MFG469225

Sales Engineering Automation Using Forge, Fusion Lifecycle, and Vault

Ryan Small
SolidCAD

Mark Gartner
SolidCAD

Learning Objectives

- Understand how a solution based on Forge improves efficiency
- Provide mass customization solutions to your customers
- Improve your company's workflow from sales through to engineering and manufacturing
- Integration of cloud-based configurator to FLC and Vault

Description

Manufacturing companies are under increasing pressure to provide unique products to their customers while at the same time, improving their overall efficiency. In this session, we will explore how a configurator technology built on Forge in conjunction with Fusion Lifecycle (FLC) and Vault provides a seamless and integrated solution to achieve increased sales, reduced engineering cycle-times and, ultimately, greater efficiency.

Using only a web browser, sales staff or even prospective customers can configure a product to their unique requirements and receive immediate visual feedback and a professional quotation. When they are ready to order, information will flow seamlessly to both Fusion Lifecycle and Vault. Additional vault customization will provide additional downstream data such as STEP and DXF files - all automated using vault's lifecycle engine.

This session is certain to open your eyes to best-in-class processes for optimal efficiency, integration, and automation.

Speaker(s)

Ryan Small - Ryan has been with SolidCAD, an Autodesk Platinum Partner, for 20 years. In his current role, Ryan leads the software development team which develops customization solutions for the Autodesk product portfolio. Ryan is one of the leading experts with Autodesk Vault, having worked with the product since its inception and having performed numerous, complex implementations. He has also used Inventor since the R3 release, training hundreds of users, and is an Inventor Certified Expert.

Prior to working with SolidCAD, he was employed as a full-time LISP and VBA programmer for a structural steel company where he developed steel detailing automation in AutoCAD.

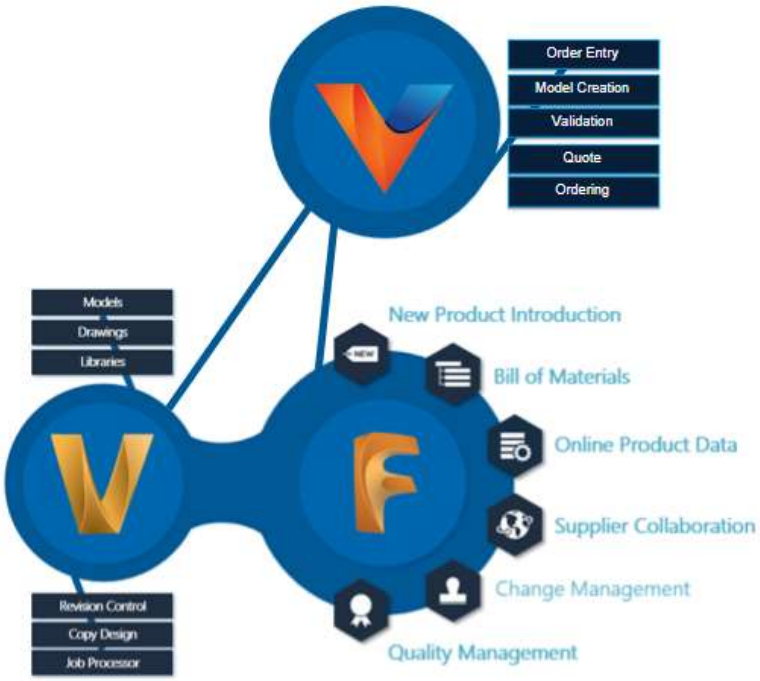
Ryan has a Business Administration diploma from Mohawk College as well as a Private Pilot License.

Mark Gartner - Mark Gartner has been deeply involved with manufacturing for his entire 30-year career. After graduating from CAD/CAM Engineering Technologies, Mark was employed by a heavy equipment manufacturer. Here he was involved in the entire manufacturing process, learning everything from plasma cutting, design, automation, ERP and production. With this knowledge, he moved into the software and services side of the industry. Starting out by instructing people, completing onsite process assessments and implementations. A number of years later Mark began working with customers in a sales consulting role, helping many manufactures realize improvements in their manufacturing processes.

