

MFG500112

## Cloud Data Management with Upchain

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### Learning Objectives

- Familiarize the student with Upchain's intuitive interface and overall philosophy
- Introduce Upchain's Bill of Materials (BOM) management concepts and workflows:
  - BOM creation and manipulation paradigms (top-down or bottom-up)
  - BOM actions
  - Item Types & Part Numbering
  - BOM Compare
  - Visualization
- Introduce Upchain's CAD Integration capabilities
  - CAD Connector Plugin
  - Checkout/Modification/Checkin
  - Object status indicators (concurrent engineering)
  - Local caching
- Introduce Upchain's Business Process / Workflow / Change Management
  - Change Request
  - Workflow Editor
- Introduce Upchain's Document Management functionality
  - Creating a document
  - Checkout/Modification/Checkin
  - Microsoft Office Plugin
- Additional Resources

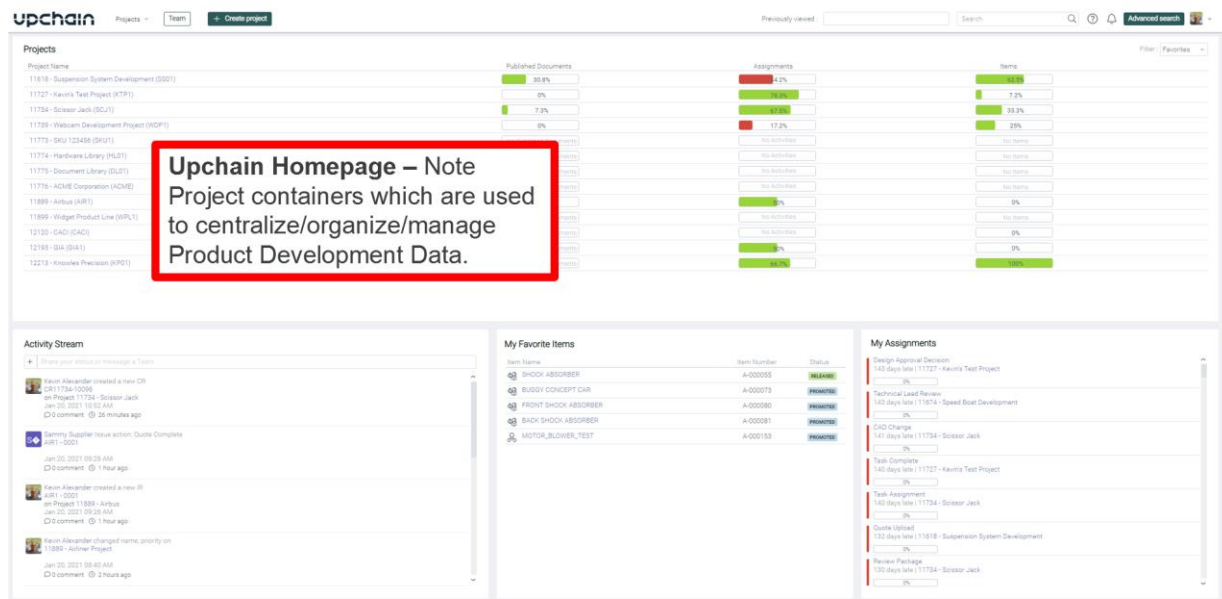
### Description

Upchain is the world's first CAD-centric, multi-tenant SaaS, instant-on PDM/PLM system. Fusing an intuitive interface with powerful CAD, BOM, and project/change/document management capabilities, Upchain is ideal for today's complex product development ecosystems. Designed first and foremost with collaboration in mind, Upchain also empowers the extended value chain.

### Speaker

Kevin graduated from the University of Louisville in 1997 with a Mechanical Engineering degree. He has spent his entire career applying technology to Product Development challenges! As an Implementation Specialist and Upchain Subject Matter Expert at Autodesk, Kevin enjoys helping customers employ Upchain's revolutionary PDM/PLM capabilities to make their businesses more efficient.

