

Upchain: Making Robust PLM Easy

CIMdata Commentary

Key takeaways:

- *PLM is a complex problem that often has been addressed with complex solutions that can be hard to use and difficult to implement.*
- *Over the years, a number of solution providers have attempted to offer easier to use solutions by taking away needed functionality.*
- *Upchain started with a clean sheet of paper, using multi-tenant cloud and modern tools to define a new user-centric approach that supports an extended set of PLM use cases while avoiding common PLM pitfalls.*
- *Upchain's cloud architecture, data model, UX, and implementation methodology ("Connect the Chain") have all been designed with "keep it easy" in mind, without jeopardizing functionality.*
- *Upchain's PLM solution has been designed to drive innovation by enabling an integrated environment that allows users to work in their native applications while easily collaborating with others throughout their value chain.*

Today's global ecosystem is all about change. Companies of all shapes and sizes need to evolve, not just due to today's economic and noneconomic conditions, but also for tomorrow's. In today's business environment, like in life, change is inevitable. Without change, things just stop being. This means that most companies' products and services need to continue to evolve to include richer capabilities and connectivity, which in turn requires more enterprise disciplines to work together—well beyond engineering. Ultimately, workers need to have processes and enabling innovation platforms that can be easily changed and adjusted to fit today's, as well as tomorrow's evolving business requirements.

Albert Einstein, the famous theoretical physicist, said it best, "Everything should be made as **simple** as possible, but not simpler." This is true for PLM as well. When PLM is made as simple as possible, ROI is maximized and innovation flourishes. It is that simple. Don't over engineer, but do engineer. Above all, companies need to ensure that their PLM solution addresses their real enterprise PLM requirements in a manner that is easy to implement and intuitive to use for all enterprise users, forming an effective and innovative work environment. It is in this light that Mr. Peter Bilello, CIMdata's President & CEO, joined Mr. John Laslavic, Upchain's CEO & Founder, on the phone to discuss Upchain's approach and value to those who are seeking a new and easier way to do PLM. Please note that the interview that follows was edited for clarity.¹

Peter Bilello (PB): John, thank you for joining me today to talk about this important topic and to expand CIMdata's audience's understanding of Upchain. So, what does "keep it easy" mean to Upchain?

John Laslavic (JL): So, keep it easy. What is it really? Well, it's all about your point of view, isn't it? Easy for who is the real question. For us, it is all about the PLM user. That has been our focus from the beginning, making it easier for the PLM user—making sure that the user experience (UX) for all users is as simple as it can be. We want our solution so easy to use, that the UX will be so natural to them, that it will be like a 3-year old picking up an iPad and just being able to use it without any training. So, that is what "keep it easy" means to Upchain.

¹ Research for this commentary was partially supported by Upchain.

An intuitive UX is critical, not making it easy for the company or the department to implement and control, but specifically focusing on making it easy for the user, and really understanding and implementing their use cases. I should emphasize that we aren't trying to make it easy for us to sell the product either. The focus is on the user's ability to get value out of using PLM.

Again, it's all about the UX and enabling use cases in a manner that results in an intuitive experience. As an example, downstream from engineering, users of PLM like to work with files. They know their file names because that's how their applications work, such as CAD and word processing. They want to work natively within their applications and have PLM behind the scenes doing the data and process management without getting in the way. They just want PLM to provide the right file when they need it. Good PLM should eliminate the noise of managing data—that should be transparent to the user.

Our guiding principle and vision for PLM is that it acts like an operating system—always on, always there, never worried about, and never in the way of getting the real work done. The users and the organization see the results of the applications that are built on top of it, but the PLM system itself should be invisible. The user should be able to search for parts, and find them from within their applications. PLM should understand what the user's product is, as well as all of the different constituents that specify the product, in a manner that makes sense to each user within their specific context, while enabling their specific user experience and use cases.