Today, Mark is the National Director for the Manufacturing division at SolidCAD, where he continues helping customers improve processes. This position has Mark driving company direction in manufacturing and striving to be at the leading edge of the manufacturing industry.

Improving your Workflow

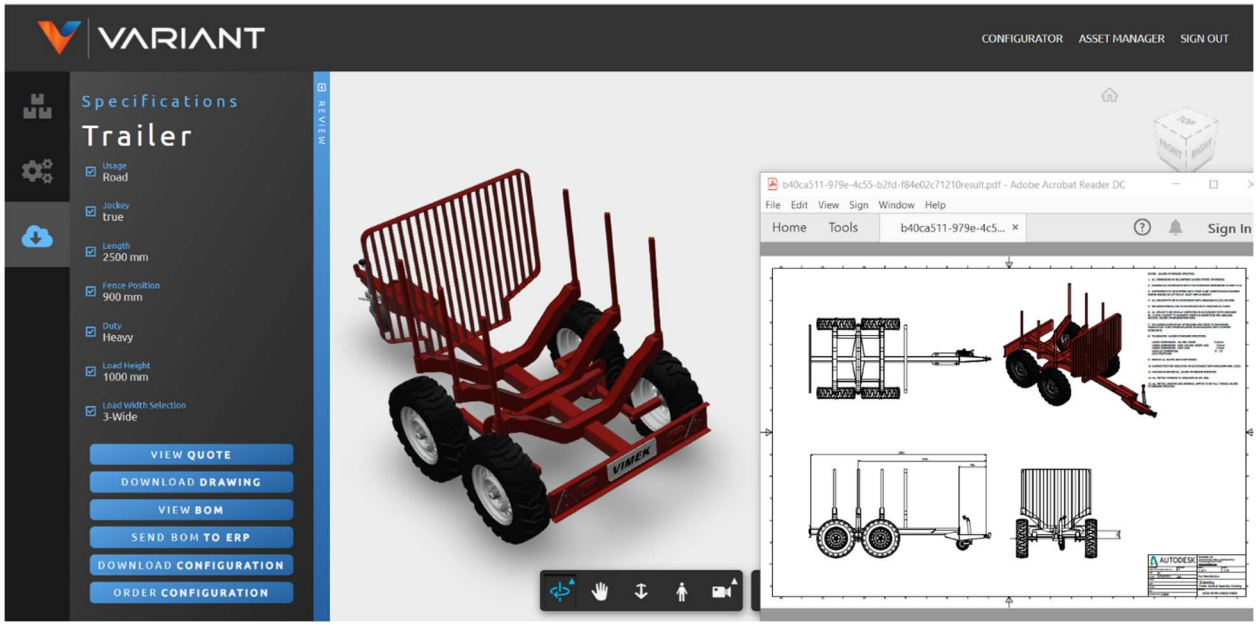
As a manufacturer, delivering products to customers typically requires multiple people, departments and software tools. With each step of your process, bottlenecks and errors are introduced as information is handed off and people within the company try to satisfy multiple requests. With the global marketplace and customers needs of “instant gratification”, it is imperative that manufacturers streamline their processes and tools.



Variant

Variant is a new offering by SolidCAD to address the issues that manufacturers have with satisfying customer configuration requirements. Presently, the processes for meeting the demands of customers requires multiple points of communication and work within the design department and estimation/sales in order to produce a quotation. Often, this process lags and the customer may source a product offering from another vendor. Therefore, time spent by staff to provide a quotation is wasted along with the lost sale.

Variant streamlines this communication with a web-based, Configure To Order (CTO) system. Using only a web browser without any special plugins, sales staff or end customers are directly able to configure a product and generate outputs such as a viewable model, drawing, bill of materials and quotation, all according to the rules defined by the manufacturer.



Variant is built on the Autodesk Forge Platform, Autodesk's web service API to visualize data, connect that data to external sources for greater insight, automate tasks and connect teams and workflows. Within the Forge offering, Variant leverages the Design Automation API and Viewer API. The Design Automation API is used to convert product selections into models and outputs and the Viewer API is used to display the resultant model within the web browser, where the user can interact with the design.

