FINDING THE BUSINESS VALUE POINTS FOR CONTROLLED IT DELIVERY

CEMENTING THE FOUNDATIONS
FOR VALUE STREAM MANAGEMENT

Executive Summary

Industry has been talking about digital transformation for several years now, and organizations around the globe are on their individual journeys of change. The vagaries of the term digital transformation have slowly been replaced by specific ambitions, processes, skills and tools. We are now seeing successful outcomes, even though over the past two years, every organization has seen its operational plans disrupted and accelerated by the Covid-19 pandemic.

With transformational maturity comes new challenges, one of which is to ensure changes to technology and processes deliver maximum value. Digital transformation is far from straightforward. The promise of more-effective handover and collaboration between the software development, delivery and production processes and the people involved — defined as the basis of DevOps — is formed of many stages. Each of these stages introduces its own new processes, skills and tools with associated costs and value.

Progressive organizations are beginning to look at these stages with a view to optimize the value each provides to business outcomes. To do this, they are borrowing from an established lean business concept: value stream management. This report explores:

- What value stream management is and how it can be applied
- What tools are involved
- What companies have gained and learnt from its application

Crucially, those charged with delivering value-based goals will gain an understanding of the important characteristics and working practices for successful and measurable outcomes. The report concludes with a profile of a value stream management solution from OpenText, as well as the company's underpinning portfolio.

Defining Value Stream Management

There is much debate about the definition of value stream management. Some organizations rightly question the many attributes assigned to the capabilities enabled by the concept. In What People Don't Get about Value Stream Management, Andrew Fuqua, senior vice president of products at ConnectAll, presents misconceptions in this area. One of them is the promotion of unsubstantiated claims of the benefits of value stream management — for example, that it provides visibility into or control over something — rather than recognizing that it is merely a concept, one that encapsulates the value of people's involvement in delivering better processes and value streams.

This is a common challenge given how difficult it is to express the inclusion and non-linearity of human behaviour in automated computational processes. In fact, there are parallels with digital transformation and DevOps, which similarly often struggle to find a single definition, particularly one that incorporates human involvement well. This has not been a problem in those areas, because such concepts are usually best delivered when organizations find a definition (or a version of it) that best suits them.

DEFINING THE CONCEPT

The term value stream itself can be defined as the steps in each process that a customer is willing to pay for to produce a product or service. The process is therefore the stream through which value flows. There is some debate about whether the management of this is itself tangible, for example a process, methodology, framework, platform or tool. Some argue that it is a concept or culture through which people constantly seek to optimize value from the processes they are part of.

Of course, people involved still benefit from having support in this area, and this is where value stream management can make use of tools to measure and track value through the application development life cycle.

FOUNDING PRINCIPLES

The principles of value stream management hark back to early manufacturing. Taiichi Ohno, the father of the Toyota Production System, developed Material and Information Flow Mapping in 1988 to visually depict all workflows in the production process. He created a common language for identifying areas of improvement and eliminating waste. By doing this, it was possible to optimize the process and get more value from each stage, contributing to the increasing value of the whole.

In addition to and since Ohno's work, there has been a rise in lean management principles and Six Sigma techniques, which were created by Motorola engineer Bill Smith. All these share an aim to identify and remove the causes of defects and interruptions in business processes to drive the business value. Today, the same approach is used by companies around the world looking for lean management of their software delivery.

A Case for Small-Scale Value Streams

Perhaps the biggest challenge with value stream management is the scale of value streams. From end to end, this includes a potentially huge number of processes that span multiple business functions, each with their own software tools, teams, skills and cultures. The development of a software product may form only part of a wider value stream spanning multiple products or streams of development and affecting different systems in various parts of IT or the business.

