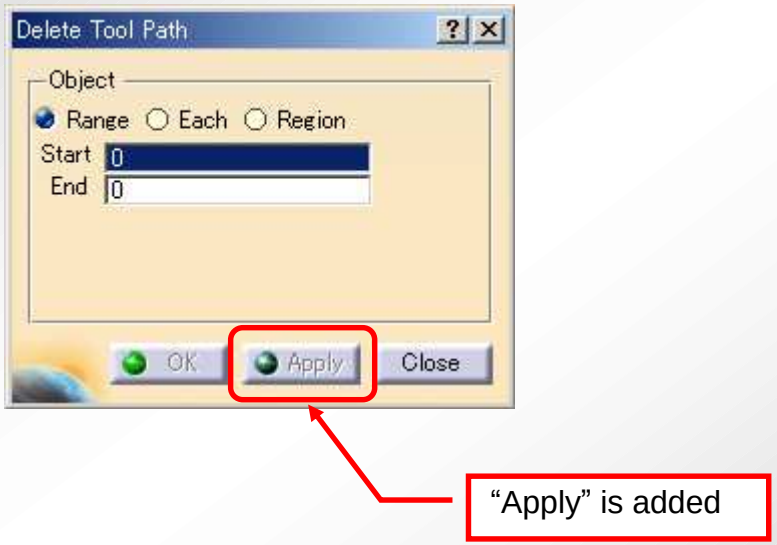
"Apply" button is added to "Delete basic tool path command" for recursive operation of the command.

Purpose

It is inefficient to activate the command many times to delete basic tool paths recursively so far.
Operations and man-hour of the command execution are reduced by this improvement.

Usage

Recursive operation is possible to push "Apply" button instead of "OK".



Dynavista

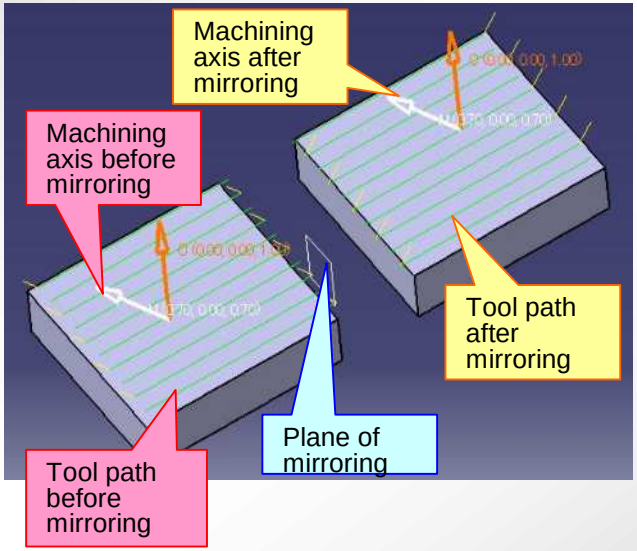
Tool path edition

- Mirror copy of a tool path

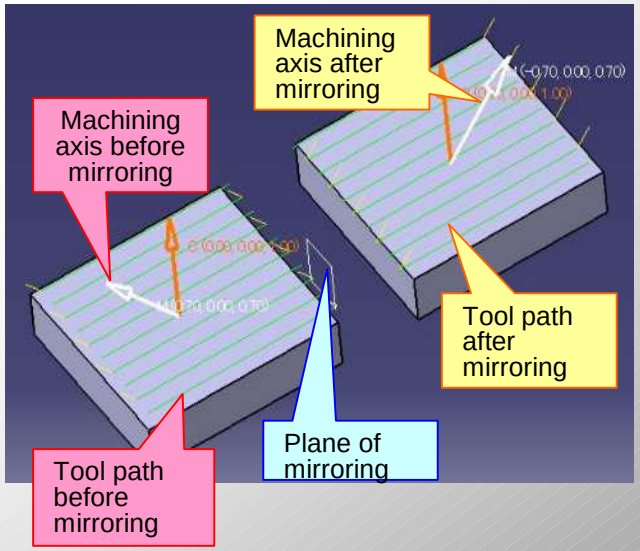
abstract

Mirroring function is added for a tool paths in a specified machining process and specified and machining axis.

