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***Geneva International  
Product Lifecycle Management (PLM)  
Conference and Exhibition***

September 6-7, 2011

CERN, Geneva, Switzerland

***Presentation Abstracts and Speaker Bios***

# Presentation Abstracts and Speaker Bios

The Conference will include, in three parallel tracks, more than 45 presentations. Short descriptions are given below of some of the presentations and their presenters.

## **Introduction to PLM, Introduction to the Conference**

In this introductory presentation, John Stark who has been CERN's adviser for the Conference, briefly outlines the scope and structure of PLM, and shows how the Conference presentations fit to this structure. Some presentations primarily address phases in the product lifecycle: innovation; development; manufacturing; use/support; retirement/disposal. Some primarily address specific components of PLM such as data, processes, human resources, applications. Other presentations are focused on PLM strategy, and PLM in a particular industry sector.

*John Stark is President of John Stark Associates, a leading PLM consultancy that has advised more than 200 companies throughout Asia, Europe and North America on the practical implementation of PLM. He is the author of the landmark PLM book – "Product Lifecycle Management: 21st century Paradigm for Product Realisation". The first edition was published in 2004, the second edition in 2011. Stark, a PLM thought leader, is also the author of "Global Product: Strategy, Product Lifecycle Management and the Billion Customer Question". John Stark was awarded B.Sc. and Ph.D. degrees by Imperial College, London, and a Fellowship by CERN, Geneva. After working at Battelle Research Institute and Coopers & Lybrand, he set up JSA in 1991, focusing first on PDM and then, from 2001, on PLM.*

## **Lifecycle of an Innovation: the Story of the Web**

The Web, invented at CERN in 1990, is a typical example of how an innovation comes about: a long phase of anticipating technologies converging to a singularity, followed by a big bang and divergence. Can design be a part of the event and if so, where should effort be spent? What are the stakes for the future and can they be recognised at the start?

*Dr. Robert Cailliau worked at CERN from 1974 to 2007. In 1990, Tim Berners-Lee and he proposed a hypertext system to access the LHC documentation. This led to the World-Wide Web. Early on, Robert contacted the European Commission, starting "WISE", their first Web based project and later "Web for Schools". In 1993 he had CERN put the Web technology in the public domain. In 1994 he started the International WWW Conference series, still running today. In 1995 the ACM Software System Award was awarded to Tim and Robert, in 2001 they received the "Genève Reconnaisante" medal. Robert holds a Ph.D Honoris Causa from his Alma Mater, Ghent University, and in 2010 he was awarded the INSEAD Innovator prize. Robert is co-author, with James Gillies, of "How the Web Was Born". Although now retired from CERN, he sometimes gives web-related presentations.*

## **From Collaboration to Collaboration, an Agile PLM Implementation**

The high-end watch industry is characterised by a high level of technicality mixed with handcraft activities. In that context, Corum recently counted on its experienced professionals to renew all its product lines in a time, and on a level, which had never before been achieved in the watch industry. To secure Time to Market, and to ease collaboration and communication on product development activities, Corum needed to adapt its development methodology, and support it with a PLM solution able to provide project members with information about the status of every project and its content at any time. But how could we lead highly-qualified, results-oriented professionals into a common structured development methodology? In this presentation, Gilles Ruffieux shows how these seemingly opposing objectives were attained, and how the implementation project opened up brand new challenges in data management and IS architecture.

*Gilles Ruffieux is IS & Organisation Director at Corum, an exclusive brand offering high-quality watch collections featuring an innovative and distinctive design, and equipped with sophisticated mechanical movements. There are four key collections - Admiral's Cup, Romvlvs, Corum Bridges and Artisans. Models range in price from 5,000 to 1 million Swiss francs. As IS & Organisation Director, Gilles has aligned Information Systems with company strategy, and developed an IT MasterPlan leading to a full IS architecture organised around logically interconnected layers (PLM, ERP, QM, BI, MediaManagement, Extranets, Virtualisation & NAS). He has also led the reengineering and implementation of the Product Development, AfterSale Service and Supply-Chain processes.*

## **PLM is a CEO issue**

Dr. Luis Cediél speaks of his experience with PLM, as a former R&D VP and then CEO, in a \$700M global leader in the plastics industry. For PLM to succeed, not only were changes needed in processes, techniques, applications, documents, people and metrics in all parts of the company. The involvement and commitment of the CEO and the Management Team were also required.