AUTODESK FORGE
Design Automation API
Viewer

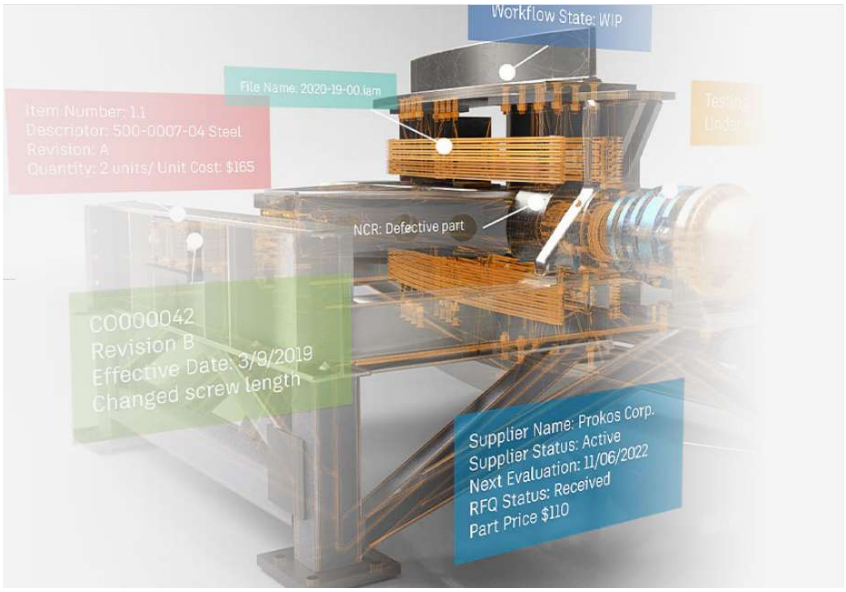
For customers that are already using Inventor's iLogic functionality, Variant provides a path forward to web-enable your design configurations. Using the administrator interface, you can upload your models and specify parameter options, ensuring that your investment in Inventor's desktop-based iLogic toolset can be leveraged on the web. Moreover, companies that are currently using Autodesk's C360 product (which is being discontinued) now have access to a replacement product via Variant/Forge to continue to provide web-based design configuration and outputs.

For more information about Variant and how it compares to Autodesk C360, please visit https://www.solidcad.ca/variant

Fusion Lifecycle

Fusion Lifecycle connects and organizes people, processes and information across the entire organization, providing a central repository of information, allowing users to visually track and trace the lifecycle of a project or product.

It provides users with access to the right data at the right time using the right technology, improving how companies create, build, support and evolve products and services.



Use Fusion Lifecycle to manage all aspects of bringing a product to market and servicing that product through-out its existence. FLC combines New Product Development, Change Management, Quality Management, Bill of Materials and Supplier Collaboration into a web-accessible tool.

Build your own workspaces to accommodate for your unique workflows and business processes and tie the information from the workspaces together to establish relationship between tasks.

Autodesk Vault

Autodesk Vault is Autodesk's document management tool for storing files, tracking revisions and controlling access to data. Many customers use Vault today across the entire range of Autodesk CAD products including Inventor, AutoCAD and AutoCAD Electrical.

In conjunction with our configurator technology, Variant, as well as FLC and integration tools, a configured dataset within Variant flows seamlessly into Autodesk Vault. This captures the "as-configured" model with vault, while also accommodating for workflows involving unique requests. These unique requests which are outside of the configurable options can then be addressed as the required data exists within vault and can be modified to accommodate these unique requirements.

Regardless of whether the required configuration is in accordance with the product parameters, or needs to be modified to accommodate unique/special requests outside of the typical options, Vault is used as the release control tool, ensuring that the design is locked down and the necessary files and bill of material are available for downstream users.

Job Processor

Job Processor is a feature of Vault Professional which provides a means to perform custom operations within the vault. While a number of operations are performed as standard functions including Sync Properties and DWF creation, the real power of Job Processor is tapped through the development of custom jobs. With a custom job, operations are performed automatically in response to changing of state within the vault. And with these operations associated to state transitions, users are not required to change how they use vault – they simply change the state of entities (files or folders) within vault and the automation is queued for execution.