Mirror copy of CATIA

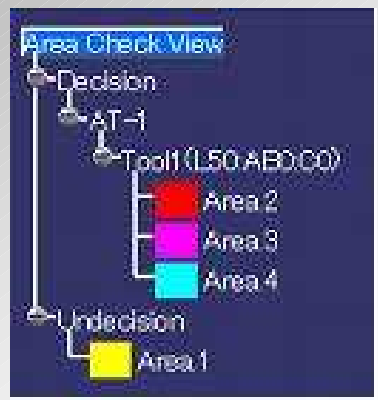


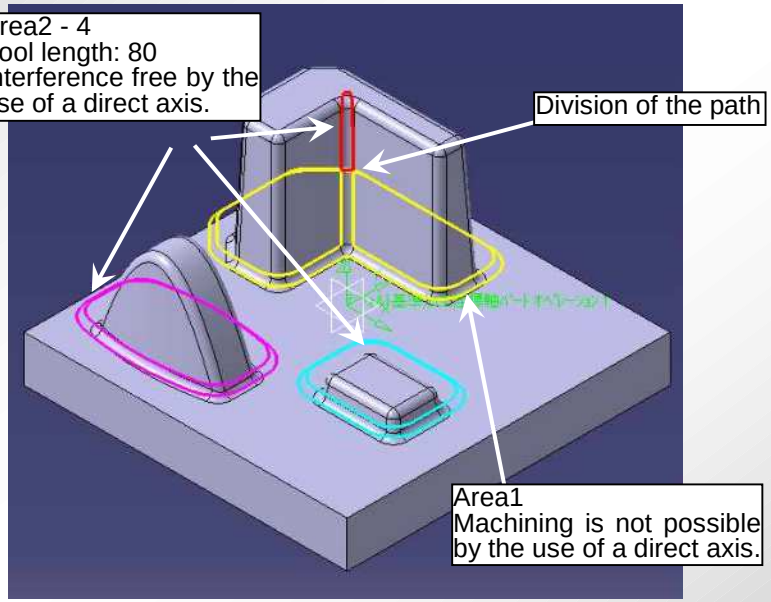
Mirror copy of Dynavista

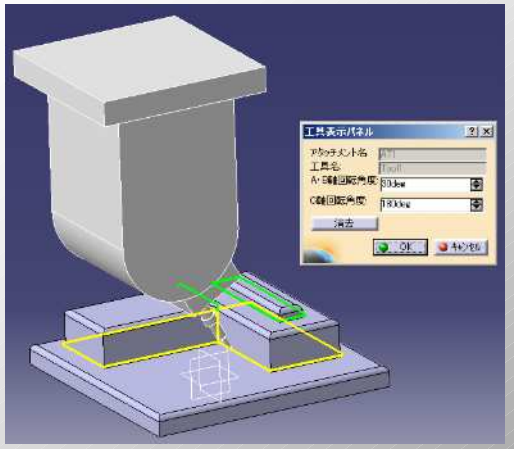


Corner machining Auto Corner Division
– selection of appropriate length tool

Interfere free tool paths are created at tools, holders and attachments taking optimum tool length and tool axis into account. Tools with different length are pre-registered.







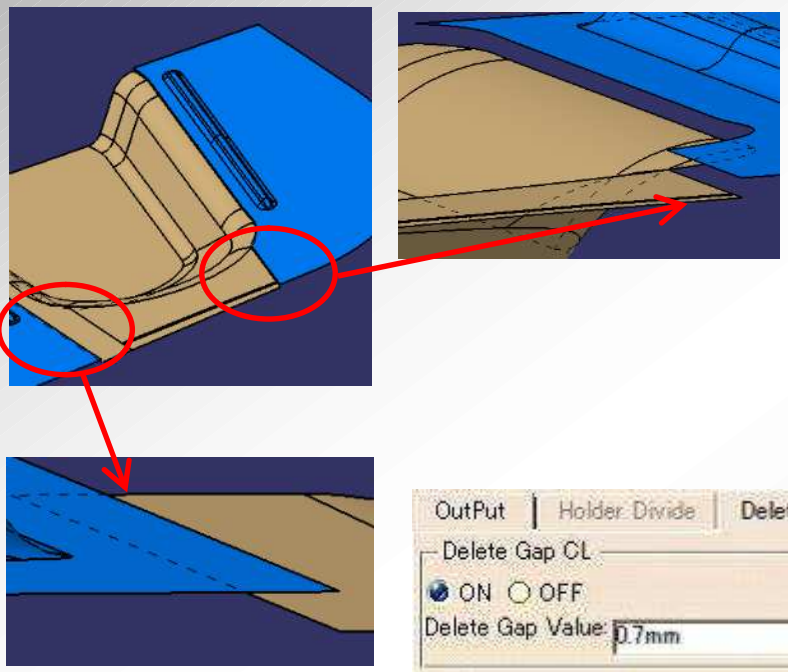
Sloped axis tool can be specified for an area unable to machine by a direct axis

Machining order
An order is defined so that a short tool is prior to a long one, and direct axis tool is prior to a large slope angle one. Whether tool length order or slope angle order will be determined by executing an optimization.

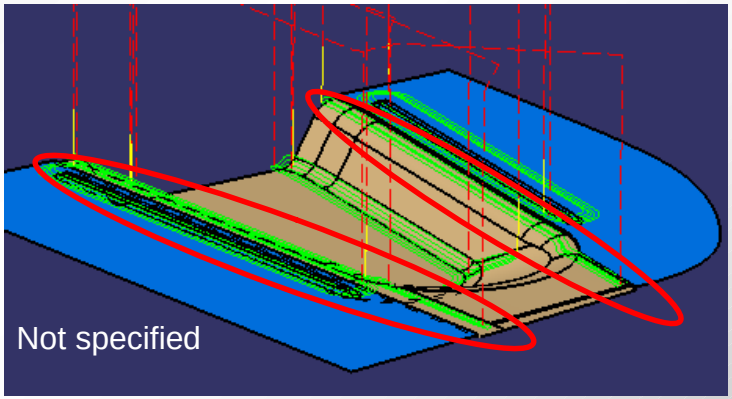
Dynavista

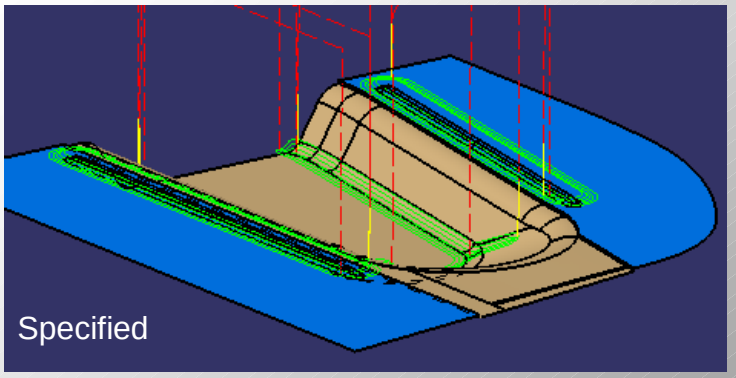
Corner machining Delete Gap CL
– removal of small step path

When a small step (where surfaces are disconnected) exists in a target shape of machining, the small step is automatically detected and no tool path will be created at the portion.



A user specifies whether it is a small step or not.