## Interface and overall philosophy



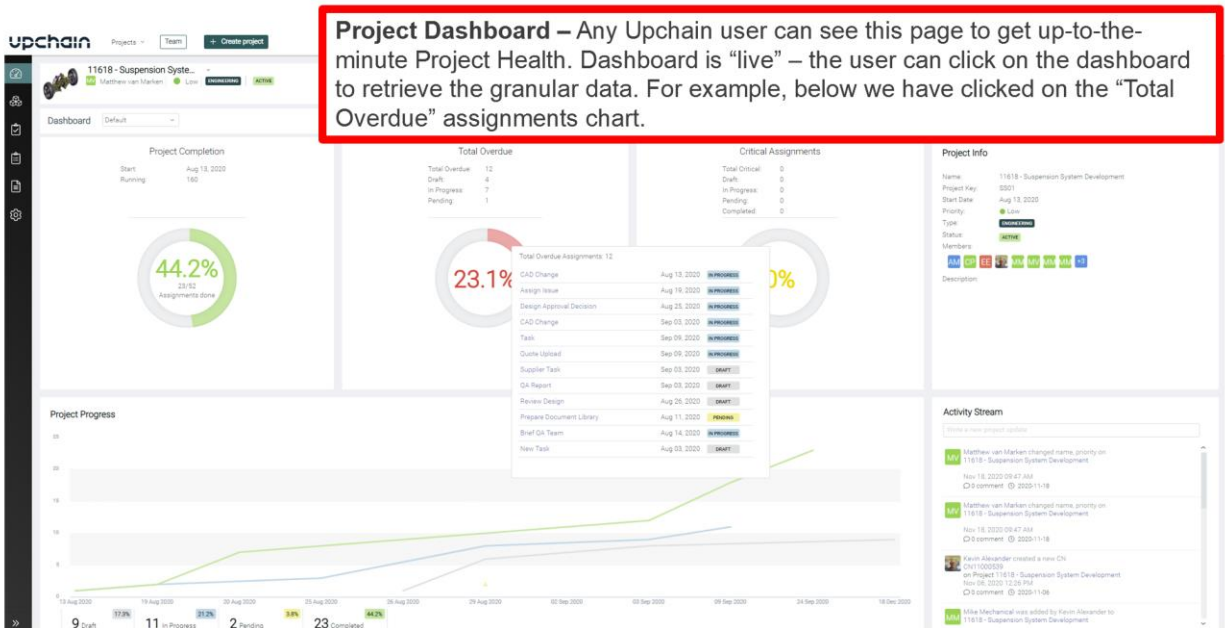
Projects are the central organizing principle within Upchain. The easiest way to think about a Project is that it is simply a “container” for housing Product Development content. Inside the Project container we can access/control things such as:

- Project Dashboard
- BOM
- Project Management (Gantt chart)
- Business Processes / Workflow
- Documents
- Project Settings (including access control and Project Team)

Upchain provides great flexibility in terms of structuring content – Projects can represent product lines, individual SKU's, part and document libraries, customers, contracts, and more. Also, Projects may be created for the sole purpose of sharing content with suppliers, vendors, contract manufacturers, etc. Sharing content is as simple as copying the object of interest and pasting into the BOM's or Projects where you want to reuse the information.

Additionally, Project templates can be created which facilitate the reuse of information such as: Teams, Documents, BOM's, Business Processes, and Gantt charts (project plans).

## Interface and overall philosophy (continued)



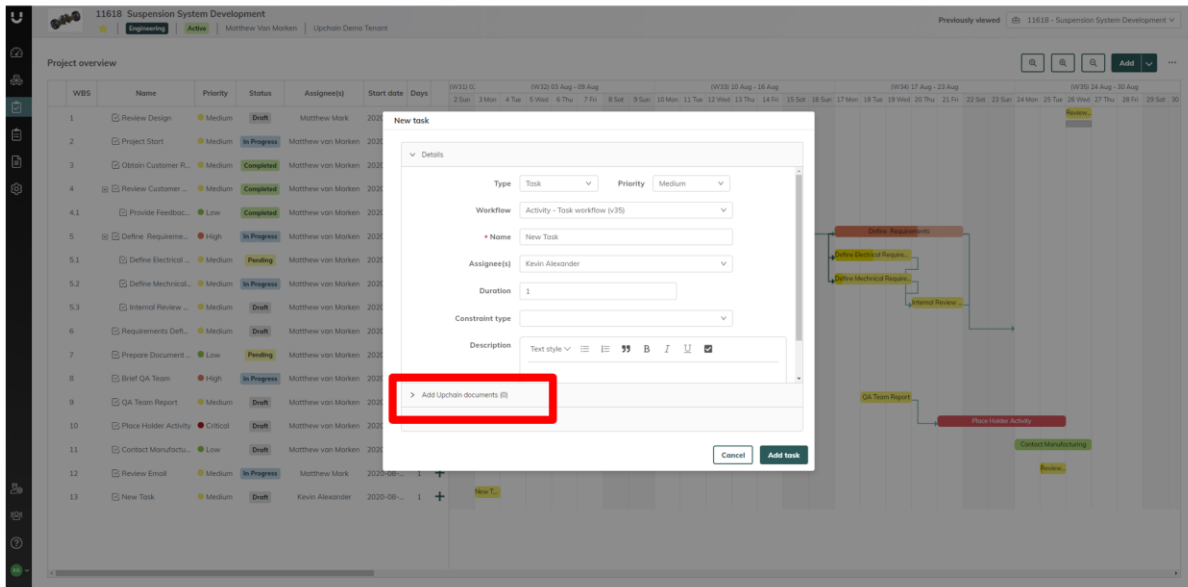
The Project Dashboard is used to provide insight and visibility into Project health. Several dashboard “views” are provided:

- Default (shown above) – high level view of % of completed Project tasks, % of overdue Project tasks, % of critical Project assignments which have been completed, and Project Progress chart
- Design – granular view of the user’s recently created Project objects, locked objects, and assignments
- Project Management – granular view of BOM Items (with cost rollup) and assignments

In addition to the Project Dashboard shown above, Upchain has a myriad of dashboards and reports which can be used to glean Product Development information. Several out of the box reports are provided, but additional reports can be created. Additionally, [Upchain’s Open REST Services API](#) can be used to extract information from the system.

## Interface and overall philosophy (continued)

**Project Management** – Upchain supports common project management functionality including project planning (shown below-left of screen) and Gantt chart (shown below-right of screen). Project Tasks (form shown below-center) can be linked to **Documents** and/or **Items** – this ensures Product Development deliverables are “connected” to the Project Plan itself.



