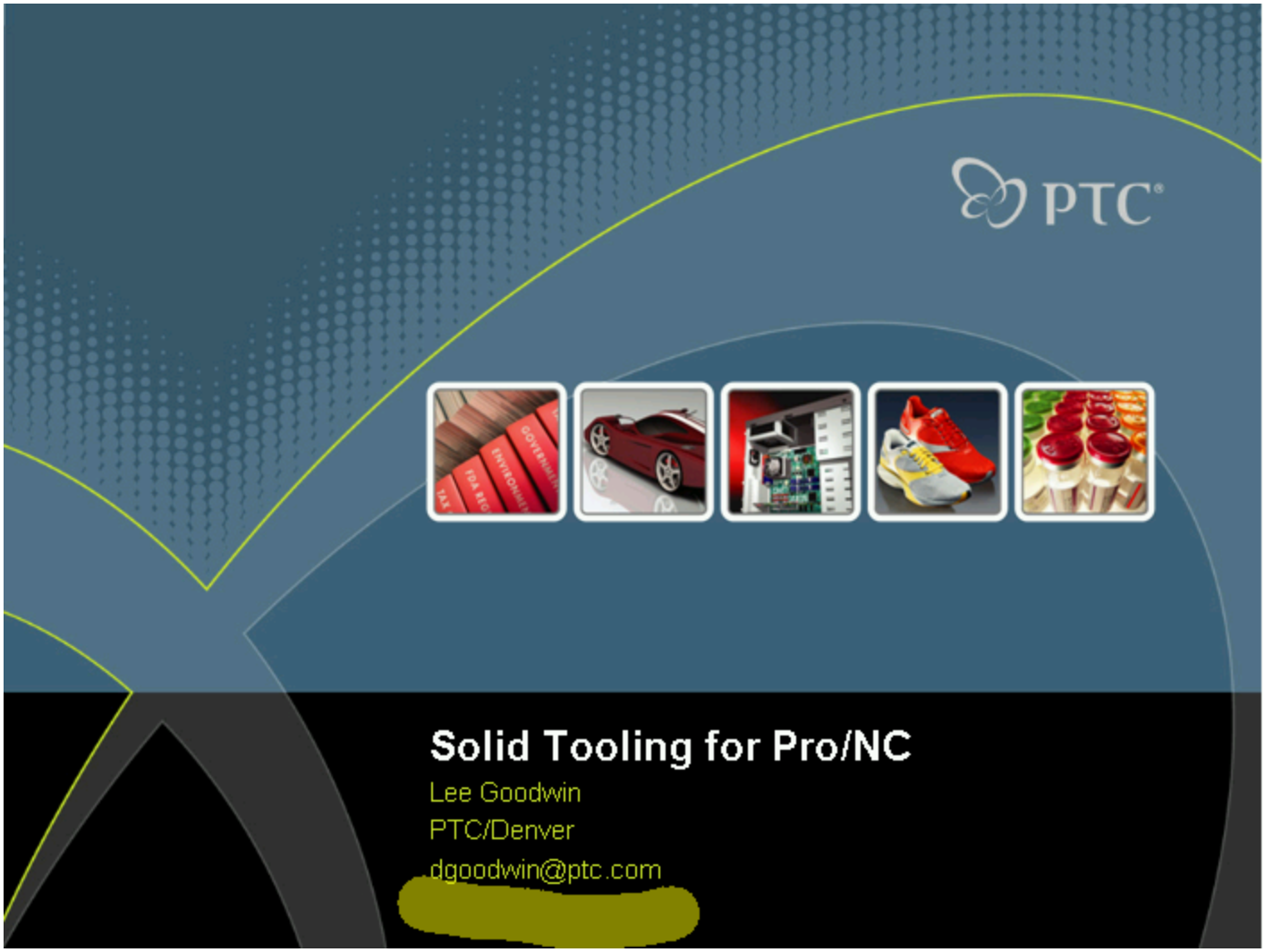
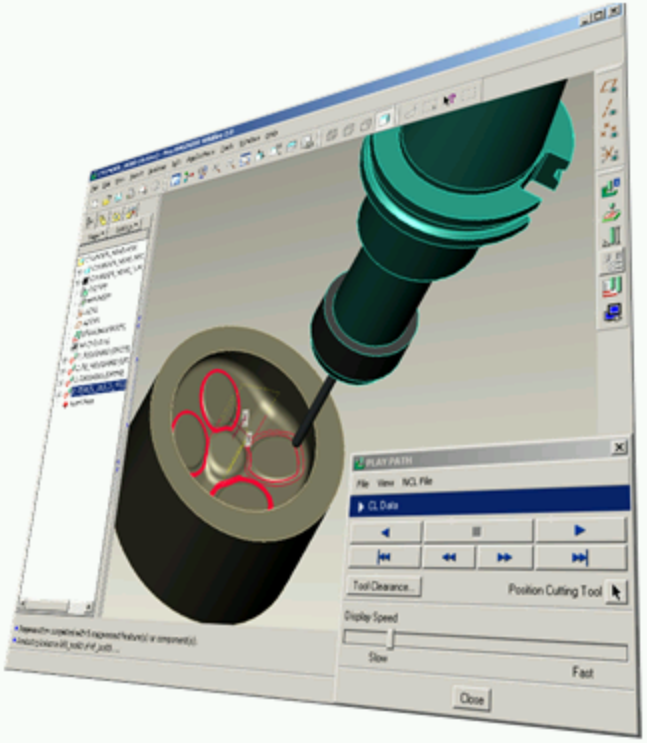


Solid Tooling for Pro/NC

Solid Tooling in Pro/NC

Agenda

- Key Issues
- Creating Solid Tools
- Using and Maintaining Solid Tools
- Next Steps
- Questions



Solid Tooling in Pro/NC

Solid Tooling in Pro/NC – Key Issues

Why?

- Machining Simulation
- Gouge Checking
- Complex Tooling
- Eye Candy – Impress the customer
- New in WF2 – Shaded solid tool display during playback

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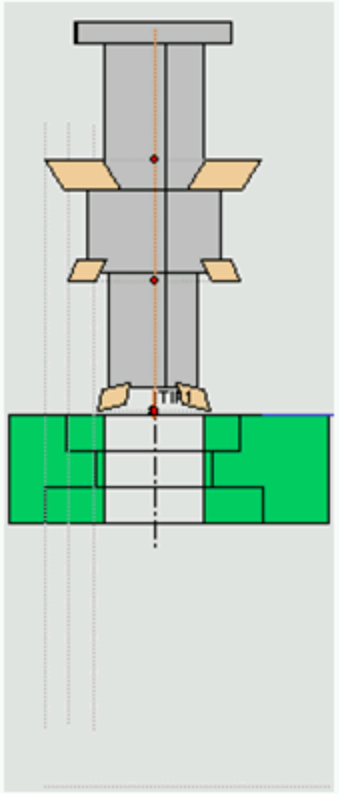
Solid Tooling in Pro/NC – Key Issues

Solid Tooling in Pro/NC – Creating Solid Tools

The Basics

- Pro/E Model of Tool
- Pro/E Model of Holder (optional)
- Appropriate Parameters:
  - –Cutter Diameter
  - –Length
  - –…
- Coordinate System for Drive Point



Solid Tooling in Pro/NC – Creating Solid Tools

Solid Tooling in Pro/NC – Creating Solid Tools

The Pro/E Model of Tool

- As complex or as simple as desired.
- Flutes, colors, etc.
- Family Tables are usually a good tool for construction and retrieval, but optional.
- Name them anything that makes sense to you.