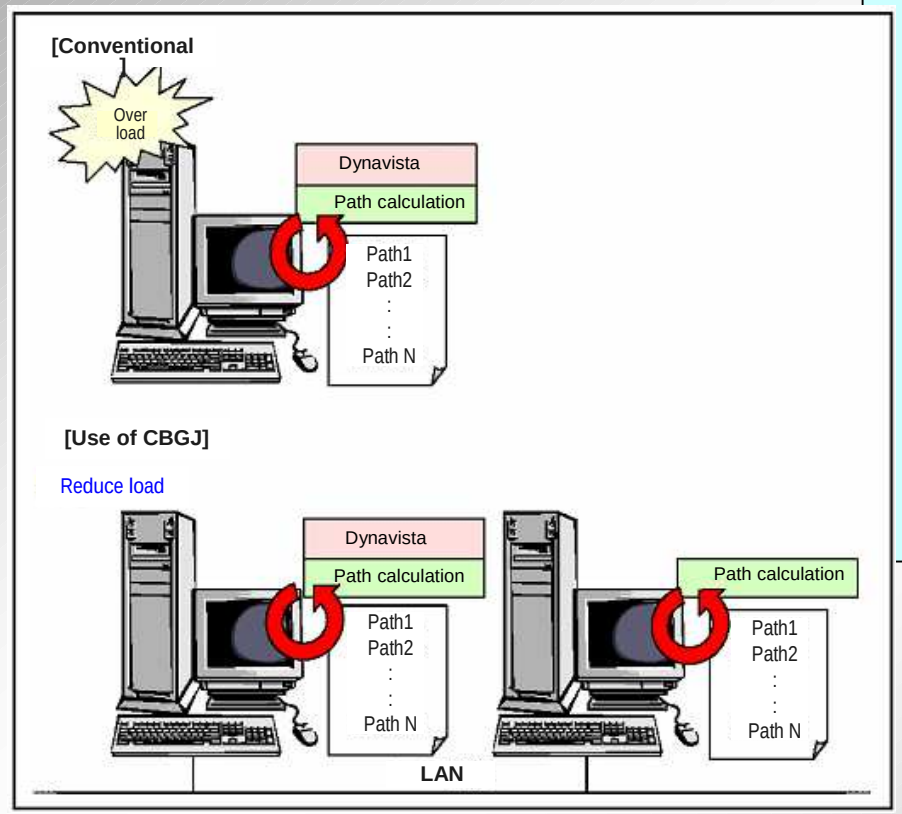




BGJ

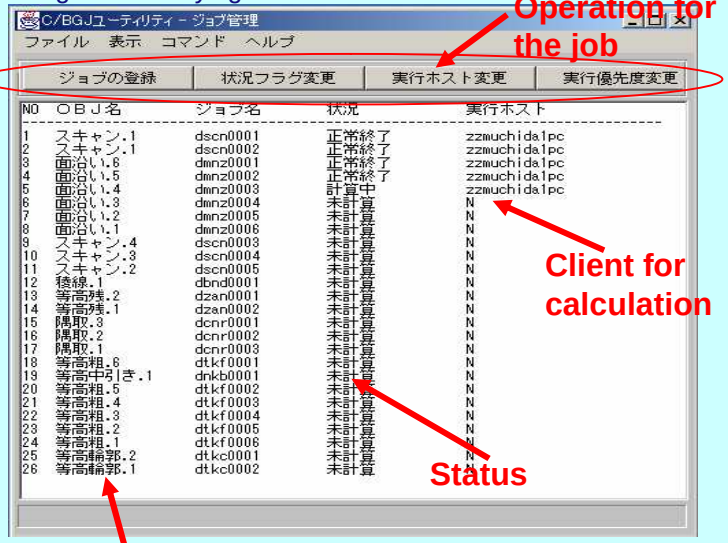
- Managing background calculation for tool paths

  Save total calculation time by dispatching calculation to two or more clients.



[BGJ utility]

- Monitoring and modifying the calculation status

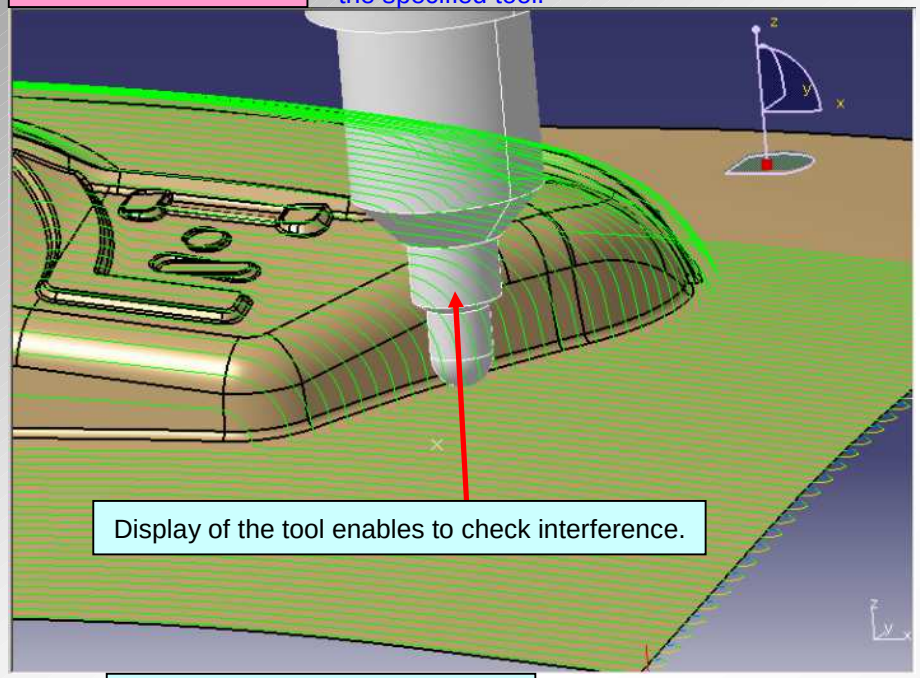


Check tool path

- The tool can be displayed in order to check the specified tool path or the specified portion.

Tool body display

Cutting status can be checked by 3D view using the specified tool.