Integration

To facilitate a seamless workflow and exchange of information, and to ensure that customer requirements are satisfied quickly, it is important to leverage integration tools. These integration tools ensure that the data flows between the multiple systems including Variant, Autodesk Fusion Lifecycle and Autodesk Vault.

Feature Manipulation Engine (FME)

FME is an integration platform for connecting data between applications. FME bridges the gap between multiple software titles and platforms by providing a visual interface to load data, convert data types, and transform the data by location and/or value. This platform can work with GIS (geographic information systems) data, computer aided design (CAD) data, or any other graphic or non graphic data type. The tool can be leveraged from the desktop or as a web/cloud based service that allows organizations to validate, modify and exchange data in an automated or semi-automated way.

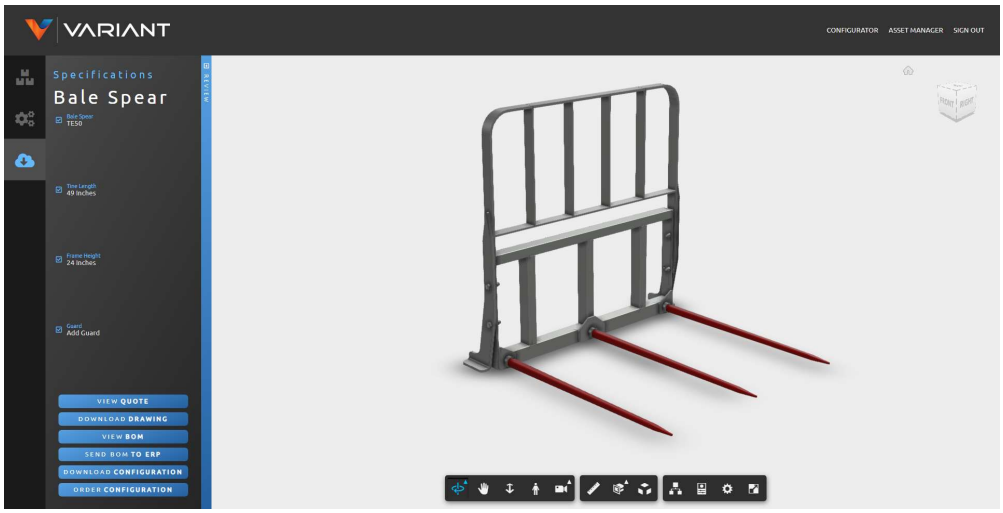
CoolOrange Vault Fusion Lifecycle Connector

The Vault Fusion Lifecycle Connector from coolOrange is a purpose-built tool for exchange of data, bi-directionally, between Autodesk Vault and Autodesk FLC. The tool support synchronization of projects and files, including metadata and bill of materials.

Putting It All Together

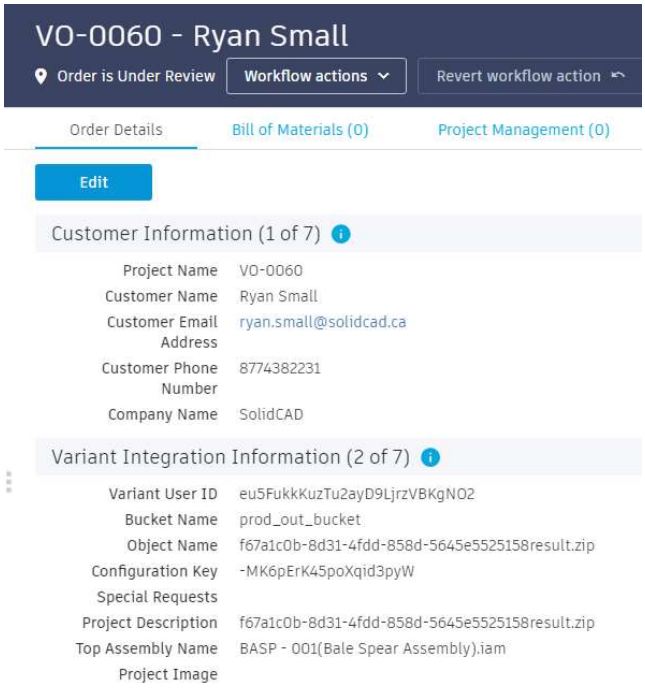
So how do these different products and tools work together to provide efficient quoting and exchange of information for downstream processes? Let's look at the entire process from start to finish.