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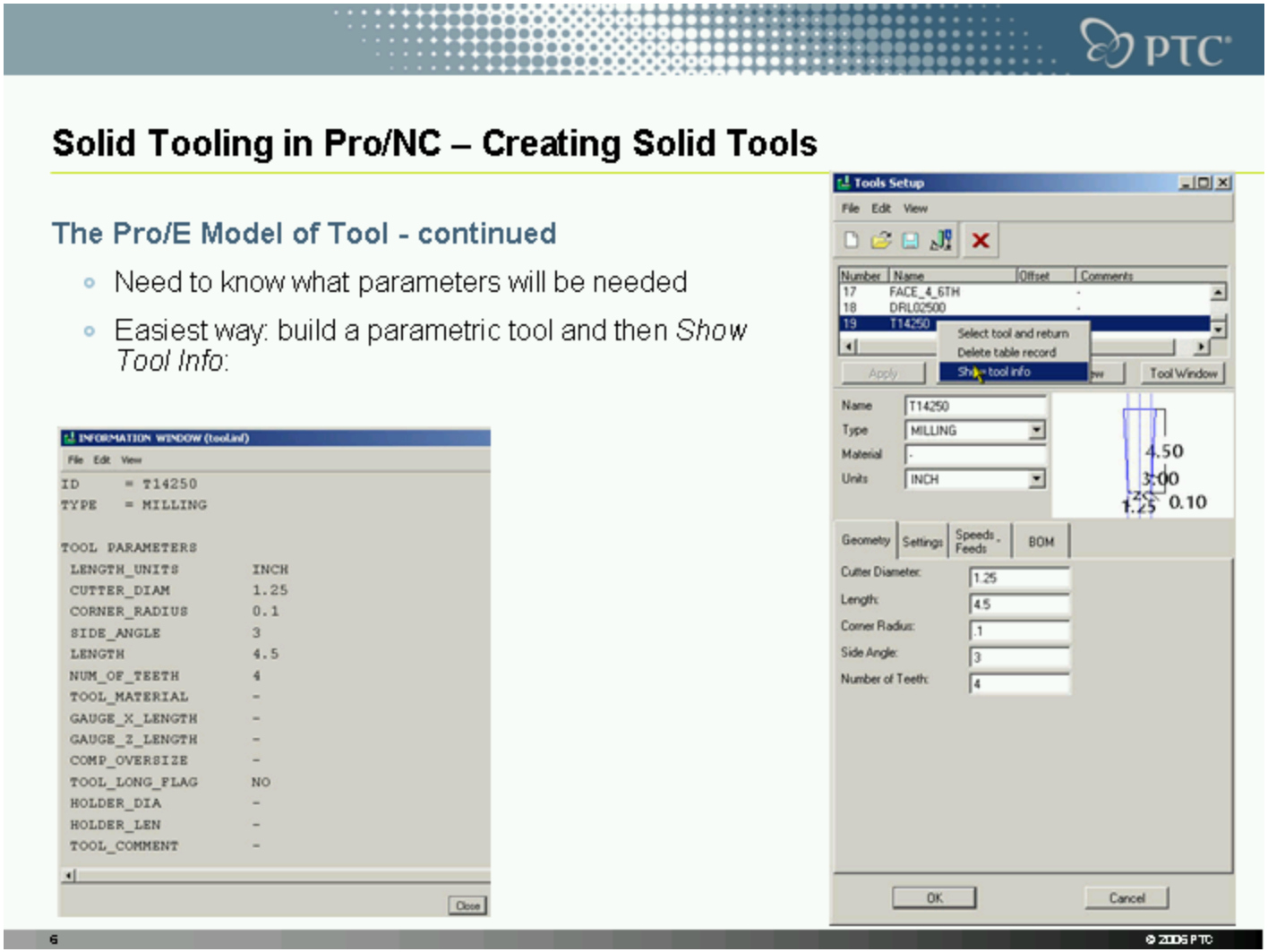
Solid Tooling in Pro/NC – Creating Solid Tools