PB: Thank you for that. Can you talk a little more about how Upchain is enabling role-specific user experiences and use cases in a manner that gives them life?

JL: Well, we start with how we present data to specific application users. For example, for someone that's used to working in Microsoft Outlook, like a manager. For them, it is their notification and workflow engine. For them, Outlook is where they want to review and approve data. That is their context and that is what Upchain enables. Our integration with Outlook supports this manner of working, the user doesn't have to leave the comfort of their tool. It is within it that they get pop-ups, sign off directly within emails, and so on. All of which is managed behind the scenes by Upchain. And when they need to, they can easily access their Upchain platform on the web to review overall program status, review dashboards, and drill down into managed data as required. With this said, I would like to stress that our focus is on letting the typical PLM user work within the tools that they commonly use to create and review data.

PB: Who is a typical user? And do you expect and plan on them spending 90% of the time within the tools that they commonly use, and the rest of their time in PLM?

JL: To answer your question, we put users into a few UX buckets. For data creators, we want them to spend 100% of their time in the tools that they use to create data. For managers, they want to work within email for review and signoff, but we also want them to be able to view dashboards that exist in PLM. So, they are going to spend some time within PLM.

There's one other user type. These are the consumers of data; they don't create any data directly in the PLM environment. They typically search, find, and look at PLM managed data. For these viewers, Upchain provides easy and intuitive access. For instance, for suppliers we provide portals to access data. They're not in PLM, but rather have access to data published by PLM. Again, keeping it easy is key for all types of users.

PB: Over the years, many PLM solution providers have attempted to deliver pre-configured and “easy” to implement solutions, only to have them thrown aside because companies found them to be too restrictive. How has Upchain addressed that problem?

JL: I first should note that most providers that have tried to do this already had a product. So, for them, they attempted to provide an “easier solution” by removing capabilities from their current solution, but underneath the data model and the architecture, and so on, were still based on their legacy solution. What’s different for us is that we started more than five years ago from the ground up to design and deliver a solution focused on a different and much easier UX. This allowed us to re-invent PLM, to take a hard look at everything from the data model through our licensing model, to how we do integrations, as well as how we create and deliver implementation templates.

I think that it is important to understand that you can't simply morph something that already exists, which is already complex, and make it simple. Inherently, if it's complicated then that's what it is. You might be able to change the way you interface with it. Making the UI simpler, for example, but you would likely have to take functionality away.

For Upchain, we decided that our end goal was to make it easier for the end user. We also decided that we would enable different user personas, and that those personas would have specific use cases enabled, and finally that we would build the product from the ground up with those things always in mind. It completely changes the dynamic related to how you build something to be simpler, because you have started from the ground up with that in mind.

PB: Your comments remind me of a quote from John Gall that I recently ran across, “A complex system that works is invariably found to have evolved from a simple system that worked. A complex system designed from scratch never works and cannot be patched up to make it work. You have to start over, beginning with a working simple system.”

We both know of many PLM solutions that have evolved over years, if not decades, in complex solutions. Some have been re-architected and some need to be. Some have chosen to deliver pre-configured capabilities for simplification reasons, and others, for example, have chosen to deliver configurable solutions. Do you have any comments about these approaches?

JL: One of the things that we thought about right from the beginning was where do you start in the simplification journey. For many, their starting point really was after engineering. For us, we started with engineering. So, instead of outsourcing CAD integrations, we chose to do them ourselves. We wanted to make them extremely easy to use, to enable an easier way of working within the CAD system and having PLM do what it does best behind the scenes. Fundamentally, the enterprise landscape is heterogeneous, and we have embraced that fact. There are many CAD systems out there and you have to deal with multi-CAD. Users need to be able to work naturally within those systems. PLM can't get in the way of performing that work. From the beginning, we decided that CAD and the data it generated wouldn't be treated as a blackbox like so many have done in the past.