This is without considering the possible input of marketing, sales, customer support and other teams. A value stream management tool will sit above these and visualize the complete stream. However, the end points of a value stream can be expanded or curtailed according to the scope or perspective of the desired value visualization. Crucially, it is in the underlying tools that run the processes that changes will be made.
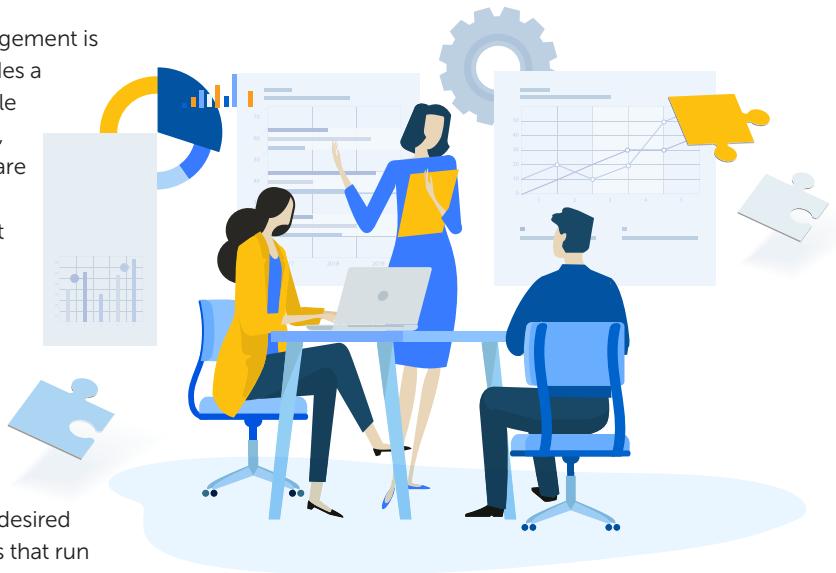
WHERE TO START IN PARSING VALUE STREAMS

There are ways to subdivide the value stream. Take, for instance, the approach used by the Scaled Agile Framework (SAFe), a set of organizational and workflow patterns for implementing agile development practices on an enterprise scale. In this regard, the approach would be to think of operational value streams and development value streams, or to think of business and IT value streams. It is where the latter two align that will drive success for organizations.

Without a connected and normalized view across business and IT for multiple product lines or value streams, it is impossible to understand the impact of any business change, or to align business and IT. Instead, organizations will keep guessing at the most beneficial change to introduce.

LOCKING IN ACCOUNTABILITY

Guessing where to invest and prioritize leads to poor strategy, which in turn results in poor investment decision-making, misaligned business and IT demand, and product lines that fail to deliver what the organization needs.

To this end, the visualization and alignment approach of value stream management offers levels of accountability for both business and IT leaders in their technology investment decisions. Importantly, visibility of the alignments between business value streams and IT product lines and delivery processes provides IT roles with the means to push back against whimsical demands that can be shown to be detrimental to generating value.

This broader aspect of business and IT alignment underpins value stream management. It highlights the role of business transformation partners and services working in concert with tools that enable key software life cycle processes.

Why Now for Value Stream Management?

Interest in value stream management has grown from recent change initiatives, often under the umbrella term of digital transformation, but in many cases predating that. As these initiatives have matured, they have often failed to deliver the promised value.

An example of this is cloud computing, which covers various offerings from software-as-a-service solutions to proprietary workloads. As enterprises have moved to the cloud, they have often found that they have not fully realized the potential of their investment. As a result, they get stuck revisiting processes to unlock additional value.

This is where value stream management is a good fit.

This scenario is not just seen in cloud computing, but throughout the modern software development landscape.

Machine learning, containers and DevOps have all failed to meet early expectations in some cases. Usually, it is not the technology that falls short but the processes for its implementation — in short, the human involvement.

By revisiting processes and applying "value stream thinking", organizations hope to unlock the value they had envisioned. They can identify where human activity may be best placed and where it makes sense to support it with tools for automation in the defined end-to-end workflow or value stream.

As operations become more and more complicated, the ability to visualize and optimize processes is increasingly important; organizations thinking about value stream management now may enjoy a stronger position in the future. The visualization that value stream management supports establishes a framework for measuring and controlling cadence, consistency, economy and other metrics.

Value Stream Management in Practice

Of course, everyone wants to maximize value and optimize processes. But what does it take to make this happen? Below are some examples.

1

RELATING WHAT IS DELIVERED IN CODE TO BUSINESS OUTCOMES

In agile development, which offers time-bounded "sprints" of working software, each sprint delivers new code, but does that code deliver value to the business? Organizations have often adopted agile practices to provide new code or software features at a faster pace, without measuring the output in terms of business value — in short, whether a certain feature provided benefit to users that then helped the company by generating more revenue or reducing costs. By measuring this, firms can better focus on areas of increased value and reduce investment in others.

