In today’s complex development environments, organizations find themselves facing an uphill battle trying to successfully orchestrate disparate teams. The clear demarcation of the boundary between product development and software development is blurring fast as software increasingly becomes a major element of products. To be sustainable and profitable, companies must integrate these critical engineering disciplines. Application Lifecycle Management focuses on the processes for software and systems engineering. Product Lifecycle Management focuses on the complete lifecycle of products. The two worlds are literally colliding as software is a key driver for product innovation in today’s environment. Software is where the future is and ALM is managing this future. If software is a consideration in your product portfolio, you don’t want to miss out on this connection!

**ALM for Embedded Software Development in the IoT revolution**

*Andre Girard, Sr. Analyst, VDC Research*

The foundation for the Internet of Things (IoT) is being laid through the evolution and increasing intelligence of embedded systems. These systems present not only new product functionality possibilities, but also net new revenue and service opportunities. These expectations for more intelligent systems are thus increasing the volume of and investment in embedded software in these devices. In order to maximize the value they can derive from IoT systems, engineering organizations and enterprises must now reevaluate the processes and technologies they use to develop software and bring these connected products to market.

At a time when products are becoming increasingly complex and deriving more and more of their functionality from software, the status quo no longer suffices. Product quality, development schedules and R&D budgets are suffering. Additional engineering resources alone cannot help organizations manage and scale innovation for connected products. Traditional software development methodologies and tools often were not designed to address modern engineering mandates for agility and efficiency.

Engineering organizations must combat more complex project requirements with tools and processes capable of managing and adapting to software-driven product lifecycles. The foundation for the engineering efficiency required can be laid through the adoption of more sophisticated and integrated lifecycle management solutions. For example, the integrated use of formal tools for requirements management, system architecture and simulation, and product line engineering can help organizations gain efficiencies in the creation and reuse of software content. Furthermore, the use of these tools and the processes that support them can improve testing and change management through enhanced trace-ability across the design cycle – an especially valuable feature for safety-critical systems. Most importantly, these changes must be paired with commensurate investments in process changes and training. In many cases, new corporate cultures are necessary to promote the collaboration needed across both engineering teams and the new groups of IT and line of business stakeholders that IoT initiatives require.
**IoT and Industry 4.0 Predictions: The Software Development Perspective**

*Stefano Rizzo*

*SVP Strategy and Business Development*

*Polarion AG*

We have started living (and we will soon be totally immersed) in the Internet of Things (IoT). We are entering upon a new Industrial Revolution that is defining new ways to create new kinds of products faster than ever before.

Everyone will be a stakeholder in IoT, even if only as an end user. If you will be investing in this trend, or building or being part of IoT initiatives, or if you will be actively envisioning, designing, or delivering innovation and solutions... in every case your thoughts and concerns will gravitate to software.

So the future, including the part that’s already here, is all about software. But not just any software. It’s all about good software. Good software will need to be available, certified, compliant, flexible, reusable, reliable, secure and safe.

Whether you will be a consumer or a producer, you should consider 8 key predictions about the evolution of the supporting technologies that will make the IoT a reality. To build good software, and to mitigate its risks, a new generation of Application and System Development platforms will evolve from the more mature of the current ALM and QA tool platforms. Unified ALM will represent the 4th era in Software Development history, after Compilers (1st era), Versioning (2nd era) and Traceability (3rd era).

**Why ALM and PLM Need to Cooperate**

*James Brogoitti*

*PLM Innovation Leader*

*General Motors*

In today’s automotive engineering environment the product complexity continues to increase at a significant rate. Autonomous vehicles with inherent safety ramifications are requiring tighter integration between requirements, software, electrical and mechanical systems. The challenge is to seamlessly integrate ALM and PLM systems to manage the digital thread and variant management of those products. This presentation elaborates the problem that GM is facing.
**ALM the Siemens’ way**

*Jiri Walek*
*Siemens PLM Software*

To deal with modern day challenges, Application Lifecycle Management (ALM) has emerged with the intent to fast-track innovation, while safeguarding quality, functional safety, and compliance. Leaders are already applying the methodology across a wide range of industries to deal with the relentless drive for innovation. In fact, according to Forrester Research, “speed in developing and delivering innovative applications is becoming essential to the success of businesses in any industry.” Polarion set out in 2004 to address those issues and empower development teams with a single solution built from the ground up to span the entire application lifecycle with a consistent data structure and business logic. Polarion is now part of Siemens. In this talk, we discuss industry best practices and the benefits customers gain from using Polarion® ALM, the unified Application Lifecycle Management solution for unlocking synergies across disparate teams.