Upchain is first and foremost a PLM software, however it does have Project Management capabilities. Project plans may consist of 3 different types of Project Management activities:

- Milestone – marks a key point in the plan, use milestones to determine if the project is on schedule
- Stage gate - key decision points in the project, use stage gates when continuation of project depends upon approval
- Task - most basic and flexible unit of work, this is the only activity that can have an individual workflow associated to it

Additionally, Project tasks can have Documents and/or Items associated to them. This facilitates the “connection” of Project planning/execution activities with actual Project deliverables.

Dependencies and predecessor relationships may be created between Project activities by simply dragging and dropping the endpoints of activities in the Gantt chart.

Upchain also supports “critical path” and “slack” functionality. The critical path represents all the activities that, if delayed, affect the completion time of the entire project. Activities that are not on the critical path can be delayed without delaying the project. Slack represents the amount by which activities can be delayed before becoming part of the critical path.

## Interface and overall philosophy (continued)

**Business Processes Change Dashboard** - Upchain supports several Out of the Box business processes including: Requirements Management, Investigation Requests (Issues/Tickets/Problem Reports/etc), Change Requests, Change Notices, and Quality Assurance.

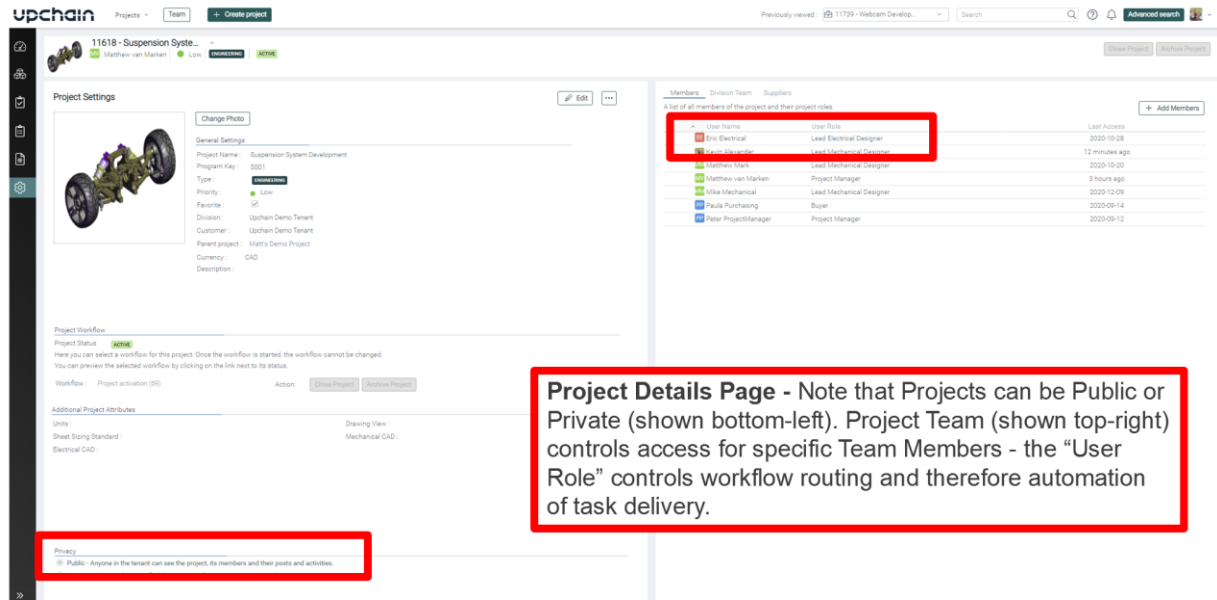
Requirements Investigation requests **Change requests** Change notices Quality assurance

The Business Process Dashboard provides a central portal for creating, managing, and reporting on the various business processes which Upchain supports out of the box including:

- Requirements Management - keep track of your requirements, assign them to specific people, attach documents to them, link them to items, link them to other requirements, and create child tasks and requirements
- Investigation Requests - used to initiate the change process and promote discussion within the organization or with partners
- Change Requests - used to describe a suggested enhancement or problem with a product and defines a set of affected items to be released - a change request can also be used to obsolete an item
- Change Notices - used to initiate the procurement of items contained in the CN - it is used to notify other departments and/or systems connected to Upchain (such as an ERP system) that design changes have occurred, items have been released, and are now ready for procurement
- Quality Assurance - keep track of your QA processes, assign them to specific people, attach documents to them, link them to items, link them to other QA processes, and create child tasks and QA processes

Note that the dashboard is Project-specific. The business objects which appear on the dashboard reside in the Project container being accessed.

## Interface and overall philosophy (continued)



The Project Settings page provides an area to modify Project details such as:

- Project metadata (photo, name, priority, hierarchy, description)
- Project workflow
- Additional Project Attributes (enabled by a tenant property)
- Privacy setting
- Project Team

Note that Projects can be Public or Private. Anyone your company has provided an Upchain login to will be able to access Public Projects. Public Projects are great for things like hardware libraries, document libraries, etc. Private Projects can only be accessed by the people who have specifically been added to the Project Team. Members are added by simply clicking the "Add Members" button at top right.