2

PROCESS AUTOMATION

Organizations have been seeking to automate more processes and eliminate drains on resources. A simple example is the automation of software testing, which allows for:

- More frequent testing, reducing time wasted in significant code changes

- Faster testing, reducing wasted time in waiting for testing

- Removing people from the testing process, reducing investment in human capital

The move to automation frequently centres on the change from manual to automated processes, but once this has been achieved the next stage should focus on optimizing the automated processes themselves.

3

PROCESS INTEGRATION

For example, individual teams will often automate the processes they are responsible for. However, the handover between processes can still be manual, leaving wasted time and investment in the gap from one process to the next. Integrating processes allows for this waste to be removed.

Data is core to much of the value stream management process — more specifically, the ability to collect data and derive insight. It is with data that we can track the movement of value through the complete process and identify areas for optimization based on key metrics. For example, measuring business value is essential for mapping code output to it — without data this is not possible.

Differentiating and Aligning with IT Transformational Initiatives

Value stream management can be applied to many areas of software development. Each of these consists of different processes, some of which overlap, with different support needs. Below are examples of these areas.

AGILE DEVELOPMENT

Agile development strategies aim to improve the success of delivered software by enhancing collaboration and breaking down silos of interaction to better govern the delivery process.

The agile development process is made up of several stages, often involving multiple tools. A typical sprint needs at least some form of requirement management, planning, code development, and testing, as well as a tool chain to support these phases. Support for value stream management here will require data to be surfaced from all these areas to measure efficiency, quality, speed and predictability.

DEVOPS

The definition of DevOps focusses on the removal of barriers between development and operations teams, and enabling interactions that improve software delivery as well as continuous, controlled and repeatable releases.

For many, DevOps is the IT manifestation of digital transformation; an end-to-end process that goes from identifying a business problem and proposing a software solution, to delivering that solution and then continuously improving the process. DevOps offers ample opportunities for value stream management.

In an enterprise, DevOps will mean a multitude of processes under the purview of different teams. To eliminate waste through process optimization, automation and integration, it is essential to capture data from the whole process. DevOps will include agile development practices and bring in other areas such as continuous integration and continuous delivery (CI/CD) pipelines, environment orchestration and the management of infrastructure, in addition to monitoring for problems or security threats.

DIGITAL TRANSFORMATION

The tenets of digital transformation focus on improving operational outcomes as well as expanding an organization's reach and presenting paths to new opportunities. A particular lure is the ability to reimagine processes and improve productivity by delivering more valuable experiences for employees, customers and supply chain.

At the business level, a digital transformation strategy is all-encompassing, looking at all value chains in the company and bringing in all business functions. It introduces the need for governance, in addition to the requirements of agile development and DevOps. It is at this level that business value can be measured and then mapped back into lower-level processes.

Waste here typically comes from inherent organizational problems, such as siloed functions that create friction between business processes or replicate processes.

All these different areas bring a lot of complexity, and organizations may find that different value stream management tools are best suited to different areas. For example, some focus on agile development practices, some aim to address DevOps pipelines and others tackle broader issues such as governance and measuring business value. Organizations must consider how tools work with each other to avoid the irony of creating waste in a tool chain designed to eliminate it.

It can be difficult to differentiate value stream management from the concepts discussed here. How does managing the value stream in a DevOps scenario differ from managing the DevOps process itself? Are they not one and the same, just with different terminology?

An important difference is that, in this case, DevOps focusses on the implementation of the core process itself, for example, the creation of CI/CD pipelines. This may include the use of different tools at different stages within the overall pipeline. In contrast, value stream management looks at the process from end to end, with supporting tools pulling data from the underlying tools to provide a single view of the complete process.

Tooling Considerations for Value Stream Management

A big question is what is required to support value stream management. Organizations must explore three areas when considering the software development life cycle.

PLANNING

In an agile and DevOps environment, planning is a continuous activity. New requirements are constantly emerging and each of them may seem like a mini project needing input from several participants. Sprints are usually measured in weeks, and one rolls into the next. Once delivered into production, a new feature may lead to further requirements. This consistent cycle needs oversight to make sure that value flows without friction and blockers that create waste are avoided. All the while, each requirement should deliver value for the business, and the ability to measure this is critical.

