CORNING

Systematic Innovation (SI) Training Overview for new Engineers and Scientists

Function Modeling

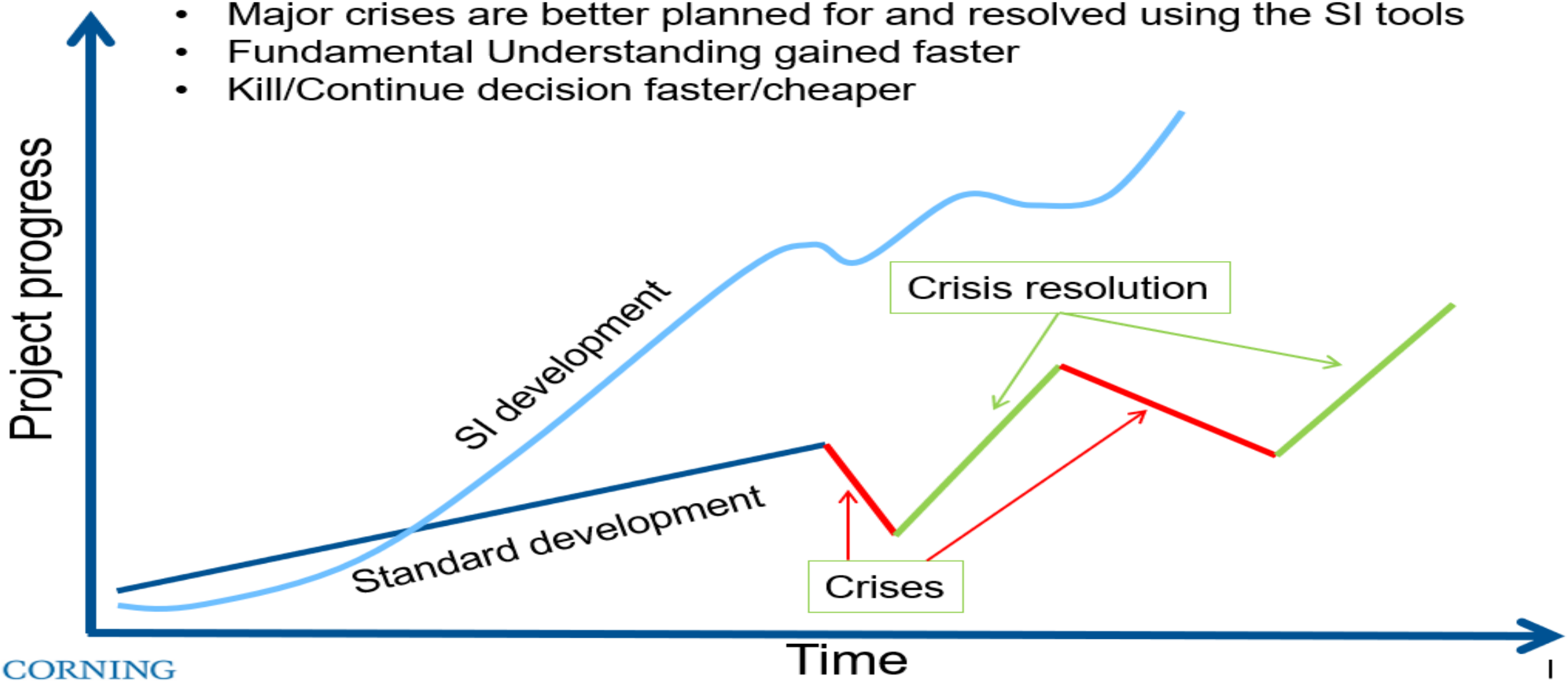
May 2022

Outline: Overview of Systematic Innovation

- Why are we using Systematic Innovation?
- An overview of 1 SI tool - Function Modeling
- Live Demo from a real problem
- Q & A

Systematic Innovation can be faster to project resolution

- Appears slower at first while models are made
- Faster rate of learning/execution to resolve critical risks
- Major crises are better planned for and resolved using the SI tools
- Fundamental Understanding gained faster
- Kill/Continue decision faster/cheaper