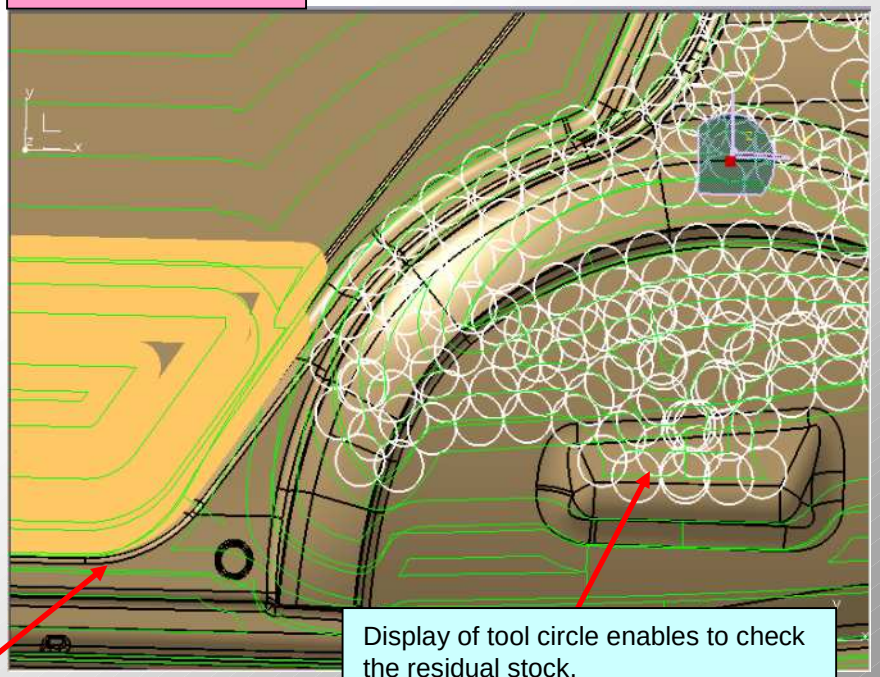
Display of the tool enables to check interference.

Selection of tools, re-setting to a process
Display even without tool paths.

- Half transparent display is possible.
- It can be used from Edit tool path / Display tool path / Check interference result

Tool circle display

Cutting status of be checked by 2D view using the specified tool.



Display of tool circle enables to check the residual stock.

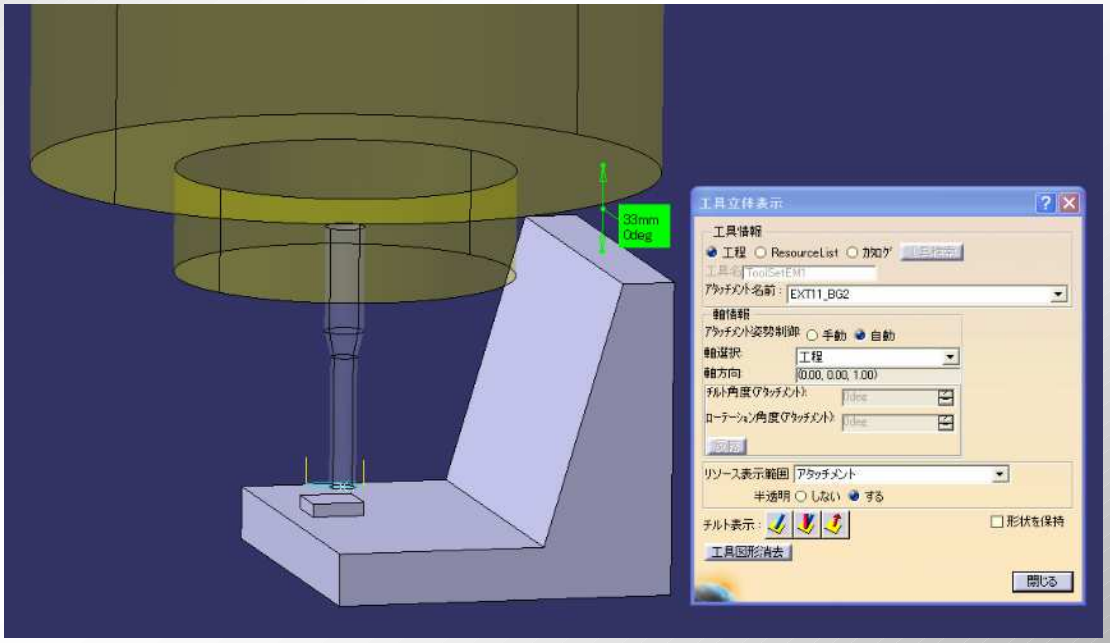
Display of the tool paths in filled manner enables to check the residual stock.

Dynavista

Tool display

- Display a tool solid on a screen

  - Half transparent display is possible.
  - It can be activated from Tool path edition / Tool path display /Interference check result command.

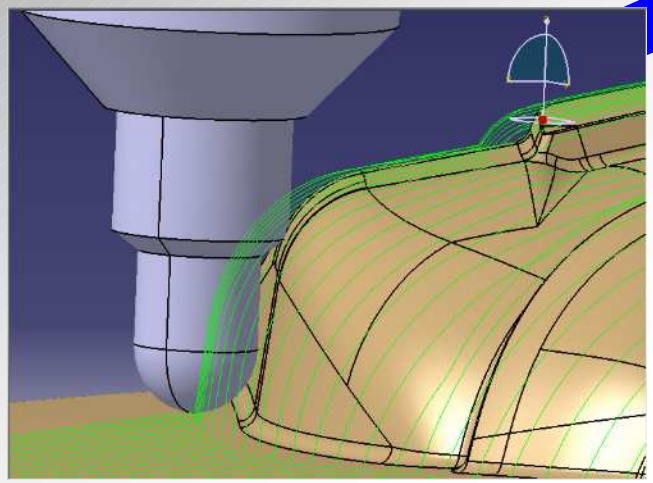


Interference check

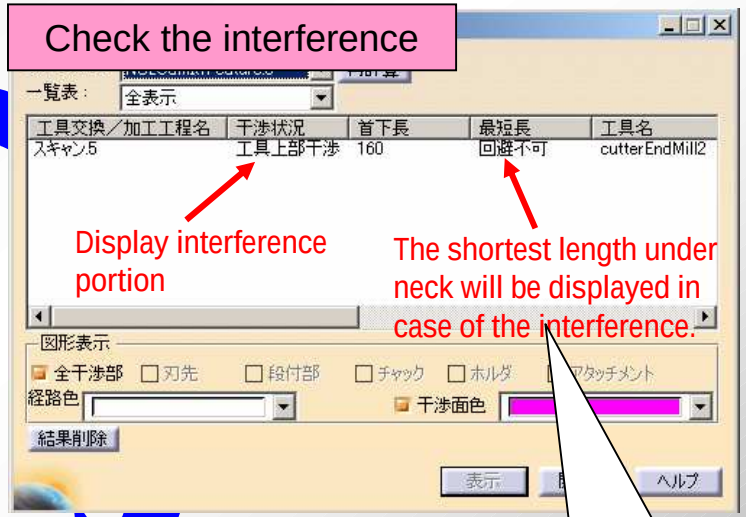
Interference check of the tool, the holder and the attachment for a tool path.