If you look to keep things easy, for example, when a change happens, this is where complexity typically occurs in PLM. The simple case is that you create something for the first time. And everything from there is a serial process that works perfectly downstream. In this simple case, there're never additional changes, nor are there ever any feedback loops. For many, this is how they architected their solution, but as we all know, this isn't how things really work. So, we chose another course. We chose to enable a change process that makes it easy for not just the CAD users, but also for the downstream users. Our solution informs specific users downstream explicitly about what has changed. Our solution does this because it tracks what data specific users have consumed previously. What gets communicated is exactly what has changed instead of notifying the user of a change and providing them links to all the data that might have been impacted. Inherently, this resolves a massive problem as products get more complicated.

The rate of change related to how quickly products need to go to market and how complicated they are means that you have to shorten the development cycle. Additionally, many companies are relying on more suppliers and partners that need to be involved in parallel, not serially—how do you do that? If you don't really understand what's going on and your systems don't understand nor analyze and notify the right people, what happens? You end up getting a bespoke solution that just either gives access to everyone, everything, and/or notifies everyone of everything. None of this makes things easier. We considered all of this when we architected and delivered our solution.

PB: Your comments remind me of the famous quote from Steve Jobs, “Simple can be harder than complex: You have to work hard to get your thinking clean to make it simple. But it’s worth it in the end because once you get there, you can move mountains.” I think that is why Upchain has chosen to do its own CAD integrations, for example. Is there anything you would like to add to that?

JL: Yes, on the CAD side, we do all our integrations ourselves and with regards to enterprise system integration we follow a well-defined method. We developed and use a very robust API. We also have a tool that we continue to build out based on MuleSoft [a commercially available Enterprise Application Integration framework] as our enterprise system connector. The ability to easily integrate a heterogeneous set of solutions is one of our main goals. We don’t believe that a company will ever have one system containing a holistic single source of the truth. We don’t need to own everything, but we do want to fully support a “best of breed” strategy. We provide the PLM operating system—the platform upon which applications from many providers are connected into a single **logical** source of the truth.

This concept of PLM being an operating system is very important to us. If you think this way, you will architect a solution that can integrate to anything. That's not an easy problem to solve and it’s a hard road to take. That is inherently what we feel must be done to really make PLM successful—make it transparent, make it easy, and make it beneficial for all users.

PB: So far you have described a number of key elements that make Upchain’s approach easy, for example, your architecture, UX, and so on. I think it would be helpful if you would explain a couple of the key characteristics of each of these elements?

JL: Related to architecture, our solution architecture is based on a multi-tenant cloud implementation. That allows us to get a lot of benefits of the cloud, such as, the ability to scale up or down, as large or as small as necessary since a company doesn't need a large overhead to get going. Small companies don't need to carry the infrastructure costs that can be quite large. We are fortunate that we chose to develop our solution from the ground up leveraging the cloud. We haven’t had to migrate to a multi-tenant cloud, but have had one as part of our core architecture from the beginning. By leveraging cloud services, for example, from AWS and others, we are able to incorporate and deliver to our customers, which we refer to as partners, quickly. In fact, we leverage technologies that have actually been developed by much larger companies, like Google and AWS.

By using some of the latest tools we have been able to extend important data management capabilities without using a traditional database architecture. We’re leveraging that and continue to build artificial intelligence (AI) into our platform. Our architectural approach is allowing us to do things that other companies just can't because, architecturally speaking, they are dealing with solutions developed 30 years ago, and they have kept building on those architectures. It's difficult to turn a ship and change the route of those products architecturally without major investment and effort.

PB: While it is understandable that you don't have legacy code today, what about in five or ten years? All software companies typically start with new code, but over time they add, often creating a complex solution that is difficult to evolve. What has Upchain done to minimize future major redevelopment.