Note that Project Members have roles, these roles drive the workflow engine within Upchain. Workflows typically call generic user roles such as Mechanical Engineer, Electrical Engineer, etc. The user-to-role mapping connects these generic workflow role assignments to "real" Project team members.

## BOM Management

**BOM View** – BOM's can be built “Top-Down” (from web app or MS Excel) or “Bottom-Up” (from CAD files, shown bottom-right). BOM views (shown bottom-left) are easily created. BOM is always up-to-date with the latest information. Also, various configurations (shown top-right) of the BOM can be chosen to display.

The screenshot displays the Upchain BOM Management interface. At the top, a red box highlights the 'BOM View' text and a description of BOM creation methods. The interface shows a project named '11739 - Webcam Develop...' with a 'Team' tab and a 'Create project' button. The main table lists BOM items with columns for Item Name, Item Number, Qty, Thumbnail, Status, Files, Visualization, Item Major Revision, Item Minor Revision, and Supplier. A red box highlights the 'aBOM version' dropdown menu, which is set to 'As Saved'. Another red box highlights the 'Logitech Web Camera SLDASM' and 'Camera Protector SLDPRF' items. A third red box highlights the 'My View' and 'New view' buttons at the bottom left.

Item Name	Item Number	Qty	Thumbnail	Status	Files	Visualization	Item Major Revision	Item Minor Revision	Supplier
WEB CAMERA - MODEL A300	100000110	1		DEVELOPMENT			XX	XX	
WEB CAMERA	A-000009	1.0000		DEVELOPMENT			AA	00	
CAMERA PROTECTOR	M-000429	1.0000		DEVELOPMENT			AA	00	Logitech Web Camera SLDASM
EXTERNAL HOUSING	M-000431	1.0000		DEVELOPMENT			AB	00	Camera Protector SLDPRF
FRONT PANEL	M-000432	1.0000		DEVELOPMENT			AA	00	Front Panel SLDPRF
CAMERA MOUNT PART 1-B	M-000434	1.0000		DEVELOPMENT			XX	XX	AP11003963.SLDPRF
CAMERA MOUNT PART 2-B	M-000435	1.0000		DEVELOPMENT			XX	XX	AP11003964.SLDPRF
CAMERA MOUNT PART 3-B	M-000436	1.0000		DEVELOPMENT			XX	XX	AP11003965.SLDPRF
3K CAMERA	M-000437	1.0000		DEVELOPMENT			XX	XX	AP11003966.SLDPRF
CAMERA PCB DATA	100000111	1.0000		DEVELOPMENT			XX	XX	Diode Reverse Recovery.zip
Current Source	100000114	1.0000		DEVELOPMENT			XX	XX	
Inductor	100000115	1.0000		DEVELOPMENT			XX	XX	
DC Source	100000116	2.0000		DEVELOPMENT			XX	XX	
Voltage Controlled Switch	100000117	1.0000		DEVELOPMENT			XX	XX	
Precedence Linear Voltage Source	100000118	1.0000		DEVELOPMENT			XX	XX	
Default Diode	100000119	1.0000		DEVELOPMENT			XX	XX	
Voltage Controlled Current Source	100000220	1.0000		DEVELOPMENT			XX	XX	
VOLTAGE CONTROLLED	100000221	2.0000		DEVELOPMENT			XX	XX	
Resistor	100000222	2.0000		DEVELOPMENT			XX	XX	
Current Controlled Voltage Source	100000223	1.0000		DEVELOPMENT			XX	XX	
Capacitor	100000224	1.0000		DEVELOPMENT			XX	XX	
Voltage Controlled Precedence Linear Resistor	100000225	1.0000		DEVELOPMENT			XX	XX	
WIRING - USB	100000112	1.0000		DEVELOPMENT			XX	XX	
PACKAGING	M-000433	1.0000		DEVELOPMENT			XX	XX	
DOCUMENTATION	100000113	1.0000		DEVELOPMENT			XX	XX	
PCB SOFTWARE	100000038	1.0000		DEVELOPMENT			XX	XX	

Upchain has extensive BOM Management capabilities. BOM's can be constructed in a “Top-Down” or “Bottom-Up” fashion. When using Top-Down design, the BOM is built using the web browser itself (shown above) or Microsoft Excel, then CAD data may be added later. When using Bottom-Up design, BOM structure is driven directly from a CAD system.

The BOM table display is extremely configurable. Columns can be dragged-n-dropped, resized, etc. Upchain provides an extensive list of managed attributes out of the box, but it's a simple matter to add additional attributes into the system. Also, these attributes can be “mapped” to the CAD data.

Many standard BOM functions are supported including:

- Copy – copies a specific BOM Item to the system clipboard
- Paste – pastes the clipboard Item into a new BOM or Project
- Move – moves the BOM Item
- Remove – removes the BOM Item from the BOM itself
- Substitute Item – substitutes the Item for another

## BOM Management (continued)

The image displays two side-by-side screenshots of Autodesk software interfaces for BOM management.

**Left Screenshot: 'Add End Item' dialog**

- Title Bar:** Add End Item (with a close button 'X')
- Item type:** A dropdown menu showing a list of item types: Assembly, Electrical Package, Manufactured Item, Product Structure Item, Purchased Electrical Part, Purchased ElectroMechanical Part, Purchased Mechanical Part, Purchased Phantom Assembly, Software Package, Sub Assembly, and Virtual Item. 'Assembly' is currently selected.
- Number:** A text input field.
- Revision:** A text input field.
- Item Name\*:** A text input field.
- Description\*:** A text input field.
- Buttons:** Cancel and Create.