TESTING
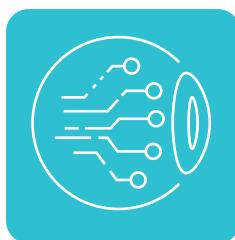
As the pace of development increases, the need for automated testing that can be done frequently and fast is essential to maintain quality. Traditional testing was open to human error, took time and offered limited visibility. With automation, businesses can get immediate feedback, better manage risks and put in controls to prevent bad code making it into production. Visibility into these processes is critical to not only avoid proceeding with bad processes and code entry, but also to see where things may be going wrong that will lead to delays or worse.

CONTINUOUS INTEGRATION AND DELIVERY
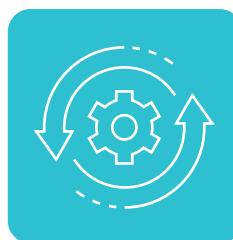
Central to DevOps is automating the processes of bringing new code together in a way that ensures changes to break the system; and further to that, releasing that new code into production in a reliable and consistent way. CI/CD pipelines can be complex, pulling code from different sources and deploying it into distributed environments. For example, in a hybrid IT environment, a workload may use infrastructure that spans on-premises and multiple public clouds. The ability to see into these pipelines is critical to optimization and identifying risks. The DevOps pipeline is often the last line of defence in avoiding a catastrophic failure with serious ramifications for a business.

These are three broad areas to consider in application development. For IT, addressing these value streams will go a long way to improving the overall value from delivering applications to the business.

ADDITIONAL FEATURE SUPPORT

In speaking to organizations that have begun to address the concept of value stream management, we identified some of the most valuable capabilities in this regard. Not only do they align with the principles considered in this report, they also present signposts to capabilities that should be promoted in value stream management tools — these are outlined in Table 1.

Table 1. Key characteristics in value stream management platforms

FEATURE	CAPABILITY	RESOLUTION
• Integration and interoperability framework • Monitoring and management dashboard • Release orchestration • Deployment automation • Continuous integration and continuous delivery	• Visualization of value • Visibility into status, team performance and trends • Central insight hub • Value creation as focal point • Mapping of business and IT functions • Relational mapping between value and software development • Optimization and alignment • Financial management • Traceability	• Bottleneck issues • Gaps and failure points • Control • Transition from project to product management

Real-World Insight

As organizations look to value stream management to unlock untapped potential in their investments, their experiences naturally find successes and challenges. Table 2 highlights benefits achieved by those that have implemented initiatives based on value stream management principles.

Table 2. Challenges and advantages of implementing value stream management tools

INDUSTRY	CHALLENGES	ADVANTAGES
Telecommunications	• Build environment aligned to digital transformation • Inclusion of traditional or agile projects in hybrid project management environment	• Strategy has executive support from start • Users do not require technical knowledge • Strategy report data supports strategic decision-making
Manufacturing software	• Move customer releases from twice a year to monthly	• Better analysis of features in each release
Aerospace and defence	• Shorten project time frames • Improve engineering and development collaboration	• Faster delivery • Fully automated software testing in end-to-end process • Full visibility improves team collaboration • Automatically generated testing documentation supports compliance
Technology	• Need for technology to be customized at any level • Support a hardcore agile development culture	• Easily modify project set-up, organizational process and team structure • Build scale alongside company • Transparency
Insurance	• Shape cloud transformation • Dispense with mainframe by 2025 • Compliance with regulated guidelines	• Efficiently navigate landscape and develop stable and secure software • Identify and address compliance risks early on • Clearly illustrate hierarchies
Automotive	• Remove friction, delays and miscommunication from processes and value streams • Sudden changes in regulatory compliance requirements • Implement a compliant solution in 30 days	• Faster delivery time • Automated traceability for compliance • Error-free collaboration with suppliers • Operationalize new requirements in less than 30 days • Link requirements and automated status updates across systems • Securely and seamlessly exchange information

Table 2. Continued

INDUSTRY	CHALLENGES	ADVANTAGES
IT and business consulting services	• Disparate and customized landscape of tools and processes • Uniform approach to global delivery	• Standardized tools and work processes across locations and customers • Reduce project ramp-up time by six weeks and improve profitability • Reduce potential breaches in service-level agreements • Improve employee productivity • Higher customer satisfaction

Despite the many benefits of value stream management, our discussions with companies exposed a need for continual improvement. One such example saw an organization missing out on seamless navigation between respective visual representations with the ability to zoom into the granular perspective of the technical application. This suggests a need for more coordinated interoperation between different tool sets.