Easy check of interference portions.

Output of the shortest length under neck.



Check the interference

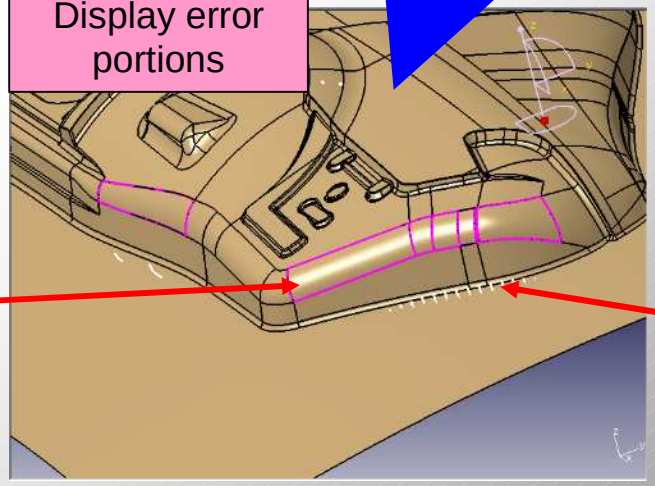


Display interference portion

The shortest length under neck will be displayed in case of the interference.

It can be displayed even if no interference exists.

Display error portions

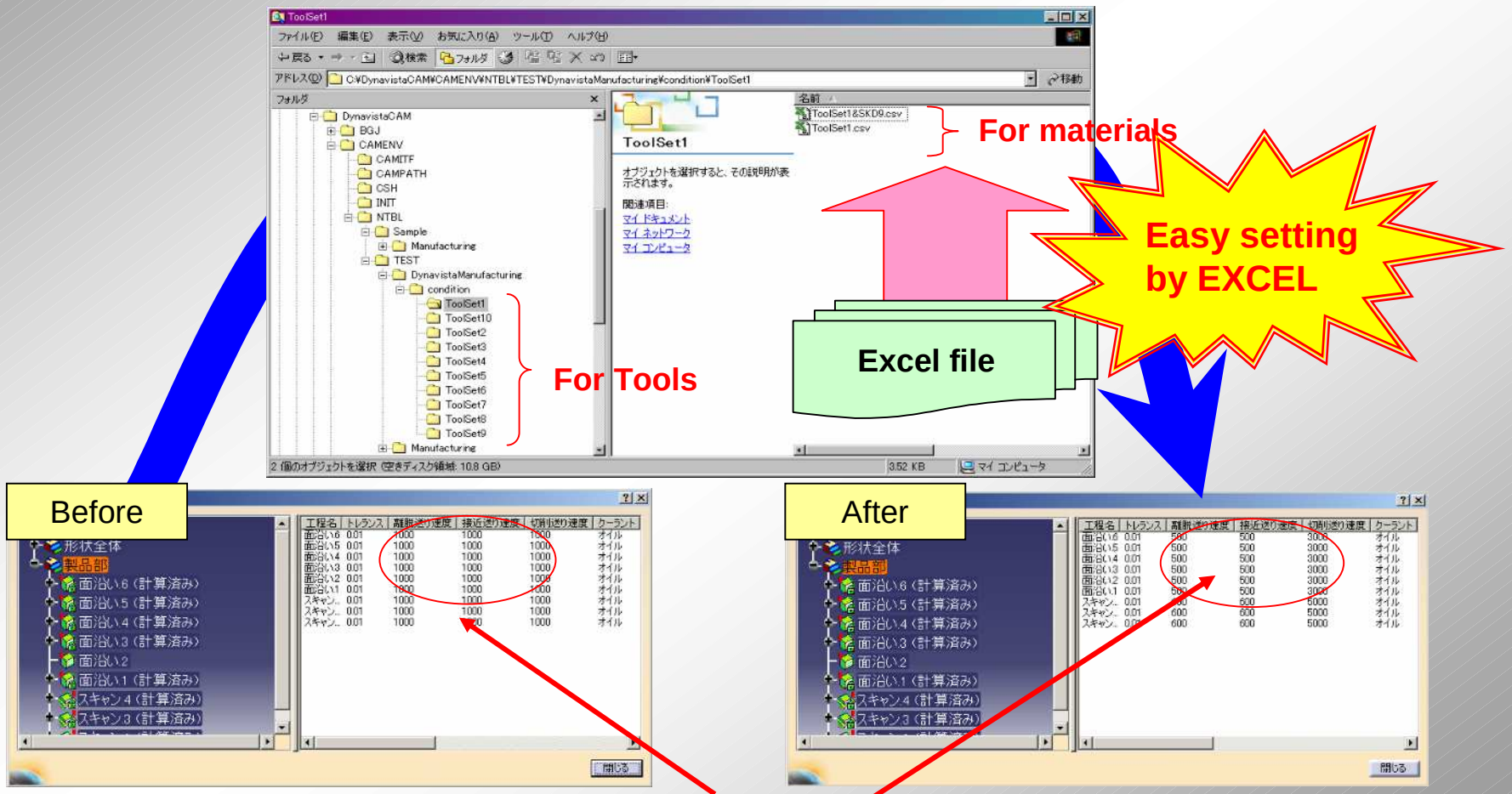


Display interference surface

Display interference portion in the CL.