**Agility squared - Polarion as systems engineering platform for VSeA**

*Axel Biedermann*
*Global Head of IT*
*Valeo Siemens eAutomotive Germany GmbH*

ISO26262, Automotive Spice, CMMI - the requirements demanded of the development process in the automotive industry are particularly high.

However - Developers primarily want to do one thing: develop!

The duty of documentation is often regarded as bothersome and only makes sense if information can be entered, retrieved and analyzed quickly. So it is only understandable that a suitable tool then has to be rolled out quickly, too.

By introducing Polarion Valeo Siemens eAutomotive has killed two birds with one stone - The data quality has been improved dramatically and the effort for documentation, data retrieval and reporting could be significantly reduced.

The presentation gives an overview about the representation and linking of the business objects, the approach of rolling out an application by using agile principles and the results previously achieved.
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| **2:15-2:45 pm**  
**Application Lifecycle Management Series - Part 6** | **Delphi’s Journey to Polarion ALM Tools** |
|  | **Douglas Niccum**  
*Manager - Global Engineering Information Technology*  
*Delphi Corporation* |
|  | Software content in automotive systems is increasing at a very fast pace. As software content continues to increase, this places additional emphasis on tools such as ALM (Application Lifecycle Management) which help to ensure process compliance, and provide automation which enables engineers to spend more time on innovation. The software toolchain used at Delphi Automotive is being modernized. This discussion will review Delphi’s toolchain modernization which includes the adoption of Polarion ALM. |
| **2:45-3:15 pm**  
**BREAK** |  |
| **3:15-4:00 pm**  
**Application Lifecycle Management Series - Part 7** | **Polarion ALM in BCT’s Software Development (20 min)** |
|  | **Thomas Kupferer,**  
*Product Manager, BCT Technology AG* |
|  | In 1994, BCT became a sales and software development partner of product lifecycle management (PLM) specialist Siemens PLM Software. Since then, the partnership has flourished - today BCT is a platinum-level channel sales partner for NX™, Teamcenter®, and Solid Edge® software; a platinum-level software and technology partner, and a certified training and implementation partner. As a software and technology partner BCT offers a wide range of software modules as well as customized software solutions. The software packages include add-ons for NX, Solid Edge, and Teamcenter for re-use, classification and standardization, quality control and engineering change management, and output management and catalog creation. |
|  | Today’s software development and product management team consist of 16 people and is crowing continuously. |
|  | Scrum teams work in agile processes, involving customers in an early phase to consequently add value to the various Teamcenter and CAD add-ons. |
|  | In order to better support this agile software development cycle BCT decided to introduce the ALM solution Polarion. |
|  | The goal was to replace several sub systems with Polarion to eliminate redundancies and improve efficiency and traceability. |
|  | Software developers manage their work items in a web based and intuitive application. Product owners organize the long-term release planning as well as the product backlogs and sprint backlogs more efficiently. Stakeholders access up-to-date information online and are notified if changes occur. |
Quality in the Internet of Things (20 min)

*Colin Bull*
*Principal Consultant*
*SQS Group*

Nowadays, many companies define their digital strategies to allow businesses to benefit from opportunities based on new technologies. These technologies consist of globally-interacting and partially autonomous systems (Internet of Things – IoT) continually gathering a huge amount of information (big data) for real-time control, user feedback and decision-making.

The cyber-physical nature of these systems mean that risk is moved from the cyber space to the physical space where physical assets including humans can be harmed. The complexity and behaviour of such technology ecosystems reveals new types of risks and needs answers from quality management.

Safety-critical applications and software have traditionally been secure through their inherent lack of connectivity with the outside world, with information being provided by a distributed set of sensors on the product itself. However, the increase in the number of data points from other devices not in control of the device itself makes the quality of the software that performs safety-critical operations subject to outside influence.

In addition to an overview of quality challenges we will discuss how ALM applications such as Polarion with the combination of mature and proven test methodologies, accompanied by Artificial Intelligence, provides a sustainable basis and an additional self-optimising mechanism for quality assurance.

We take the IoT in manufacturing as our example for this overview; however, the principles are the same in other industries.

Roundtable Discussion

*Panelists:*

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<tr>
<th>Axel Biedermann</th>
<th>Thomas Kupferer</th>
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<tr>
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Experience, benefits and future: open discussion about ALM.