Other insights highlighted common challenges in the adoption of technology initiatives in general, including barriers caused by silos, leading to a lack of wider understanding of what can be delivered. In addition, a lack of engagement throughout the organization is often paired with a lack of commitment from leadership.

We also heard of examples that confirmed the problems with defining value stream management. Getting this right is clearly an important first step and a lesson here is to be pragmatic — the best definition is the one that best suits your business. Often, we see people fall into the trap of trying to fit their business into a tightly predetermined framework only for it to fail when face to face with everyday realities.

Similarly, businesses should not fixate on certain concepts such as eliminating waste, because there are scenarios where loss of value can bring benefits. For example, human intervention in a process may be better than 100% automation where there is a risk that complete automation will result in catastrophic failure.

There will naturally be differences in opinion between different functions. Whereas business executives typically look at value streams within the context of lines of business, IT roles are often more granular, for example, in targeting CI/CD.

Once an organization has defined value stream management, it will move to implement it, often as part of a particular scenario or ambition within a broader strategy. Applying the concept to the entire business is a complex and time-consuming task — it is better to start small, learn, and then expand the approach.

The starting points are often the move to agile development or the desire to realize digital transformation goals such as increased speed or product quality. As with any change initiative, executive support usually leads to better results. Typical benefits seen by organizations include:

▶ Faster delivery with better quality

▶ Better visibility into the application development life cycle

▶ Improved identification and ability to address governance risks

▶ Ability to link business value back to requirements

Implementation does not come without challenges. These tend to present similarly to other change programmes, and problems cited by organizations include:

1 People are too busy to observe and understand the processes

2 People most familiar with technical systems may lack knowledge about business process improvement or organizational design

3 A lack of precise understanding of where impediments lie. Managers may have a rough idea of plans and progress, but lack a tool that can accurately identify the metrics that reveal inefficiencies

4 Limited view of the end-to-end process

5 Cultural challenges in which teams blame each other or are reluctant to embrace changes that would benefit the organization

6 Organizations often believe they are not mature enough for value stream management

Recommendations for Successful Value Stream Management

For companies that have embraced the concept, success started with getting buy-in from senior leadership. Value streams can often cross organizational boundaries, even within a single function such as IT.

Software development often covers numerous groups, not just development and operations but architecture, security, governance and various subgroups like specific infrastructure teams. Leadership that spans these is greatly beneficial.

Those involved in the processes must be educated in the principles of value stream management and given the time to focus on it. The best people will understand the underlying processes and tools; however, it is also important to combine IT and business knowledge. What business leaders define as value and how it fits into their strategic vision must also apply to different teams and their processes, in order for these to generate value that underpins the business need.

To support value stream management, tools need to collect data from what is often an underlying tool chain that manages the existing processes. Through this combined data, teams can gain insight, enabling them to track value and identify areas for optimization. This visibility of the whole value stream is essential to the process of optimizing but also to measuring value — without measurement there can be no value.

Possibly the most successful organizations will be those that embed value stream management in their culture. Rather than making it solely the preserve of a dedicated few, having everyone involved understand value and how it flows through the business can lead to optimizations that may otherwise be missed. For example, software developers may identify areas of waste in their workflows that can improve the value flowing through the overall development function.

Value Stream Management Progression from OpenText

OpenText has adopted value stream management, defining it as "the bridge that allows organizations to define, track, deliver and validate the value of change as it continuously

flows through the product delivery cycle, aligning high-value customer demands with high-value product deliverables". It recognizes the benefits to customers, with an understanding of the tools needed to assist.

OpenText offers a wide portfolio of products aimed at overcoming challenges including integration and the heterogeneous nature of enterprise IT environments, offering solutions to many parts of the development process such as agile planning and DevOps tools.

The company has a long history in the software development space and understands the steps that turn ideas into business value. It sees the value stream for digital product delivery as running from the business need to the business outcome, with the various phases of IT in between — including requirements management, version management, build, deployment, test and release.

ValueEdge: Foundations for a Value Stream Management Mesh

For value stream management, OpenText offers ValueEdge. The ambition of ValueEdge is to provide a tool that oversees the value stream management process from end to end. This enables it to surface value streams through "traceability" and brings together features of strategic portfolio management, agile planning such as backlogs, and follows this through DevOps to deployment and into operations. The ValueEdge tool provides native, cloud-based support for all of these capabilities, but can also expose value stream management-specific information from third-party tools.