Automatic parameter definition

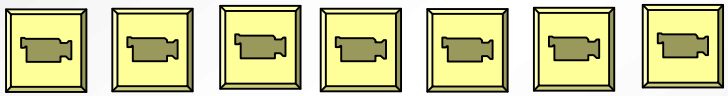
- Machining parameters such as feed rate are automatically defined by tool, material and machining method.



Machining operation

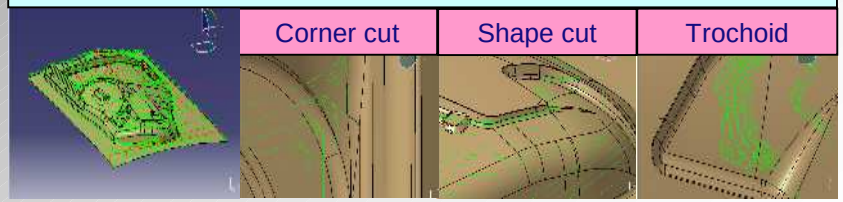
- **Various original 3D machining functions**

Contour Along-surf Corner Boundary Scan Profile Scriber

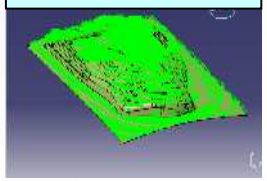


Contour machining

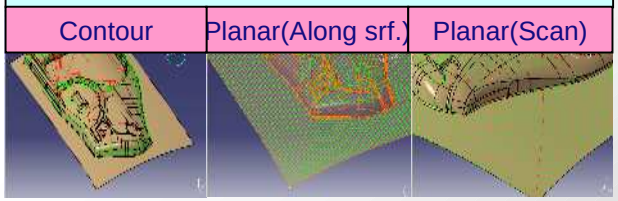
Contour rough



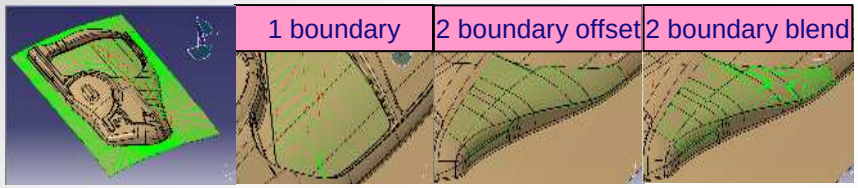
Contour semi-roughing



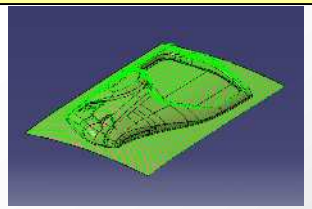
Contour finishing

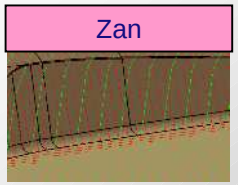


Along surface machining

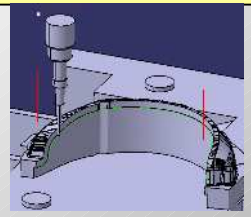


Scan (Lace) machining

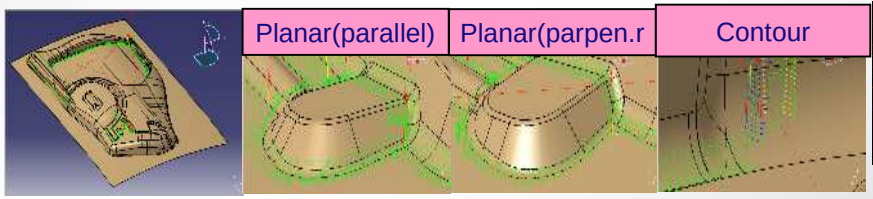




Profile machining

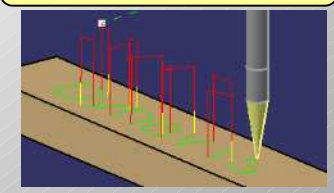


Corner machining



Boundary machining

Scriber machining

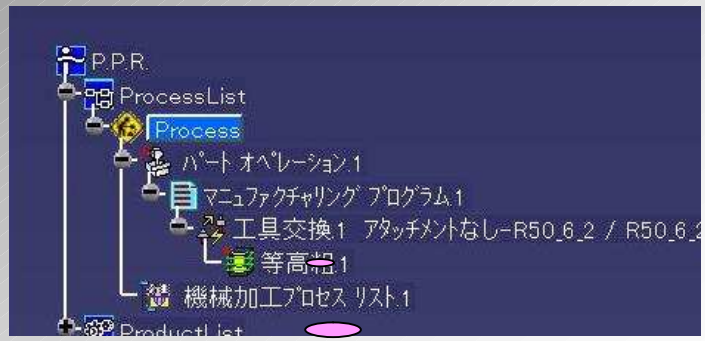


- **Automatic selection of optimum machining parameters fitting to machining process**

