

# AUTOMATION & INTEGRATION



**Optimization® & Inventor®**  
**The Inventor Link**

Optimization® stands alone as a leading CAM or nesting automation specialist. Optimization has focused its more than 30 years of research, development and expertise on developing best-in-class nesting automation.

Similarly, AutoDesk® has become ubiquitous in the CAD design field by becoming the tool of choice upon which most designers learn. Inventor is one of their flagship products charting new advancements in technology.

When acting independently, these tools can and do make significant transformations in the automation of a production environment. Individually, they create a multiplier effect with the productivity of the resources - individuals, equipment, and raw materials - at hand. Integrated they can further leverage their individual impact.

## SECOND TIER SUCCESS

Coupling these two products in a synchronized, integrated CAD/CAM environment amplifies the advantages of each specialization while creating a seamless environment.

Second tier successes or benefits arise when the sum of the parts is greater than the individual parts. That's the case when integrating Inventor and Optimization CAD & CAM.

## INTEGRATION

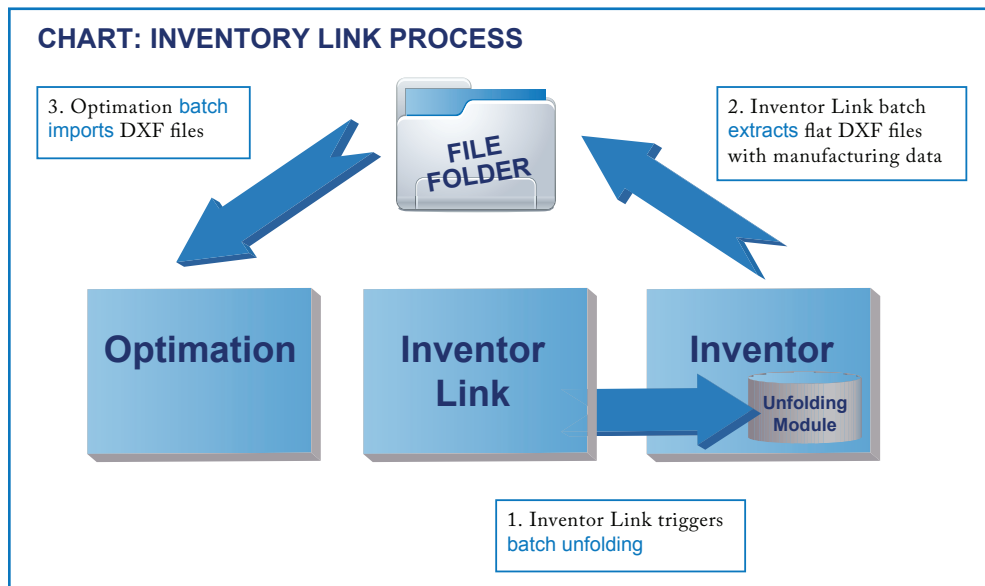
With the introduction of the Inventor Link, Optimization has connected the Inventor inventory of 3D-modeled parts and the Optimization part programming and nesting engine. It's a technology "express lane," where parts are processed quickly,

► Integrated, Optimization and AutoDesk, can further leverage their individual impact.

automatically, and with minimal human intervention. Without the multiple – and time consuming – steps of unfolding, exporting, converting, importing, filing and programming of singular parts, the Inventor Link cuts down the entire process and increases productivity.

► The advancement with the Inventor Link is apparent. The Link takes a group of parts – as defined by the user – and extracts them in bulk from Inventor after they have been unfolded. In one step the parts have traveled from CAD to CAM-ready, flawlessly.

Optimization takes advantage of the proprietary unfolding mechanism built into Inventor to masterfully and automatically unfold the 3D parts. The Inventor Link starts the process by



triggering the unfolding of a group or batch of parts. The user is not tasked with manual unfolding and extraction of each individual 3D model, saving significant time and effort.

The advancement with the Inventor Link becomes apparent at this point. The Link takes this group of parts – as defined by the user – and extracts them in bulk from Inventor after they have been unfolded. In one step the parts have traveled from CAD to CAM-ready, flawlessly.

The Link automatically converts the files – now flat patterns – to a universal format that can be easily read by the automatic

► Concurrent Engineering is a systematic approach to the integrated, concurrent design of products and their related processes, including, manufacturing and support. This approach is intended to cause the developers from the very outset to consider all elements of the product life cycle, from conception to disposal, including cost, schedule, quality and user requirements. *Pennell and Winner, 1989*

programming and nesting software. Then the user easily imports them into the Optimization nesting software file structure, where the geometry is checked for manufacturability, different cutting processes (cut, etch, bend) are read, any special part-specific requirements, i.e. grain constraints, are registered and more. Optimization programs the part and libraries it to be nested.

## AUTOMATION

The advantages of this advanced CAD to CAM integration are clear.

### Removing Redundancy

There are the time-saving, error-proofing advantages of fewer steps and less human involvement in the hand-off between design and manufacturing. When an engineer is relieved of button-pushing to achieve the same repeated task, he can devote his time to other, more productive activities. Additionally, when the delivery of parts from models to CNC programs is confidently reliable, production itself can move to a higher level of proficiency with greater capacity.

### Throughput

The sometimes hectic, often stressful upstream communication from manufacturing to design when there are problems impedes throughput. Where there is confusion and stoppages there isn't flow and speed. However, when clear communication, early stage testing, and error elimination are handled in the CAD to CAM hook up at least in part with the aid of the Inventor Link, throughput is enhanced.

### Concurrent Engineering

Finally, here's the sight-unseen benefit and frankly, the direction modern manufacturing is going. Concurrent Engineering.

Concurrent engineering is a philosophy and practice that

enables the design and manufacturing teams to work together – simultaneously or in real time – to get the product produced in the least time and with the least waste.

With the Inventor Link, design and manufacturing engineers can, in real time, simulate the process of converting a design to a CNC part program. Within seconds many part or an entire model can be tested for manufacturability. The engineers can see and address problems long before they manifest on the shop floor. Either changes can be made to address specific, demonstrated issues or the part pieces can be sent through to production with the utmost confidence that it will pass the real world test of viability.

Real World Example: Imagine the part is incorrectly drawn and cannot be produced or will be fabricated incorrectly. There are gaps, redundant lines, missing features, or some indication of downstream processes needed are absent in the design. Unnecessary time is spent sending it back to design for a rush-order correction and then fed back through the CAD/CAM process to the floor to be inserted into the now, current order stream. Avoiding this costly chaos is the advantage of concurrent engineering using the Inventor Link.

## IN CONCLUSION

When two leading technologies come together for the benefit of enhancing productivity the whole engineering team wins. Such is the case with the Inventor Link. The design team sees their work get production-tested in real time. The engineering team knows the work will flow smoother with quality inspection upstream. Part quality improves. Product flow improves. Productivity improves. Chaos and stress are reduced.