**Right Screenshot: 'Add new item numbering rule' dialog**

- Title Bar:** Add new item numbering rule
- Scope:**
  - Division:** All Divisions X
  - Item type:** All Item Types X
- Revisions:**
  - Major:** 2 chars
  - Minor:** 2 digits
  - Excl. chars:** (empty field)
  - ☐ Extend length after limit
- Item number:**
  - Type:** Fixed Text
  - Text:** (empty field)
  - Type:** Sequence
  - Digits:** 3
  - Start from:** 1
- Buttons:** Cancel and Create.

Upchain comes with an extensive list of out of the box Item Types including:

- Assembly - structure of parts and sub-assemblies
- Electrical Package - top-level item in an electrical assembly
- Manufactured Item - parts manufactured within your company or defined supply chain, typically made specifically for use within your assembly and cannot be purchased “as-is” from anywhere else
- Product Structure Item - has additional kitting and sBOM functions
- Purchased Electrical Part - electrical components purchased outside your organization
- Purchased ElectroMechanical Part - components that contain both mechanical and electrical qualities purchased outside your organization
- Purchased Mechanical Part - mechanical parts purchased from outside organization
- Purchased Phantom Assembly - used to indicate that you have a reference assembly (i.e. not associated to a BOM Item) in your CAD BOM (cBOM)
- Software Package - represents a software package that usually accompanies certain mechanical Items
- Sub Assembly - used to represent lower levels in an assembly or as a placeholder for other items which don't belong to a specific assembly
- Virtual Item – used for legacy purposes only

However, the out of the box list shown above is very easily configured to reflect your company's specific Item Types. Additionally, each Item Type has its own Item Numbering rule which is also easily configured to reflect your company's desired part numbering policies. Note that the numbering rule is also where we define Major Revision (form/fit/function) and Minor Revision (cosmetic/administrative) policies. Revisions can be alpha or numeric and single or double character/digit.