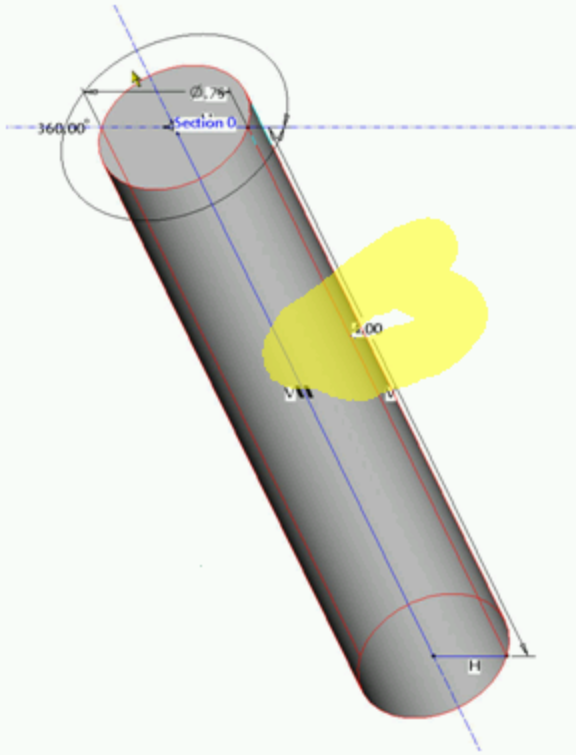


Solid Tooling in Pro/NC – Creating Solid Tools

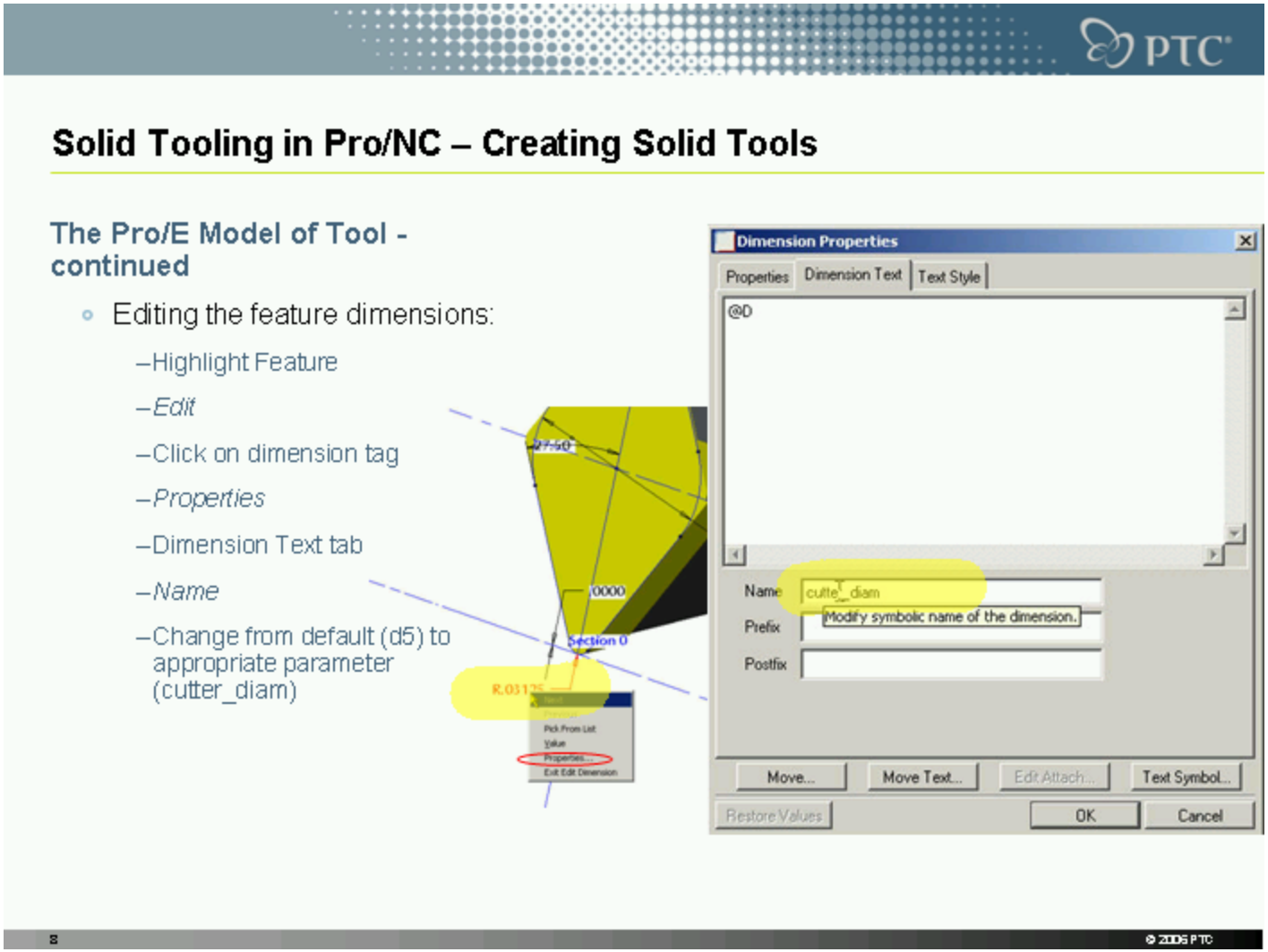
Solid Tooling in Pro/NC – Creating Solid Tools

The Pro/E Model of Tool - continued

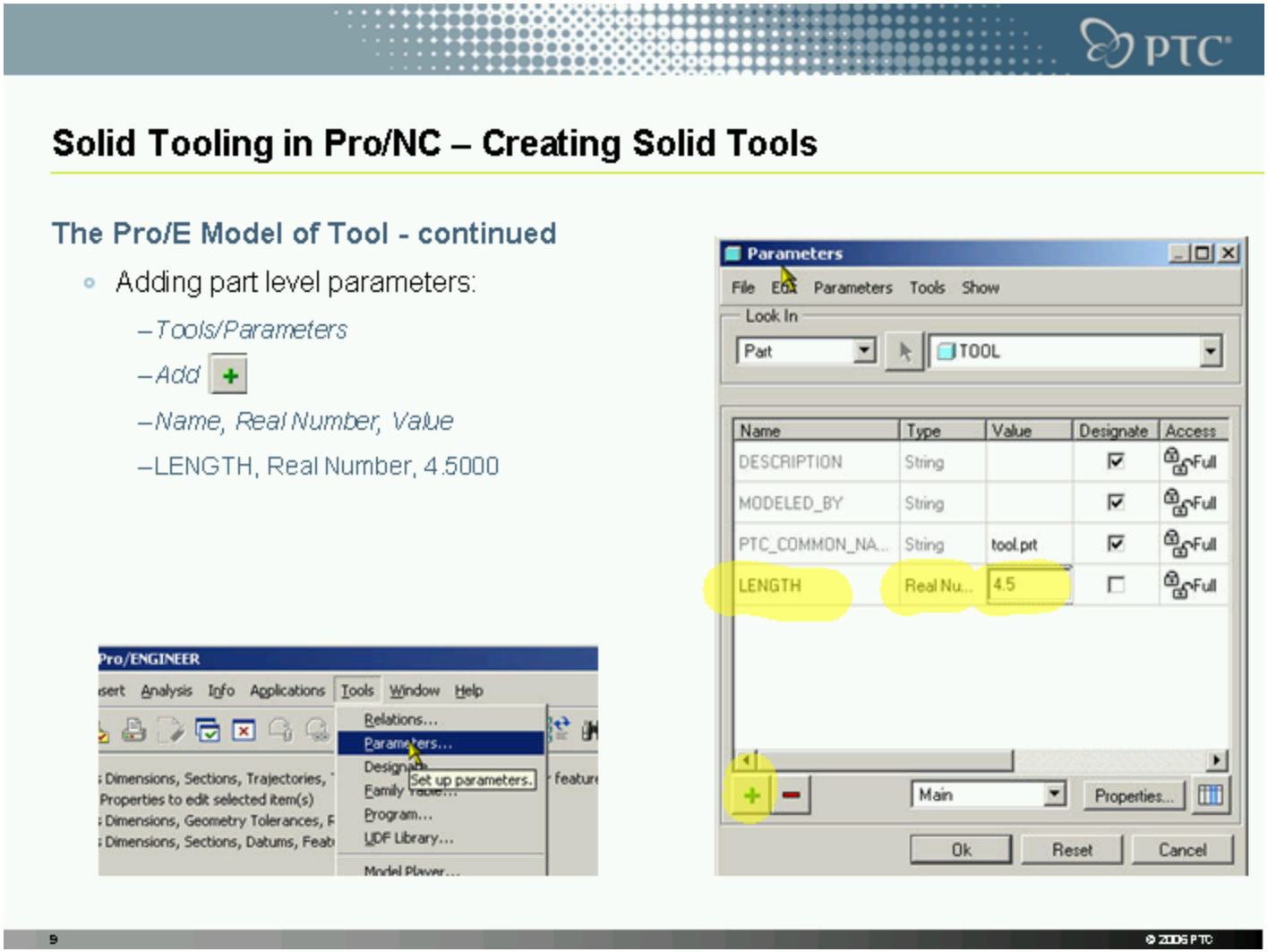
- These parameters need to be called out in the tool part model in order for them to be transferred to Pro/NC
- Can be done by editing the feature dimensions:
  - –Changing *d12* to be *length*; or
- Adding part level parameters:
  - –*Length = 4.000*