Dynavista

Machining operation

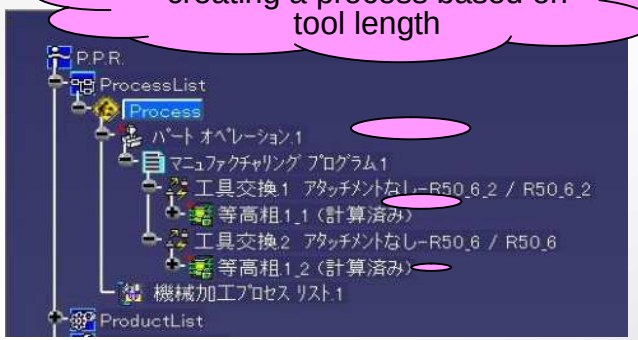
- Tool path division by tool length

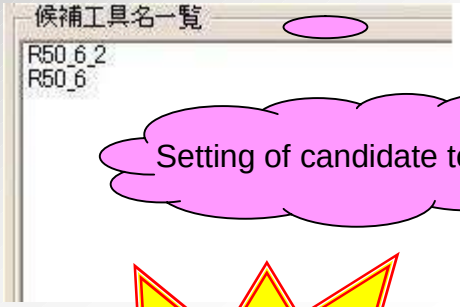


Tool path calculation

Import of tool path

Dividing a tool path and creating a process based on tool length

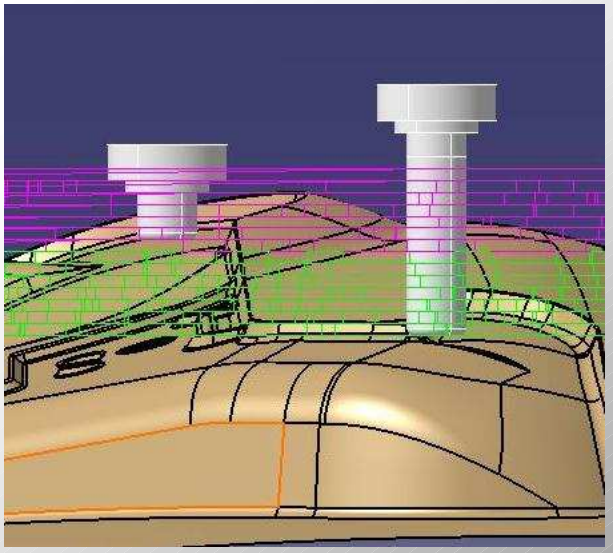




Setting of candidate tools

Candidate tool registration Easy setting by the use of EXCEL

Target machining
- **Scan (lace)**
- **Boundary**
- **Along surface**
- **Contour rough**
- **Contour semi-roughing**
- **Contour profile**
- **Contour zan**
- **Corner**



Dynavista

Machining operation

- Division of tool path by tool length

- Scan (lace)
- Boundary
- Along surface
- Contour profile
- Contour zan

+ Overlap amount can be specified.ろ
+ Motion type is selectable
  - 1 optimum tool set
  - Dividing a tool path with an optimum tool set
  - Basically dividing a tool path with an optimum tool set
  - Removal of interference portion of 1 tool set.

- Contour rough
- Contour semi-rough

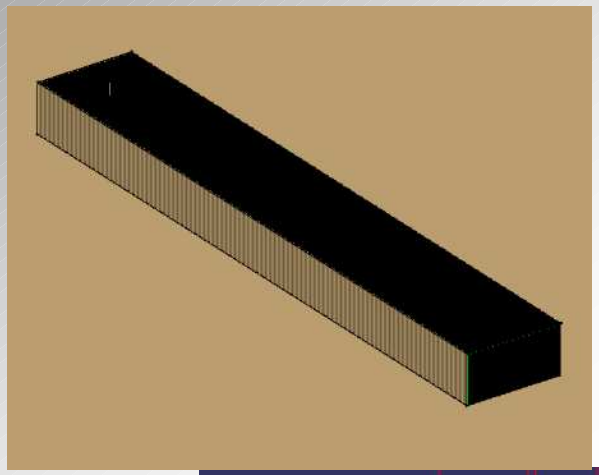
+ Interference-free tools can be determined for each layer.
+ Not only shape but also interference with raw material
+ Tool paths with interference can be temporarily displayed for every candidate tool.

- Corner

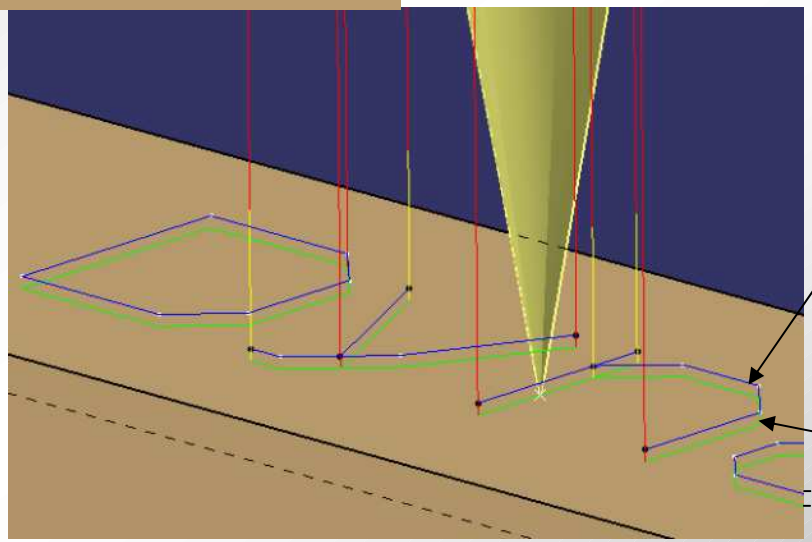
+ Division of tool path by tool length dedicated to corner machining.

Machining operation

- Scriber machining



A tool path is created from a CAD curve.