## BOM Management (continued)

upchain Projects Team Create project

Previously viewed: WEB CAMERA Search Advanced search

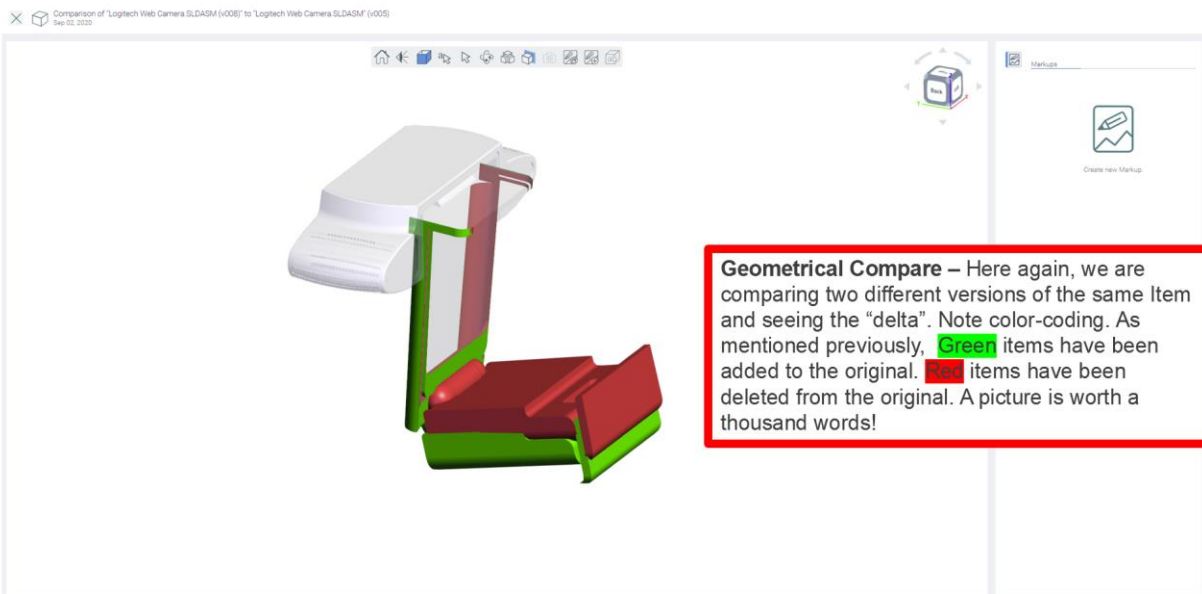
BOM Compare

3D Compare Compared with: A-000099-AA-00-LOGITECH WEB CAMERA -000

Item Name	Status	Files	Visualization	Tasks	Creator	Qty	Thumbnail	Spare	Recommended Spare	PC/NP	MTR	C of G	Appl	Ref Only	Cost	Currency code	Item Number	Item Description
WEB CAMERA	RELEASED																A-000099	HD
CAMERA PROTECTOR	RELEASED					1.0000				X	X	X	X	X	0.0000	CAD	MA-000429	
EXTERNAL HOUSING	RELEASED					1.0000				X	X	X	X	X	11.0000	CAD	MA-000431	
Revision was changed from AA-00 to AB-00																		
CAMERA MOUNT PART 1.0	RELEASED					1.0000				X	X	X	X	X	100.0000	CAD	MA-000434	
CAMERA MOUNT PART 1.0	RELEASED					1.0000				X	X	X	X	X	10.0000	CAD	MA-000435	
CAMERA MOUNT PART 2.0	RELEASED					1.0000				X	X	X	X	X	40.0000	CAD	MA-000436	
2X CAMERA	RELEASED					1.0000				X	X	X	X	X	10.0000	CAD	MA-000437	
HD CAMERA	RELEASED					1.0000				X	X	X	X	X	0.0000	CAD	MA-000438	
CAMERA MOUNT PART 3.0	RELEASED					1.0000				X	X	X	X	X	0.0000	CAD	MA-000439	
CAMERA MOUNT PART 3.0	RELEASED					1.0000				X	X	X	X	X	0.0000	CAD	MA-000440	
CAMERA MOUNT PART 1.0	RELEASED					1.0000				X	X	X	X	X	0.0000	CAD	MA-000441	

**BOM Compare** – Here we are comparing 2 different versions of the same Item and seeing the “delta”. Note color-coding. **Green** items have been added to the original. **Red** items have been deleted from the original. **Yellow** indicates a metadata/attribute change – hovering over the **red** exclamation mark on a **yellow** Item will show the user what the metadata change was. This report is extremely useful for change impact analysis and communication of release candidate information.

Upchain’s BOM Compare tool provides a color-coded BOM comparison. Items in Green with a “+” sign have been added to the original design. Items in Red with a “-” sign have been deleted from the original design. Items in Yellow have had a metadata change – hovering over the red exclamation mark provides a message indicating exactly what the metadata change was.



In addition to the BOM Compare tool, Upchain provides a “3D Compare” which provides a color-coded geometrical comparison. Green surfaces have been added to the original design whereas Red surfaces have been deleted from the original design.

## BOM Management (continued)



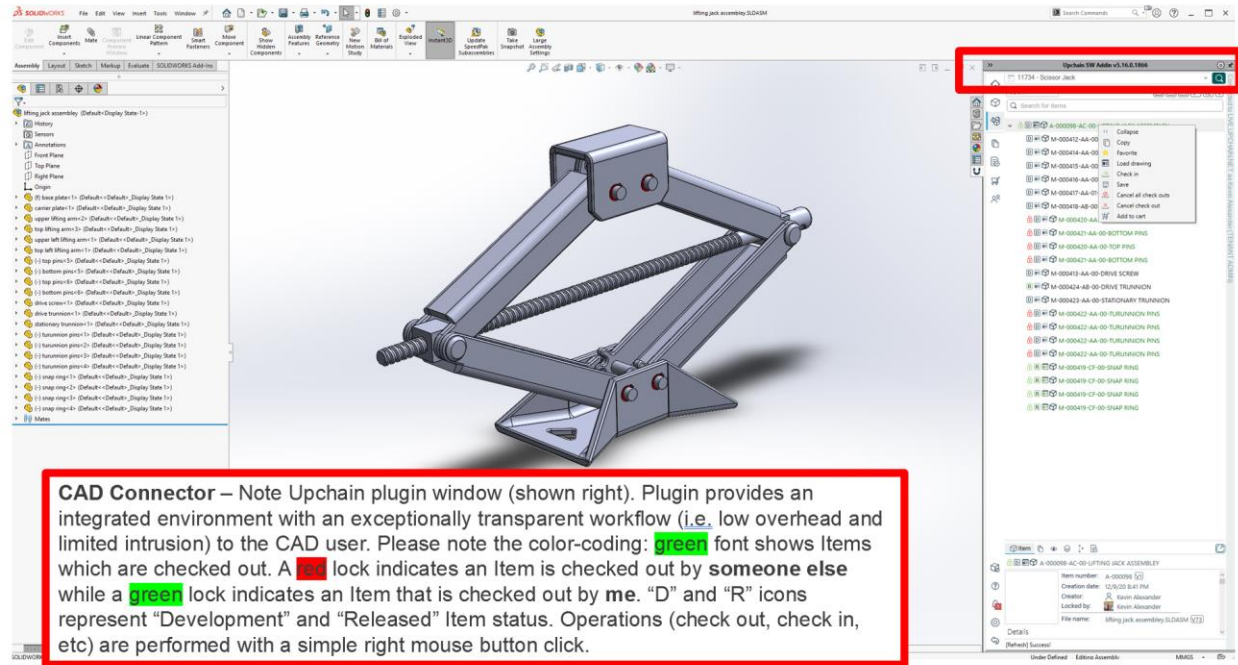
Visualization is integral to the Upchain experience. After a user checks in CAD data, Upchain automatically creates visualization files. These files are very lightweight – ideal for the extended enterprise. Using just a web browser, all constituents have real-time access to perfectly accurate representations of the 3D models and 2D drawings.

Additionally, tools are provided for interrogating the CAD data including:

- Cutting planes (sectioning)
- Assembly explosion
- Measurement
- Markup
- Saved Views (Top, Bottom, Left, etc)
- Rendering Views (Shaded, Hidden Line, etc)
- And much more!