Solid Tooling in Pro/NC – Creating Solid Tools



Solid Tooling in Pro/NC – Creating Solid Tools

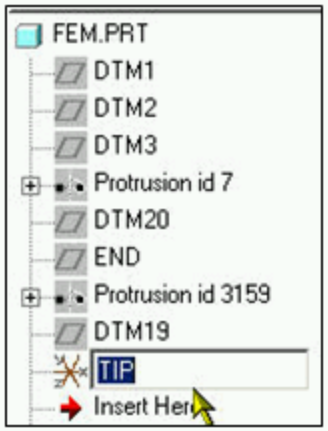


Solid Tooling in Pro/NC – Creating Solid Tools

Solid Tooling in Pro/NC – Creating Solid Tools

The Pro/E Model of Tool - continued

- Add a Coordinate System feature at the appropriate tool tip location
- Z axis positive along the tool axis
- Rename the feature "TIP"



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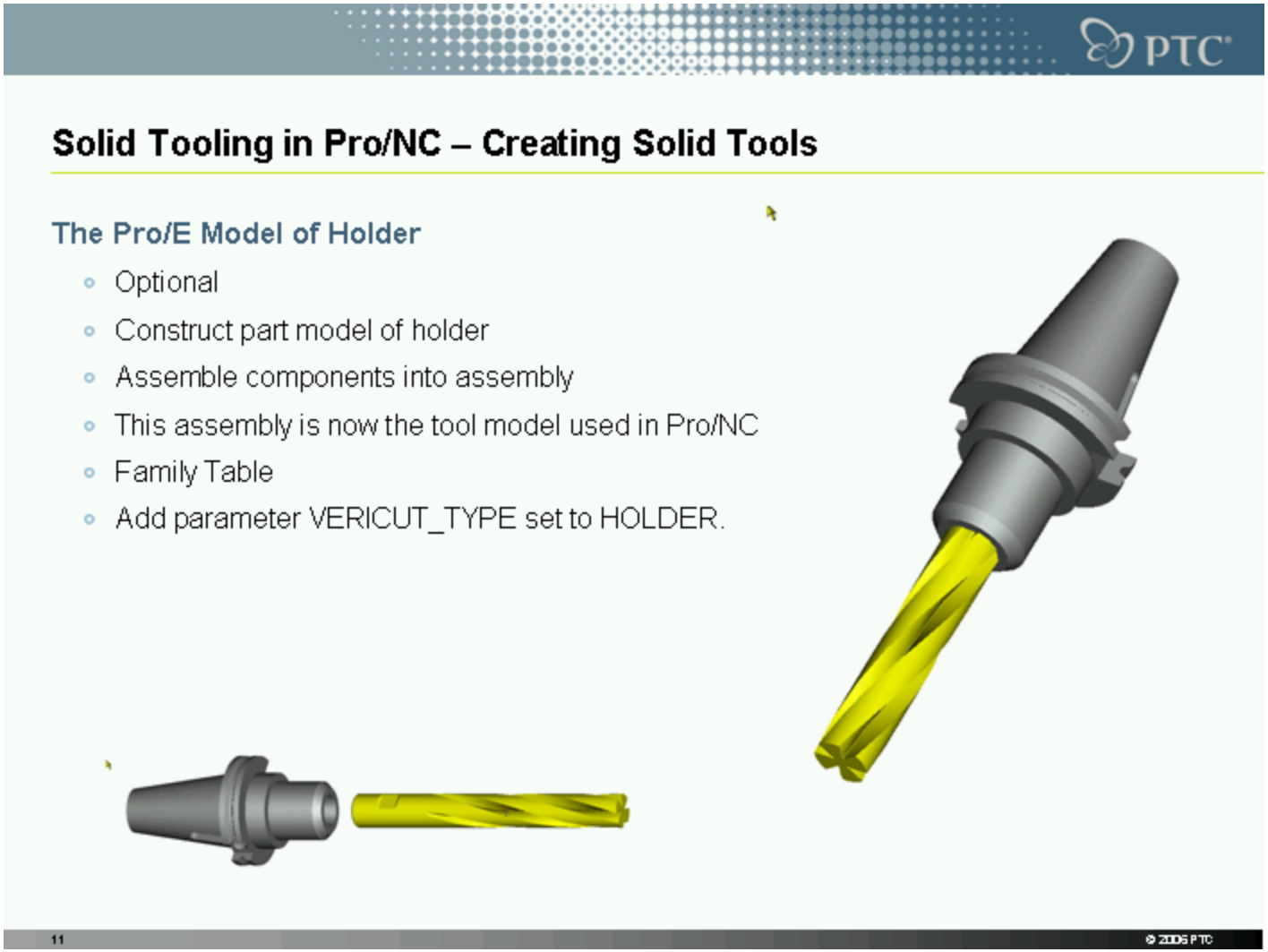
Solid Tooling in Pro/NC – Creating Solid Tools



Solid Tooling in Pro/NC – Creating Solid Tools

Solid Tooling in Pro/NC – Creating Solid Tools

The Pro/E Model of Holder - Continued

- Important:
  - If an assembly is used as a tool model, the system will search the assembly first, and then all the component parts in the same order as they were assembled (that is, the first component will be searched first), for the tool parameters and origin data.
  - Once a parameter is set, all values for the same parameter found later will be ignored. In other words, the top-level assembly parameters take precedence over component parameters, and after that the precedence is determined by the order of assembly.
  - If, after all components are searched, some of the tool parameters are missing, an error message will appear and you will be asked to select another tool.

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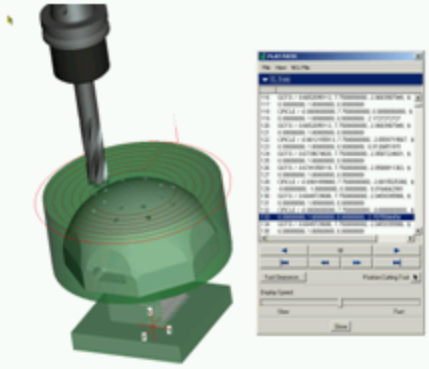
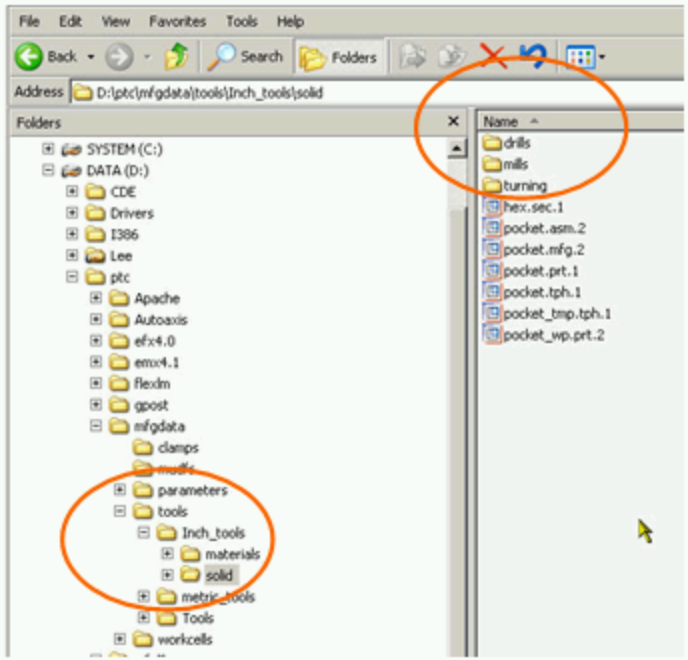
Solid Tooling in Pro/NC – Creating Solid Tools