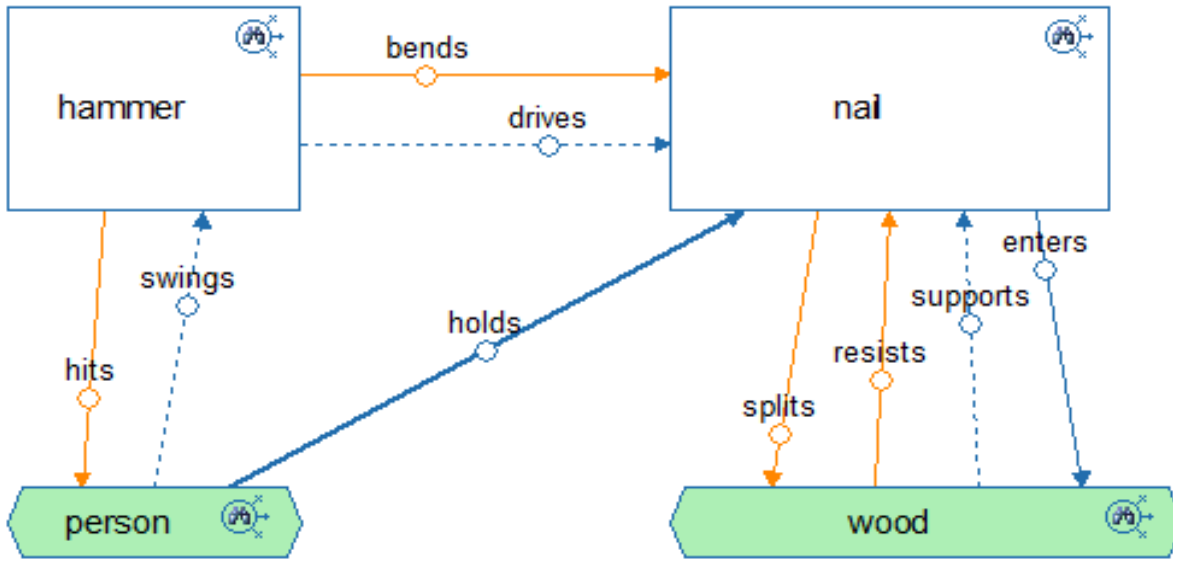


A focus on Function Modeling (FM)

Function Modeling (Device Model)

- Wouldn't it be nice to ensure that your team understands the system that you are working with? (could be a mechanical system, chemical system, organizational structure, anything that has components that interact)
- Wouldn't it be ideal to understand all the interactions between components in a system – the Useful and Harmful actions?
- Would you like to have a list of the parameters that are changed, maintained or controlled by the actions between components in a system?
- Would you like to have a visual way to organize and capture this system model and be able to also make an excel table of all of this information?
- Function models provide this capability in a "snap-shot of time" (device model) or a "series of steps in time" process model