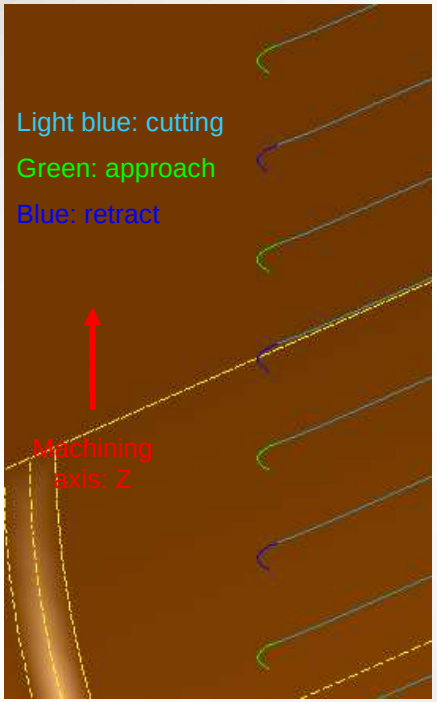
Specify a cutting amount

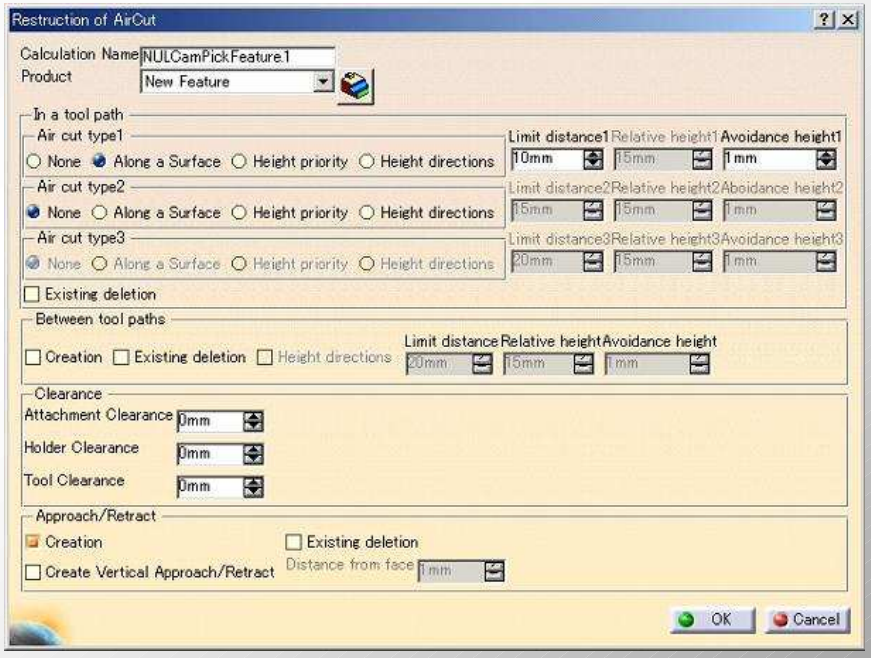
Pick calculation

- An approach and retract perpendicular to a surface

Approach along an axis (Retract)

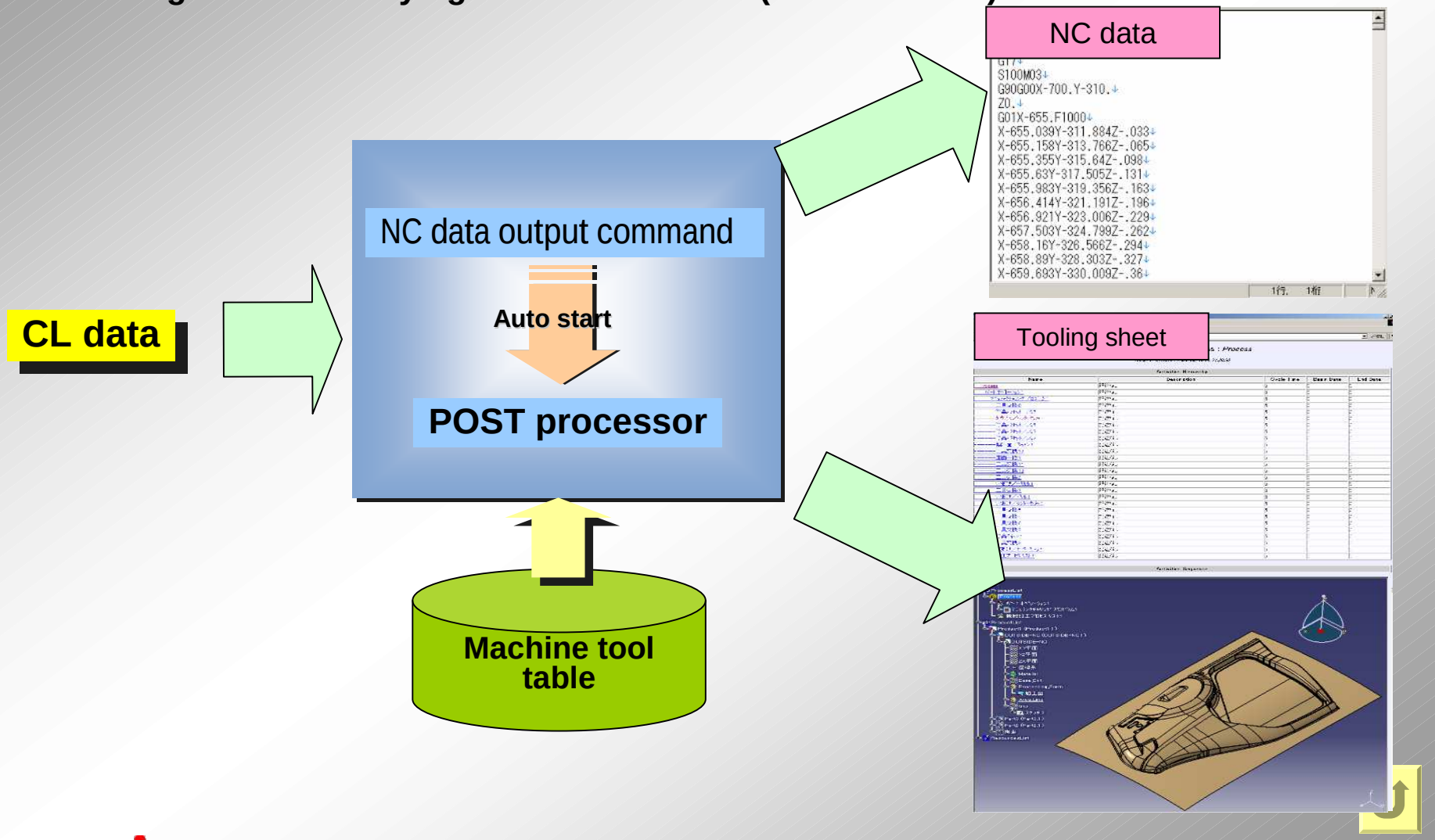
Approach perpendicular to a surface (retract)

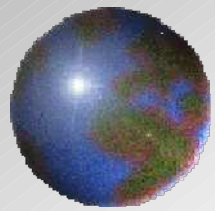




NC data creation

- NC data are created adapting to the various machine tools.
- Tooling sheets satisfying the user's needs. (Customizable)





Dynavista

CAA V5 based

http://www.unisys.co.jp/e/dynavista/