JL: First, we have implemented a modular architecture based on services. This should help minimize future redevelopment efforts, but I have to be honest with you. None of us can predict the future. Who knows what technologies will be available in 20 years. We just don't know so we will need to be flexible. I can tell you that we are currently delivering cutting edge technology that we feel places us in a good place for at least the next 10 years, on an underlying architecture that is built to evolve.

PB: A modular approach is very positive because it allows you to upgrade and replace modules without necessarily impacting the overall architecture. Time has shown that modular solutions tend to hold up without causing massive disruption for the user base.

JL: Yes, part of our core set of tenets is the enablement of best in breed applications on top of the Upchain PLM operating system. This required us to account for change from the beginning and develop a flexible and scalable platform that allows for plug and play. This should serve us well, well into the future.

PB: Can you talk a little more about Upchain's data model, its architecture and flexibility to handle today's and tomorrow's emerging requirements.

JL: This is another area of differentiation for Upchain. Our data model has been designed with 16 core objects. Each of them allows for the definition of as many relationships as needed. This allows the creation of an infinite number of relationships and objects. This has allowed us to rapidly develop new modules, for example, a new QMS module, as well as rapidly introduce enhancements to existing modules. Currently, we make additional capabilities available every two months, and we do this without changing the data model. Some examples include our rapid development and introduction of enhanced Bill of Material capabilities that support different BOM views, including a service BOM. We didn't need to change the data model to do this.

With all of this, keeping things easy is still extremely important, and in fact, difficult at times. We certainly agree with the quote you mentioned earlier from Steve Jobs. Our biggest challenge might be exposing additional capabilities to the user community while still keeping it easy to use and digest. This is where our core tenet of making things easy for the user is critical. That's for all users, in their specific context and use cases.

In a way, we have had the luxury of learning from others, as well as architecting a PLM solution from the ground up. That means we knew and designed to enable the end-to-end scope of PLM. We didn't develop an engineering system and then expand it to a lifecycle management system later. This has allowed our partners to progress through the implementation of capabilities at the speed that they can digest what we are providing them.

PB: I appreciate Upchain's use of the term partners when referring to its customers. You just talked about implementation pace. Can you talk about your implementation methodology and how it has been designed to keep things easy?

JL: For Upchain, our services have been designed to get our partners up and running rapidly. We don't look at our services as a profit generator. In fact, we provide our implementation services, including training at no additional cost. It is included in the cost of the software licenses. As a result, our services are solely focused on making our partners rapidly productive in Upchain.

It is important to mention that there's no customization in our product. In fact, we often develop new functionality with our partners during an implementation that always gets incorporated into the commercially available solution. We do this as well at no cost to our partners. This, in turn, drives us to keep our solution easy to implement, extend, and use.

PB: You have clearly architected your solution to be implemented quickly and made it easy to provide the capabilities needed by your partners. Given that Upchain is providing implementation and training services for no additional cost, some would argue that the only way you can do that is by offering a rather defeatured or simple solution. Can you address that potential perception?

JL: I am happy to, but first, a little philosophical discussion is required. A trap, as CIMdata mentioned in a recent positioning paper, is that companies often try to do too much, too fast.² Some say that they bite off more than they can chew. They want it all: process automation, detailed workflows, automated checks, and so on. For many, this results in a failed implementation—an implementation that collapses under its own weight of complexity. We have chosen to learn from this historical trap and have architected our solution and implementation methodology to enable and encourage our partners to start slow and receive value from the outset. We call it “land and expand.”

We have templates in the system that are specific to each industry. This helps our partners get up and running quickly. Our partners can then learn and, as they need to, expand. We teach them how to implement and configure using those templates. This gives them a starting point and allows them to receive value quickly. Once initial capabilities are made available, our partners can then continue to configure their implementation, enabling additional capabilities, workflows, and so on, as they can. We highly encourage our partners to start slow and never try to do everything up front. This brings up another core Upchain tenet, don't rip and replace; integrate and evolve. You may want to replace a specific application with PLM, but first integrate it, and then, if and when it makes sense, look to replace it.