Example for Device Model



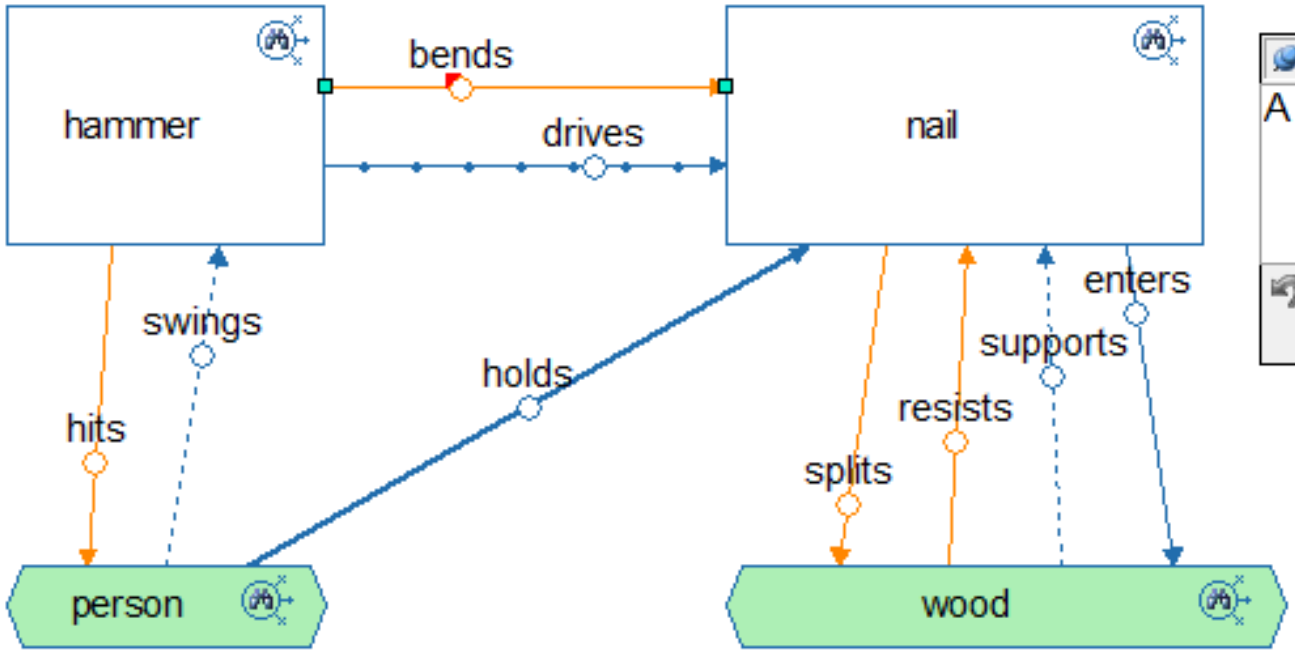
Initial system

- Boxes are Components
- Blue Arrows are Useful Actions (insufficient, optimal, or excessive)
- Red Arrows are Harmful

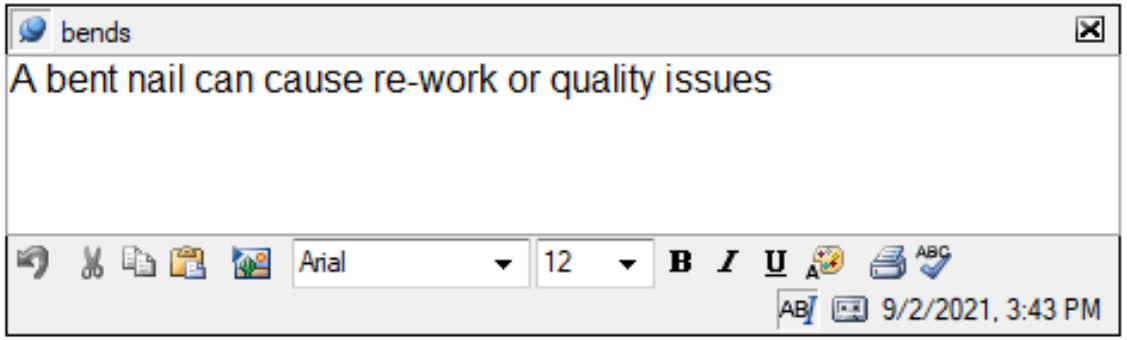
Actions can be for:

Known actions	Design specs	Providing or harming actions between steps
Hypothesis	Invention claims	
Fundamental Understanding	Scope segmentation	