In addition to the capabilities listed above, Investigation Requests (IR's) can be created directly from the visualization environment. This facilitates collaboration with the extended enterprise. IR's can be used to instigate workflows for raising tickets, problem reports, and even RFQ's.

## CAD Integration



The Upchain CAD Connector is a hub for all of Upchain's dedicated CAD plugins: Solidworks, Catia, NX, Inventor, AutoCAD and PTC Creo. Use this application to manage and launch the plugins for your preferred CAD systems. Once launched, you'll use the plugin to capture, manage and share CAD data throughout Upchain — all without leaving your CAD environment.

The CAD Connector also includes a Generic Plugin, which enables you to import and work with different CAD files without the need for native CAD applications.

The CAD Connector facilitates concurrent engineering by providing current status for each object in the CAD BOM (cBOM). Green items are checked out. A red lock icon indicates an object is checked out by a colleague (hovering over the red lock indicates exactly who). A green lock indicates an object that is checked out by myself.

Development and Released lifecycle status is clearly indicated by the "D" and "R" icons, respectively. A simply right mouse button click provides common operations such as Check In, Check Out, etc.

A fundamental component of Upchain's CAD integration architecture is "local caching". As a user works with CAD data, Upchain will cache the information locally on the user's hard drive. In other words, the more the user works with Upchain, the faster it gets! This caching mechanism ensures that users get terrific performance even when working with very large assemblies. Upchain keeps the cache up-to-date by checking time stamp information each time a user accesses the cache.

## Business Process / Workflow / Change Management

**Change Request form** – New Items are easily added to the form by utilizing the “Paste Item” button. Additional objects (documents, tasks, RFQ’s, Investigation Requests) can be added to the Change Request through object toolbar (shown top-left). Release type (shown top-center) can be Major (form/fit/function) or Minor (administrative/cosmetic). Workflow drop-down (shown top-right) allows selection of desired CR workflow.

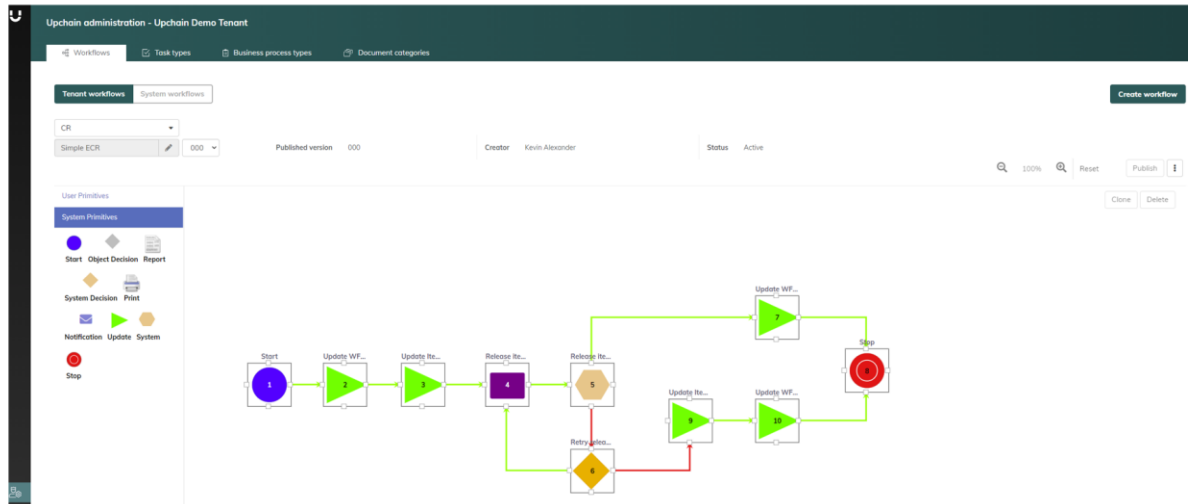
As mentioned previously, Upchain has a full complement of out of the box business processes including:

- Requirements Management
- Investigation Requests
- Change Requests
- Change Notices
- Quality Assurance

Out of the box workflows are provided for all business processes – a Change Request is shown in the image above. Note that new Items can be added to the Change Request by simply pasting. Additional objects like documents and Investigation Requests can be added to the CR by utilizing the toolbar at far left. The Release Type allows the user to select Major or Minor. Selecting Major will cause the CR to automatically increment the Major Revision of a listed Item (if not already released) if the CR gets approved. Selecting Minor will cause the CR to automatically increment the Minor Revision of a listed Item (if not already released) if the CR gets approved.

The drop-down at top right allows the user to specify the CR workflow they want to utilize. Customers can configure as many of their own workflows as desired in order to map Upchain’s workflow to their own business processes.

## Business Process / Workflow / Change Management (continued)



**Workflow GUI (Graphical User Interface)** – Out of the Box (OOTB), Upchain comes with several default workflows (business processes) including: Investigation Request, Project, Change Notice, Change Request, Task, Document, Quality Assurance, and Requirements Management. While the Out of the Box workflows often work perfectly well for our customers, it's not uncommon for a customer to tweak workflow(s) slightly to better suit business requirements. The existing OOTB workflows can be used as a starting point (template), or new workflows can be created entirely from scratch. User primitives are provided for assigning decisions and tasks to specific users and/or user roles. System primitives are provided for automation of various decisions, notifications, updates, and more.