Solid Tooling in Pro/NC – Using Solid Tools

Storage:

- Create solid tool library with subdirectories as needed.
- Config.pro option for pointing, same as parameter tools – *pro_mf_tpm.dir*
- Set search path for all solid tool files – *search_path d:/ptc/mfgdata/tools/solid*
- Set datums to hidden





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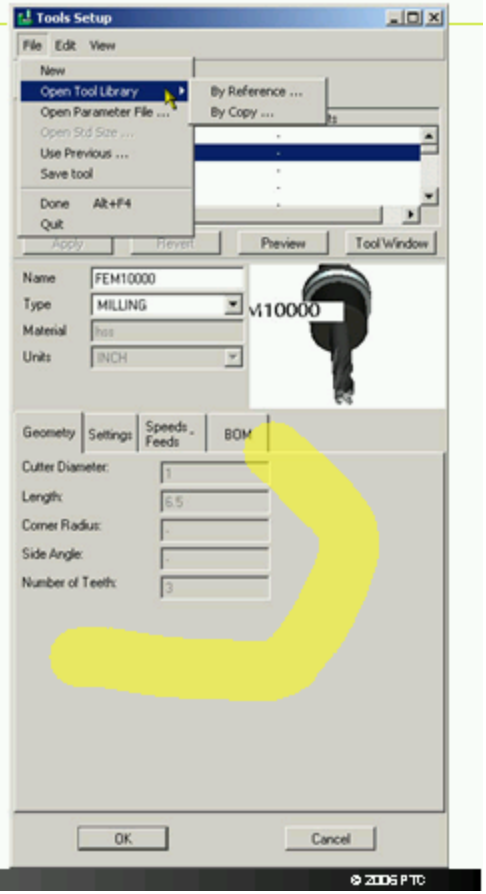
Solid Tooling in Pro/NC – Using Solid Tools

Solid Tooling in Pro/NC – Using Solid Tools

Use solid tools:

- Open tool setup menu.
- Important: when bringing in a new cutter, make sure the active tool type is correct (milling, drill, etc.) You might need to make a new dummy tool first. This problem is eliminated if you add to the tool part a parameter TOOL_TYPE.
- Select *File/Open Tool Library*
- *By Reference*: Tool is associative to original tool part/assy. If the tool model changes, the tool definition changes.
- *By Copy*: Tool information is input but changeable.

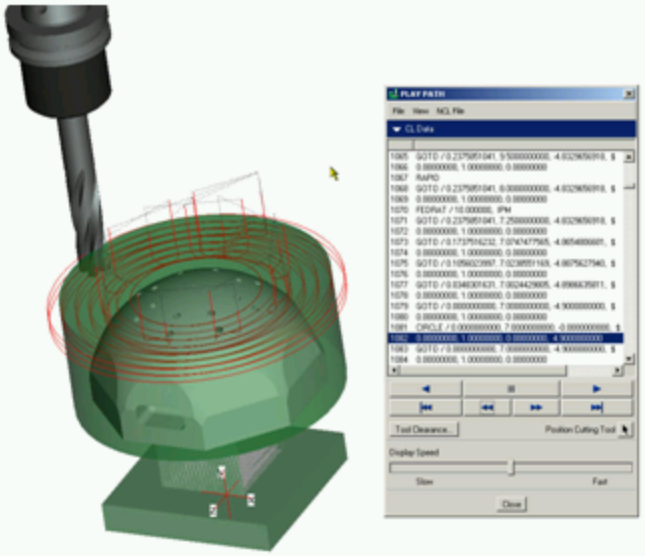


Solid Tooling in Pro/NC – Using Solid Tools

Solid Tooling in Pro/NC – Using Solid Tools

Use solid tools: continued

- Create tool path as normal.
- Play toolpath. Screen play shows tool in shaded mode.
- Note: during *Customize*, tool shown is simply parameter tool. Complete toolpath, select *Screen Play* and solid tool is shown.



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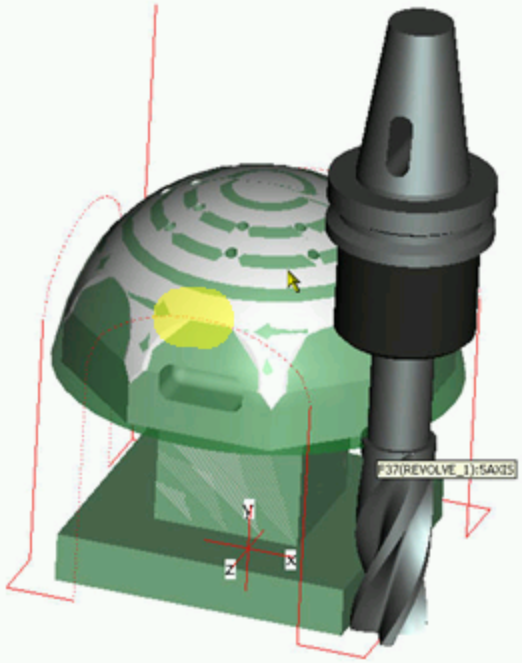
Solid Tooling in Pro/NC – Using Solid Tools

Solid Tooling in Pro/NC – Using Solid Tools

Use solid tools: continued

- Gouge Avoidance.
- During toolpath calculation, only tool parameters are used, not actual tool definition.
- Tool holder is degouged only according to sequence parameters HOLDER_LENGTH and HOLDER_DIAMETER, not actual holder definition.
- Position tool during Screen Play to observe any problems.