1. A user, be that a sales person or a potential customer, accesses Variant and specifies their desired configuration from the list of available parameters as made available by the Administrator. Variant returns the configuration result including a viewable 3d model as well as outputs, such as the bill of materials, a drawing and a quotation.



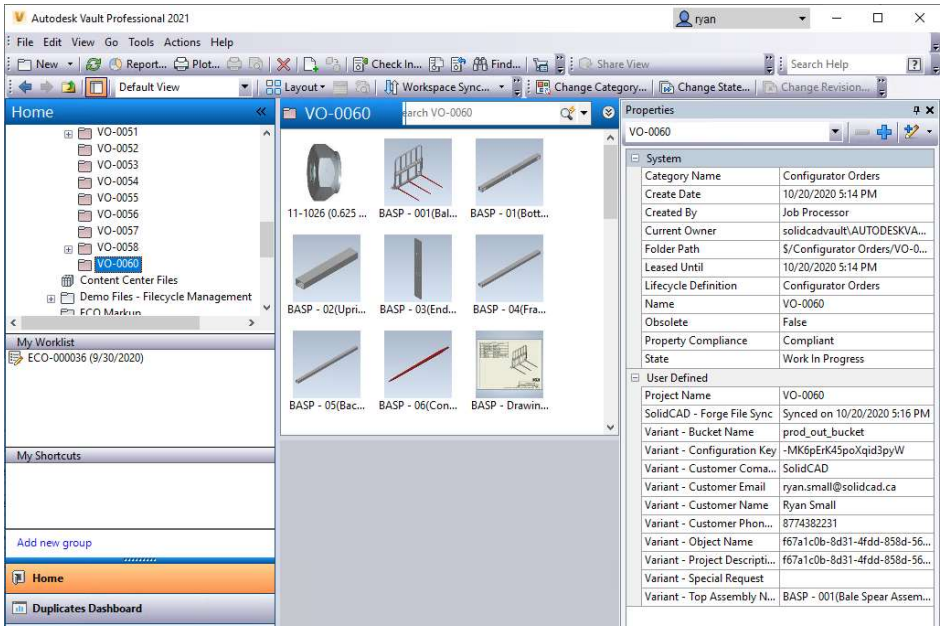
2. When the Order Configuration button is selected, a form opens, allowing the user to specify their contact information and any special requests. The purpose of the special requests field enables the customer to request something unique that is not part of the typical configuration parameters (e.g. a product is offered in Yellow, Blue and Red but the customer wants a configuration that is painted Green).

3. FME Server detects the new configuration request within Variant and creates an order item in FLC. Property information from Variant (input form) is then copied to the FLC item/record.



4. The coolOrange Vault Fusion Lifecycle Connector detects the newly created item in FLC and creates a project folder within Autodesk Vault. Property information from the FLC item is copied to the vault project folder.

5. A Job Processor extension detects the newly created project folder in vault and proceeds to download the “as configured” model from Variant and checks it into vault.

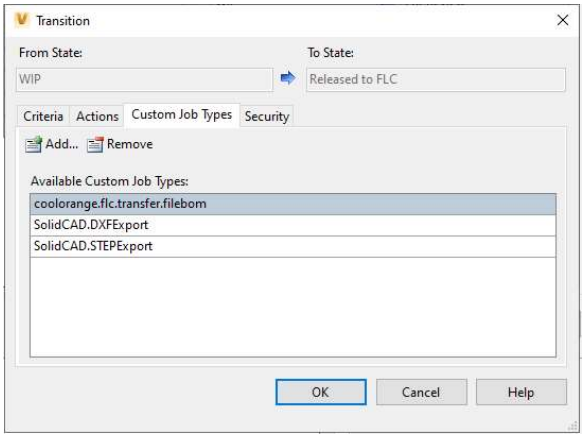


6.

   a. If the special request field is blank, this means that the customer has not requested anything unique and the configurable model that has been specified is acceptable. The Job Processor extension will then automatically mark the files as released, as well as the containing project folder.