As mentioned previously, out of the box workflows are provided for all business processes. Shown above is Upchain's Graphical Workflow Editor (GWE). From here, administrators can duplicate existing out of the box system workflows to build their own tenant workflows. Alternatively, administrators can “start from scratch” to build their company-specific tenant workflows.

A full complement of “user” and “system” workflow primitives are provided. Examples of user primitives are:

- Decision - used to bring user interaction into the workflow to decide where the workflow goes next
- Task - used to create a task that a user must complete

Examples of system primitives are:

- System Decision - used to automatically enforce your business rules
- Notification - used to send a notification to a specified user.
- Update - used to update the status of the business object and/or the items contained inside the business object
- System - used to automate various system-related functions

## Document Management

**Project Document Repository** - Documents are “content holders” which can be used to manage/rev control/change control/etc virtually any file type. Documents can exist standalone, be linked to other documents, or link to Items (parts).

Name	Document Number	Status	Revision	Version	Creation Date	Last Modified	Change Description	Usage	Size
Customer Documentation									
0-80007-Initial Article Inspection.docx	0-80007	DRAFT	1	1	2020-11-05 08:01 AM	Nov 05, 2020	Initial version	Downloaded:0 Links:0	53.23 kb
0-80008-Initial Material Spec Aluminum.docx	0-80008	DRAFT	1	1	2020-11-05 08:01 AM	Nov 05, 2020	Initial version	Downloaded:0 Links:0	16.53 kb
0-80009-Initial Project Capital.xlsx	0-80009	DRAFT	1	1	2020-11-05 08:02 AM	Nov 05, 2020	Initial version	Downloaded:0 Links:0	52.83 kb
0-80010-Initial Form.pdf	0-80010	DRAFT	1	1	2020-11-05 08:02 AM	Nov 05, 2020	Initial version	Downloaded:0 Links:0	365.80 kb
ECO Documents									
General documents									
PPAP Documentation									
000-40222-Initial PPAP Part Submission Worksheet.pdf	000-40222	DRAFT	1	1	2020-09-13 08:28 AM	Aug 13, 2020	Initial version	Downloaded:0 Links:0	1.33 mb
000-40223-Initial PPAP Part Submission Worksheet.pdf	000-40223	DRAFT	1	1	2020-09-13 08:28 AM	Aug 13, 2020	Initial version	Downloaded:1 Links:1	184.90 kb
000-40224-Initial Process Change Notification.pdf	000-40224	PUBLISHED	1	1	2020-09-13 08:28 AM	Aug 13, 2020	Initial version	Downloaded:0 Links:1	168.14 kb
000-40225-Initial Product Process Change Notification.pdf	000-40225	PUBLISHED	1	1	2020-09-13 08:28 AM	Aug 13, 2020	Initial version	Downloaded:0 Links:1	153.72 kb
000-40226-Initial Bulk Materials Requirement Checklist.pdf	000-40226	PUBLISHED	1	1	2020-09-13 08:28 AM	Aug 13, 2020	Initial version	Downloaded:0 Links:0	407.78 kb
000-40227-Initial Bulk Materials Requirement Checklist.pdf	000-40227	PUBLISHED	1	1	2020-09-13 08:28 AM	Aug 13, 2020	Initial version	Downloaded:0 Links:1	248.20 kb
000-40228-Initial Bulk Materials Requirement Checklist.pdf	000-40228	PUBLISHED	1	1	2020-09-13 08:28 AM	Aug 13, 2020	Initial version	Downloaded:0 Links:2	200.80 kb
Internal Specifications									
Linked documents									
000-40229-Initial QA Plan.doc	000-40229	DRAFT	1	1	2020-09-19 04:42 PM	Aug 19, 2020	Initial version	Downloaded:0 Links:0	638.00 kb
000-40430-Initial Quality Report Results Template.xlsx	000-40430	DRAFT	1	1	2020-09-08 09:52 AM	Sep 08, 2020	Initial version	Downloaded:0 Links:0	8.41 kb
Manufacturing									

Each Project has a Document Repository where Document objects are stored. Documents are simply content holders which can be used to manage virtually any file type. Note that documents have Number, Name, Revision, etc. Additionally, they can be put through Document workflows.

Often, Documents are used to build relationships. Documents can be related to one another (doc-to-doc) or related to Items (doc-to-Item).

Document Categories can easily be created (by Administrators), each Category can have its own Document numbering and revisioning scheme if desired.

Creating a new Document object is as simple as drag-and-drop. Editing Documents is also very simple – just Check Out and download the Document locally, Edit, and Check In!

For Microsoft Office Documents, Upchain has a dedicated plugin which facilitates view, search, and editing directly within the familiar Office environment. Additionally, dynamic product images can be inserted into MS Office artifacts – these images can be updated automatically if the models they reference are updated (users receive a warning message asking to update).

## **Additional Resources**

[Upchain Platform Video](#) (this is a compilation of videos 1-7 below)

[01 Upchain Interface Tour](#)

[02 Upchain BOM Management and Visualization](#)

[03 Upchain CAD Integration](#)

[04 Upchain Document Management](#)

[05 Upchain Business Process and Change](#)

[06 Upchain Supplier Portal](#)

[07 Upchain Administration](#)

[Upchain Open REST Services API](#)