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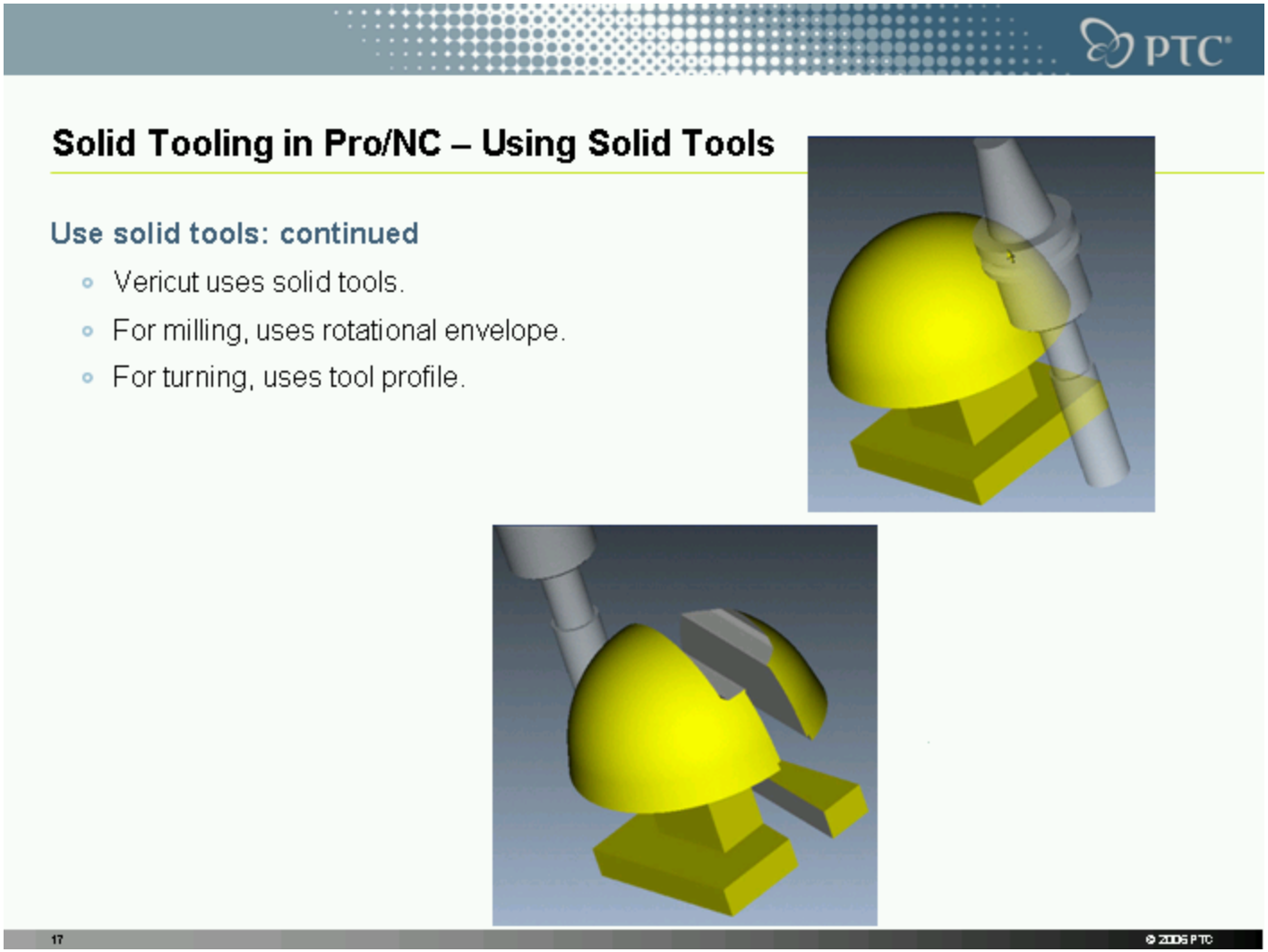
Solid Tooling in Pro/NC – Using Solid Tools

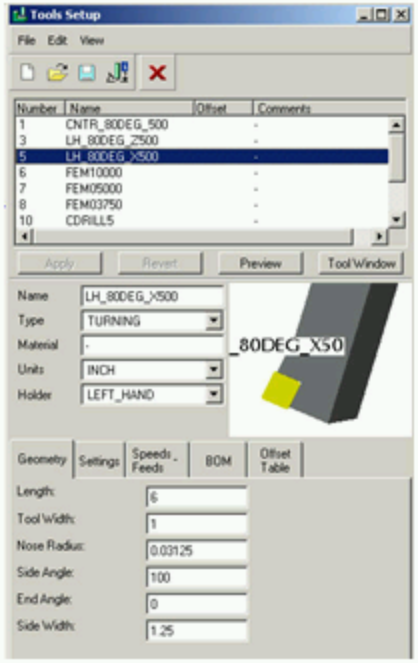


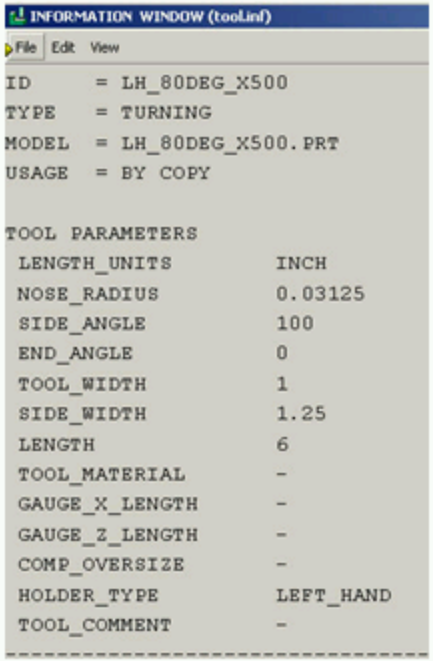
Solid Tooling in Pro/NC – Using Solid Tools

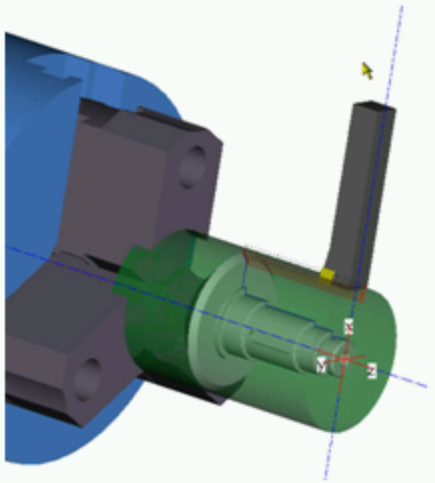
Solid Tooling in Pro/NC – Using Solid Tools

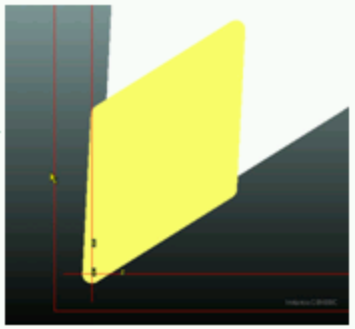
Use solid tools: continued

- Turning tools work the same.