Core to this is the ability to sit above typical tools that organizations use such as Jenkins, TeamCity and Azure DevOps, in addition to code management products like Git and Subversion. ValueEdge can pull data from these tools, normalize it and feed it into popular agile and DevOps metrics that are surfaced on dashboards in the tool and in other reporting solutions. Through ValueEdge, a customer can map value streams and optimize by identifying bottlenecks and anomalies.

Observability of the value stream will also help customers to scale more quickly and reliably. In addition, they could look to repeat efficient value streams on different workloads. In a world where organizations are moving away from the project model toward products, being able to take one product's value stream and apply it to another will be highly beneficial.

Measurement of the value stream is not just about code creation and release, but factors such as change risk, workflow orchestration, reliability, and governance and compliance. OpenText wants to reflect all of these within its platform.

OpenText can already highlight customers that have used its tools to support value stream management, including Airbus, Kellogg's and Orange. Where required, OpenText works through a partner alliance that includes providers such as Accenture, Deloitte, Tata Consultancy Services, Amazon Web Services and Microsoft.
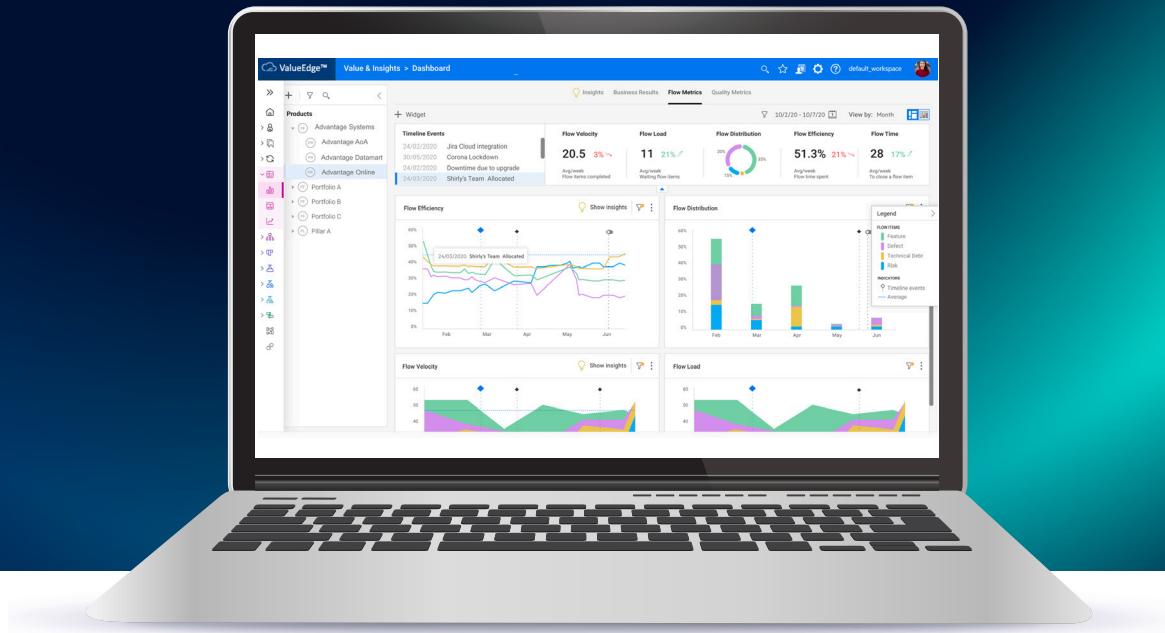
Focal Point for Value Stream Management Partnerships

OpenText has brought a strong offering to market with its value stream management solutions. However, it faces a considerable challenge: sitting above tool chains means it must be able to integrate with a vast and growing selection of tools. Enterprises are notorious for their adoption of a broad range of tools, from the most popular to lesser-known solutions and often those specific to an industry sector.

Another challenge OpenText faces in value stream management is reflecting business needs and outcomes. The company is strong in software development, but beyond this space there is an array of business tools, processes and organizational operating models that make it difficult for a single tool to track value from idea to outcome.

By working with partners that can provide vertical-market specialism and sharpening its own tools, OpenText is seeking to address these key considerations and support a growing set of customers. After all, value stream management is more than tooling; it requires organizational change, new skills, and potentially a change in culture.

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