Example for Device Model

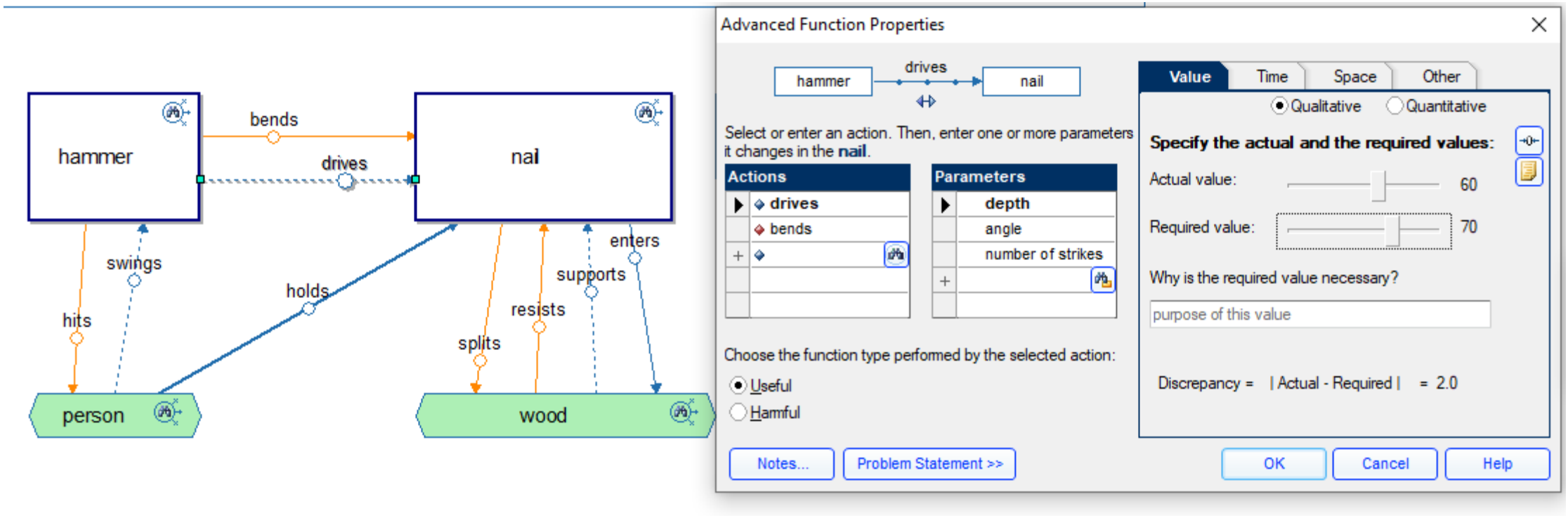


This is the opened Note from harmful action “bends”



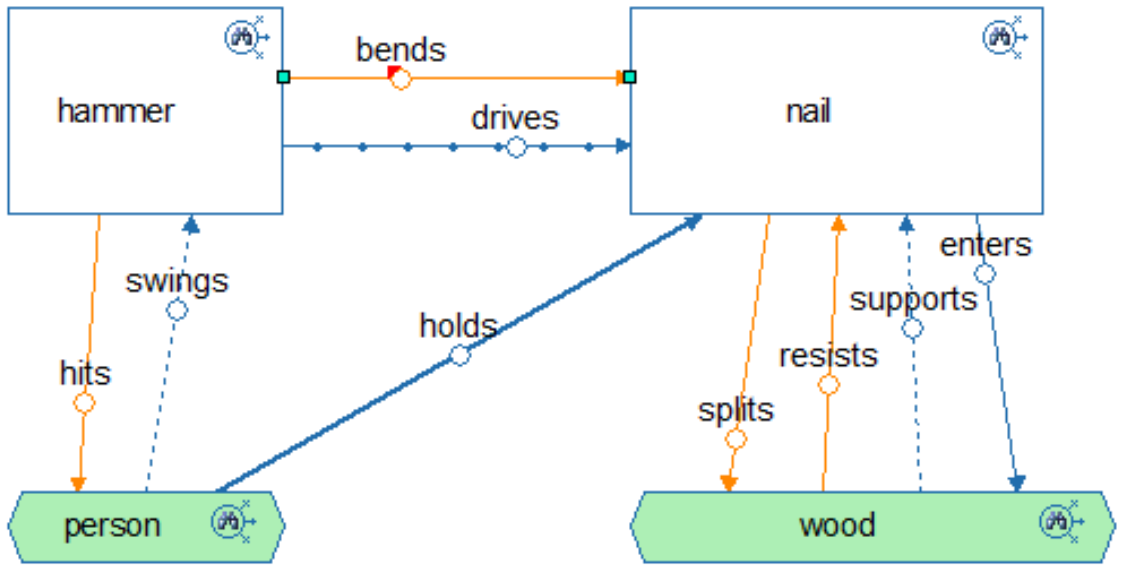
- NOTES are denoted by ◤ and may be in components, actions, or parameters
- A mouse click opens Action Arrows Notes
- Notes allow Copy and Paste from anywhere to capture team thoughts, actions, experiments, etc.