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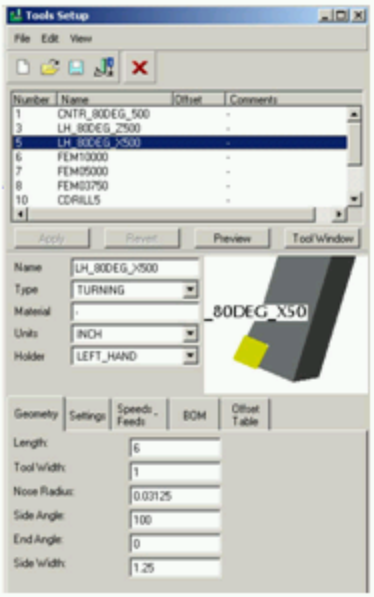
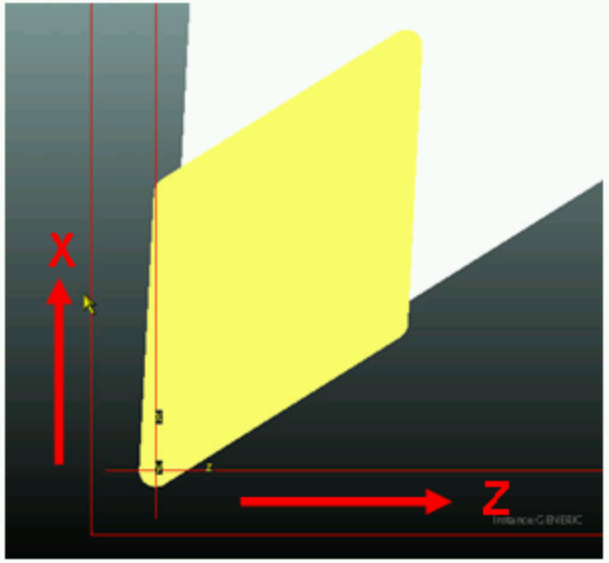
Solid Tooling in Pro/NC – Using Solid Tools

Solid Tooling in Pro/NC – Using Solid Tools

Use solid tools: continued

- TIP coordinate system same as turning operation directions (+x, +z)





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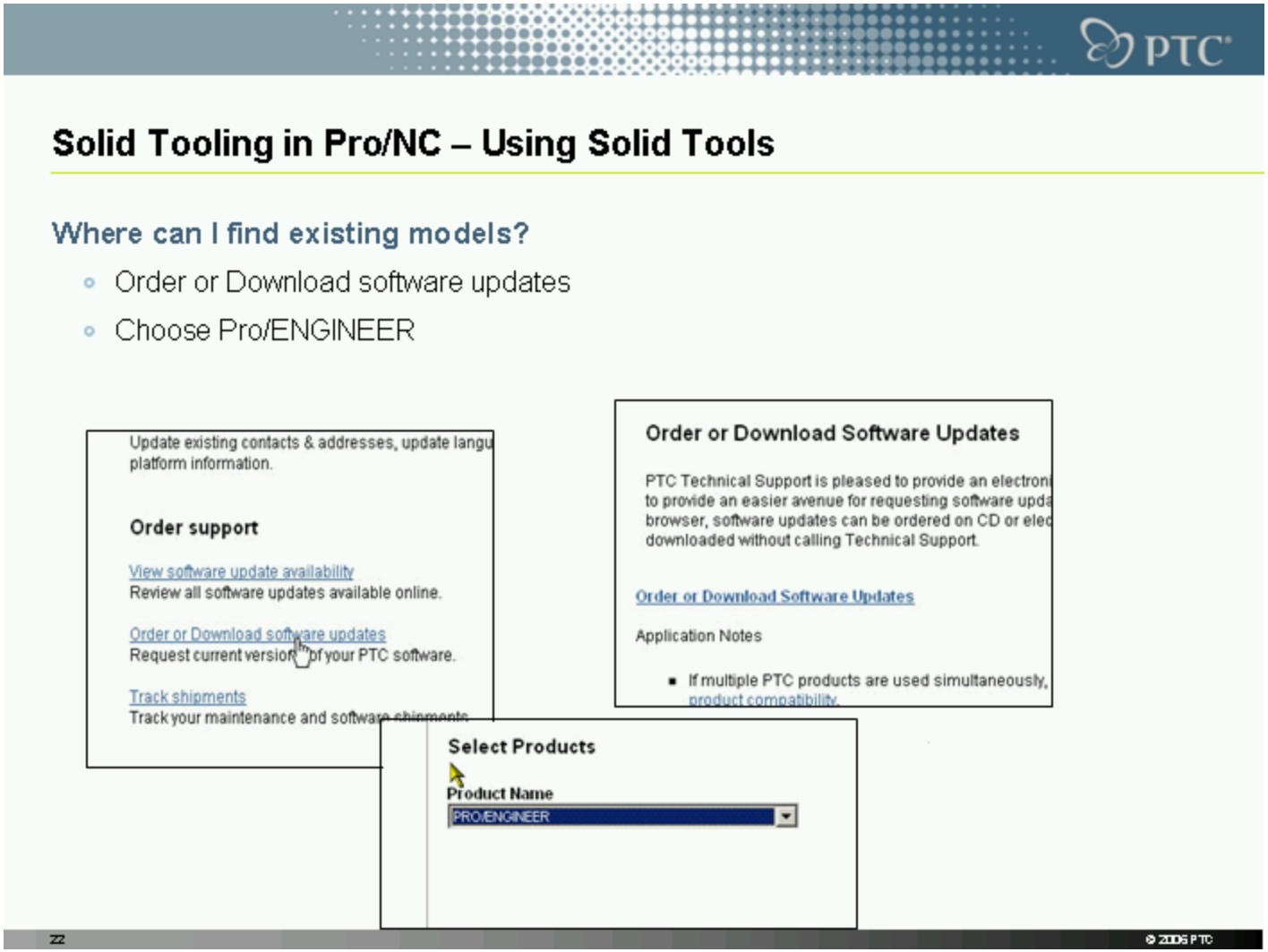
Solid Tooling in Pro/NC – Using Solid Tools