We also believe in agile. Start off with something that you know. This is where your journey begins. We have found this to be very successful for our clients. They start off small and build up their solution over time in an agile fashion. This is something that we've learned from the software industry. Take things in manageable, agile bites—take things that you can implement and digest, in a maximum of three months, implement them, learn from them, and repeat. The main point is, learn from it! Then take the next chunk and continue to evolve. We are doing this with the development of our solution as well.

Let me also address the potential perception that Upchain is easy to implement because it is a simple solution with minimal capabilities. Well, let me start with an analogy I have been using a lot lately. When you buy an Apple iPhone or Google Android phone they do everything that you need them to do. They are functionally rich, yet easy to use from day one. We think in similar terms. We are the PLM experts our partners want us to be. They are looking for us to develop and deliver a platform, a PLM operating system. We aren't building a solution that will do whatever a company may want. We are creating a solution that everyone can get value from, quickly and easily. That means that we are in control of its development and sometimes a client may think that they need some additional functionality, which, for example, would make the solution harder for users to use and/or implement. In such a case, we may suggest other

² <https://www.cimdata.com/en/resources/complimentary-reports-research/position-papers/item/13455-why-is-plm-often-so-hard-simple-is-best-position-paper>

capabilities that we feel are more in line with our core tenets and solution direction, and which would be better for them to adopt.

PB: I have to say that it has been CIMdata’s experience that many companies think that they know what they need, but don’t understand that what they need first is a PLM partner—a company helping them in their PLM journey. Is it fair to say that Upchain wants to provide its partners with what they need, maybe something along the lines of 80/20? In other words, focusing on the capabilities that deliver 80% of the value and need?

JL: I completely agree. The KISS (Keep It Simple, Stupid) principle comes to mind. Every good negotiation, every good implementation, means that there is some compromise. And if you’re unprepared to compromise and listen to your chosen expert and what they are telling you, then you will miss out on their learnings. Our partners want us to be their PLM experts, and that is what we are striving to be—day in and day out. This is the way everyone gets the best results. In the end, we don’t want to be order takers. We want to be PLM experts who drive our solutions development in partnership with our partners. Our approach allows companies to move quickly and to continue to extend and expand the value they receive. We aren’t interested in having our solution or implementation methodology get in the way of our partners maximizing their return on PLM investment.

As I said before, we are making PLM easy for users, not necessarily for us. It is our job to make the complex easy. We continue to add rich capabilities, but we do so in a manner that helps our partners in the best way possible. We do that in a way that allows the users to easily take advantage of the capabilities we are providing. For example, we continue to expand the use of visual clues, symbols, and increasingly, AI support.

PB: Before we wrap up, I would like to have you talk a little more about your “Connect the Chain” approach. Having had the chance to sit in on a few sessions, I found it to be an innovative and repeatable approach that leverages a set of evolving tools and best practices. I especially appreciate how it has been designed in a manner that closely emulates industrial users’ day-in-the-life work environment not just what the various buttons do, and how it teaches users how Upchain reduces tedious tasks and frees up time for value-added activities such as engineering design. This approach appears to be another ingredient of Upchain’s secret sauce. Could you please expand on it?

JL: Yes, this is another key part of our approach to PLM. Currently, we are investing in Connect the Chain’s evolution. As we evolve, so does our approach to supporting our partners. Connect the Chain isn’t just about the initial implementation. It is also about how a partner continues to evolve the usability of the system for each and every user community it enables. We want our partners to not just receive the systems’ initial value, but continue to gain additional return on investment. Connect the Chain is also about enabling our partners to easily evolve their solution and continue to invest in it, configure it, and improve it. Continuous evolution, continuous improvement are keys to maximizing value. Connect the Chain is our continued investment in our partners’ continued success.

PB: How scalable is Connect the Chain so that Upchain can continue to effectively support its growing list of partners without being overwhelmed by their numbers?