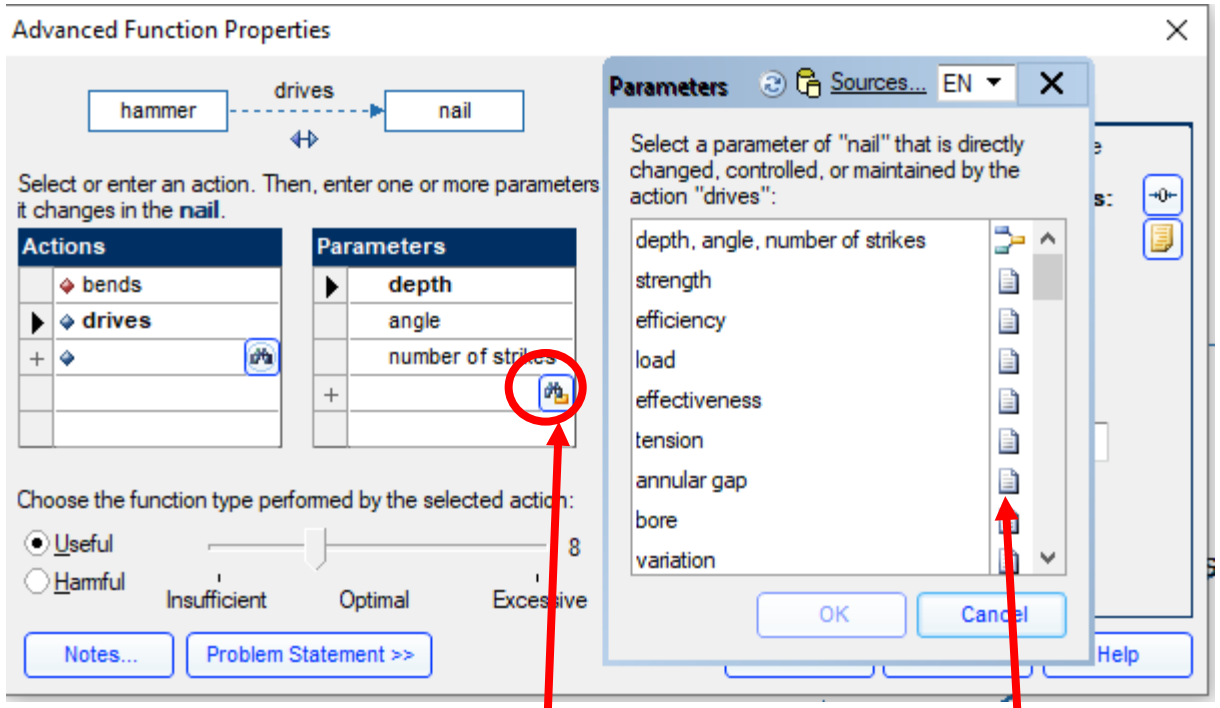
Example for Device Model



- Actions have Parameters – what the Action changes, maintains, or controls
- A mouse click opens Actions to enable selecting Parameters and even setting targets and limits
- The Parameters, Actions, and even Components are supplemented with real-time Literature search of suggested elements

Example for Device Model





- Selecting a “Finder” accesses the real-time patent and Literature search of similar systems
- The returned Parameters may provide SME’s other considerations to add to the model that they care about
- The references that provided the suggestions are accessible with a mouse click