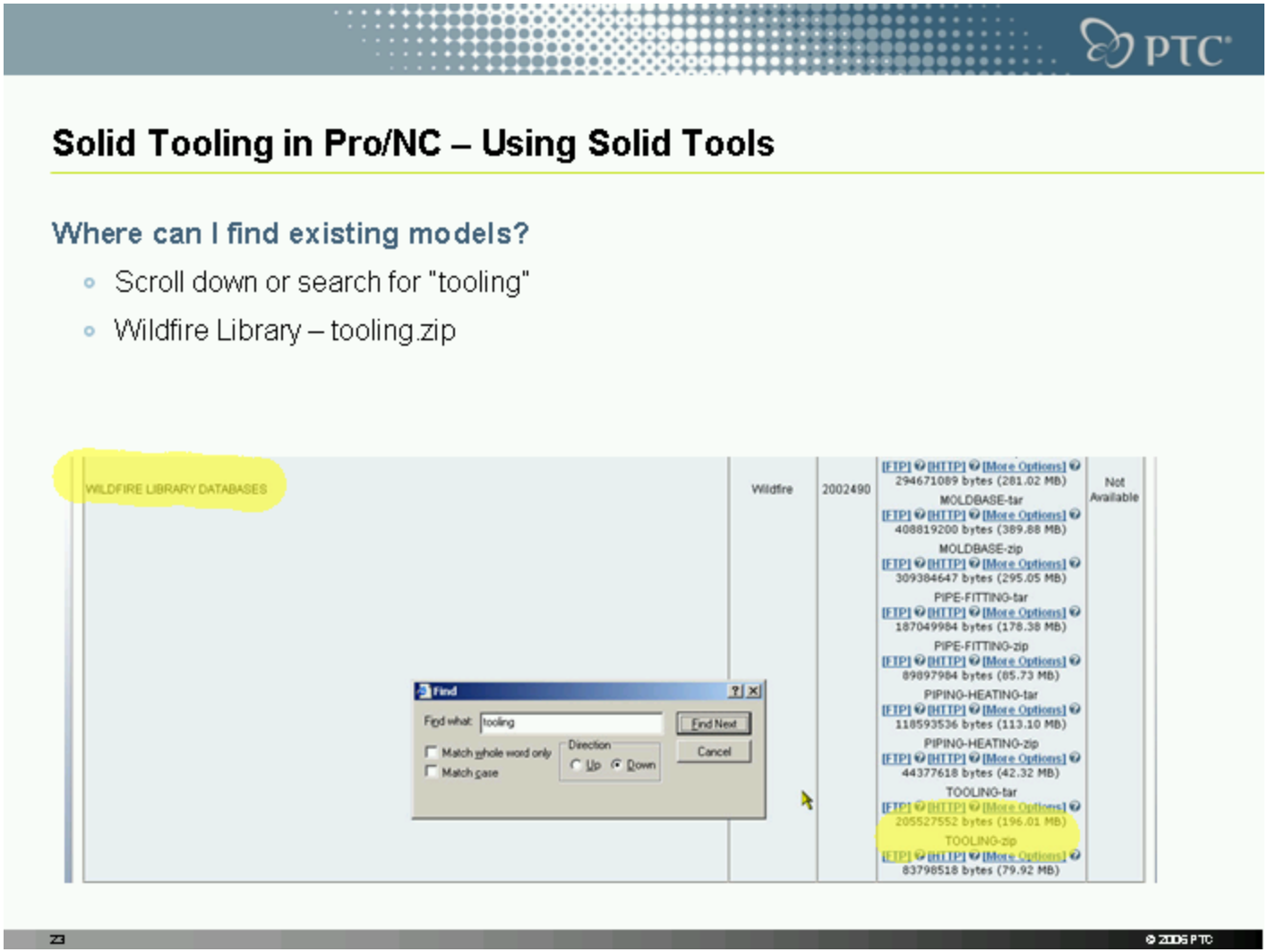
A Sharing Slide

The Sharing Frame - Lee Goodwin/PTC

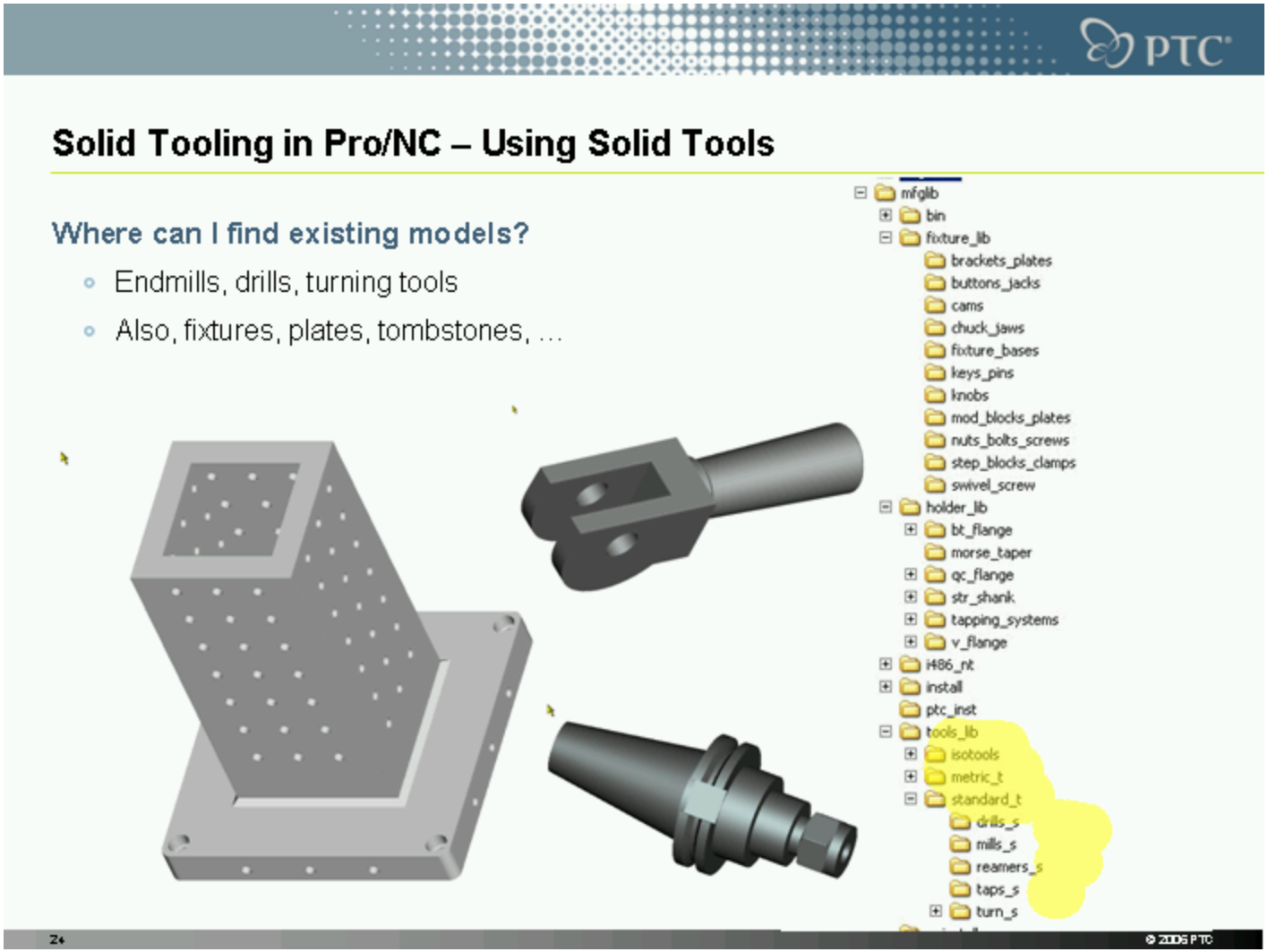
Solid Tooling in Pro/NC – Using Solid Tools



Solid Tooling in Pro/NC – Using Solid Tools



Solid Tooling in Pro/NC – Using Solid Tools



Solid Tooling in Pro/NC – Using Solid Tools

Any questions?