JL: Well, that is the root of what we’re building. Our solution has been built with business scalability in mind. We continue to release new capabilities, and since they are in a multi-tenant cloud environment, the new capabilities are immediately available to all of our partners. We don’t have to scale that, because it is automatically scaled because of our solution’s

architecture. And our partners can easily take advantage of the new capabilities without having to reimplement. Again, we are built for continuous improvement.

PB: I think that it is great that Upchain has engineered its solution and business to be a company's partner throughout their ongoing PLM journey. This should allow them to minimize the technology value gap that many experience. This happens when additional capabilities can't be easily implemented because of over-customization, for example. Your model is good, but some would argue that it still requires an ever-increasing staff to care and feed. So, could you provide some additional insight on how Upchain has engineered its business and solution to economically do this for the long-term.

JL: Yes, some might think that, but we have taken a holistic approach. It isn't just about human contact. We have an ever-expanding set of e-learning tools, solution notifications that automatically inform partners of new capabilities, capabilities that might be useful but just aren't currently being used, and so on. We never make a partner use new capabilities, but we are proactive in letting them know what capabilities would be beneficial to use that they aren't currently using. They have access to all the capabilities, even newly delivered capabilities and modules at no additional cost, so we want to make sure that they take full advantage of all applicable functionality. Cost is not even a barrier. This is an area that we will continue to develop. All of this supports our keep it easy mantra—easy to understand what is new and applicable, easy to gain access to it, and so on. It can't be easier than that.

PB: Finally, Upchain appears to be rapidly expanding, while continuing to foster a culture of agility, innovation, and creativity. A tall task to achieve. There also appears to be a lot of positive ground ahead for the company. So, what's next for Upchain, and what are you most excited about?

JL: Well, there's a lot. For one thing, we are looking to be a market disruptor. We have and will continue to question everything that has been done before. We have the opportunity to extend and expand PLM as an operating system well beyond where things are today. This might drive us to change various technological and business norms. Time will ultimately tell.

We are also excited about the broader PLM opportunities in the industries we currently serve, as well as the opportunities that exist in so many other industries. If you just look at the number of CAD licenses—mechanical, electrical engineering that are out there, as well as architecture [AEC] for instance—moving into these other disciplines and truly bringing them together is an opportunity. Brining all the different disciplines into a single logical ecosystem is the operating system of innovation. That makes us very excited and we are up for the challenge. A challenge that our best of breed approach opens up for us. But we will need to stay on top of our game to continue to be successful. We have to be the best at what we do, and that keeps us honest.

PB: You're probably familiar with this, but one of the tenets of a "true" platform is that you give open access to it. You focus on the co-creation of value—building an ecosystem where all partners add and receive value. It appears that Upchain is on its way to doing this. That is very exciting for CIMdata to see. We, at CIMdata, have been preaching the platformization of PLM for many years now and the progress Upchain is making is encouraging.

JL: That is what we have been and will continue to do. We aren't looking to build a monolithic solution—a one size fits all super system. We are very confident in what we are doing, and our partners agree.

Inherently, it comes back to the business model, and in realizing it. That is the path that we are on. At the end of the day, the world desperately needs to create better products, faster. We are here to enable that in the easiest and most effective way possible.

PB: Thank you very much. I have to say that we at CIMdata are excited about the PLM market's future, and the role Upchain is positioned to play in it.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM). CIMdata provides world-class knowledge, expertise, and best-practice methods on PLM. CIMdata also offers research, subscription services, publications, and education through international conferences. To learn more about CIMdata's services, visit our website at <http://www.CIMdata.com> or contact CIMdata at: 3909 Research Park Drive, Ann Arbor, MI 48108, USA. Tel: +1 734.668.9922. Fax: +1 734.668.1957; or at Oogststraat 20, 6004 CV Weert, The Netherlands. Tel: +31 (0) 495.533.666.