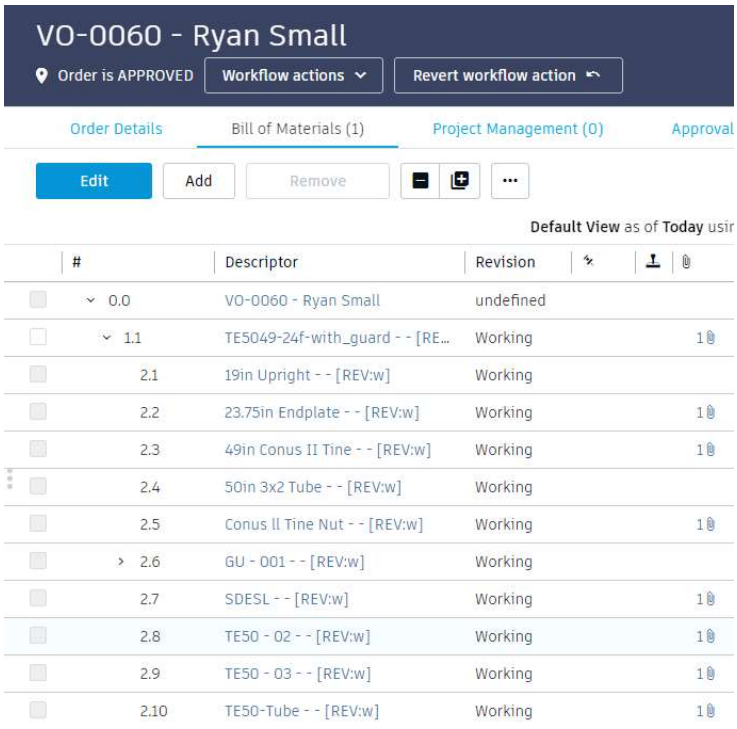
   b. If the special request field is not blank, this means that the customer has requested something that is not part of the standard configurable offering. In this case, the downloaded files will be left in a default editable state (Work In Progress). A designer will then modify the as-configured dataset to accommodate the customers unique requirements and upon doing so, the files and containing project folder will all be marked as Released manually once work has been completed.

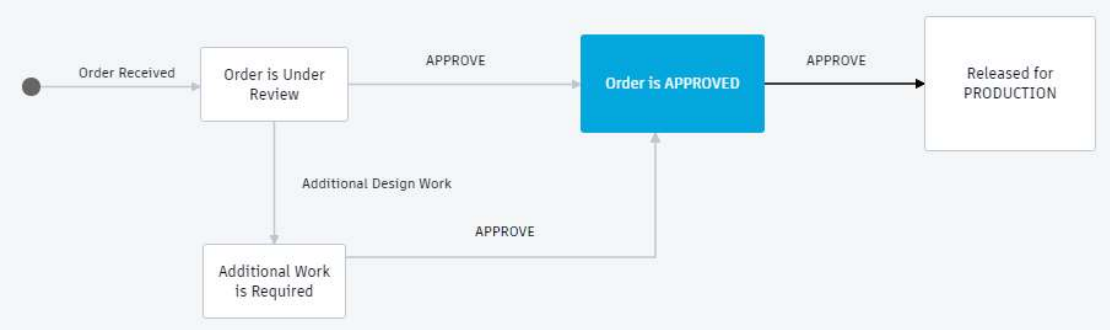
7. Vault Job Processor will then perform standard operations including synchronization of properties and DWF creation along with any custom job operations according to the lifecycle configuration. In the demo, this includes exports of Inventor IPT/IAM to STEP format, Inventor IDW to DXF format, and the upload of the Bill of Materials to FLC.



8. A custom Job Processor extension will notify FME Server that the Project folder has been released, specifying the name of the project and the part number of the configured assembly.

9. FME Server will modify the FLC Item to attach the Bill of Material and then transition the FLC Workflow to Approved.





Credits

Special thanks to Horst Welding for the use of their Bale Spear dataset. For more information on Horst Welding and their available attachments, please visit them on the web at http://www.hlaattachments.com or by phone at (866) 567-4162.