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*Dr Luis Cediel is a Swiss-based international executive with more than 30 years of wide multicultural experience in the Plastics and Food Manufacturing industries. During his career, he has been CEO, Chairman, R&D VP, and Member of Board of Directors and Business Management Teams of leading multinational companies including Habasit AG, Dow Chemical Company, Du Pont de Nemours and Singer Sewing Machine. A Chemical Engineer, Dr Cediel holds M.Sc., Ph.D. and MBA degrees, and has taught at several universities.*

### **The Holistic PLM Approach of Bombardier Transportation's BU "Propulsion & Controls"**

Markus Frey will describe the holistic PLM approach - from a process perspective - covering the whole product lifecycle of Bombardier Transportation's Business Unit "Propulsion & Controls". He will also address results from participation in the 'PROMISE' R&D Project, where BT's focus was to close the information loop between the product lifecycle phases by transforming experience embedded in field data into knowledge needed by engineers to improve product designs.

*Markus Frey is currently Process Manager in Bombardier Transportation's Business Unit "Propulsion & Controls", managing the business processes and the implementation of a new BPM system. He was previously Tools & Application Manager in two BT business units responsible for all PLM applications. Previously he was a manager of R&D projects addressing advanced composite structures, elastomer material applications, and high-end electro-mechanical drive systems. He was also the Interregional Coordinating Partner of the IMS Project 'PROMISE'. Markus has an MSc (Mechanical Engineering) from the Swiss Federal Institute of Technology Zurich (ETHZ).*

### **Global Technical Publications - Opportunities and Challenges**

Varian Medical Systems Inc. is a \$2.6B manufacturer of medical devices and software for treating cancer and other medical conditions with radiotherapy. It also delivers X-ray products and Security and Inspection solutions for ports and harbours. More than 5,200 of its Clinac and Trilogy medical linear accelerators for cancer radiotherapy and radio surgery are in service around the world. User documentation for a Medical Device is considered to be part of the product and to be treated like every other part of the product. Development and Change Management for documents follow the product lifecycle process. Newer documentation approaches such as DITA (Darwin Information Typing Architecture), and different authoring tools such as XML systems, have changed the Technical Publications environment, and also enabled better integration to the PLM environment. Richard Forster describes the need and importance of product data management systems for a global Technical Publications team working on user documentation, reference documentation and online help systems. PLM is needed to maintain control and to deliver high quality technical documentation. Re-use of data, product development oriented documentation processes, multi-language translations and the aspects of cultural differences in a global environment are addressed.

*Dr Richard Forster is Technical Writer and CMS System Business Administrator at Varian Medical Systems iLab GmbH, Baden, Switzerland. Previously he worked as Project Manager in Information Management at the AWK group. He has an MSc in Business Informatics and a PhD in Computer Linguistics from the University of Zurich. At Varian Medical, he is one of 3 global System Administrators for the Content Management System. He develops user and product documentation in XML according to DITA standards.*

### **Lifecycle Management at Merck Serono**

Rebif® was launched for treatment of relapsing multiple sclerosis (MS) in the EU in 1998 and in the US, following positive results from the EVIDENCE trial, in 2002. The presentation describes the Rebif® LCM program since 1998, including new mono- and multidose formulations, innovative autoinjector devices RebiSmart™ and RebiDose™, and the IMPROVE and REFLEX clinical studies. Key factors reported to cause lack of therapy adherence in MS will be presented to illustrate how RebiSmart™, the first eDevice in MS, may encourage adherence by its individually adjustable injection comfort settings and unique dose history feature, thus potentially also improving treatment outcomes. The presentation will end with some challenges on innovative LCM of biologic therapeutics in the evolving regulatory environment.

*Reinoud Dribergen is Global Product Team Leader Rebif® at Merck Serono, headquartered in Geneva, Switzerland and the largest division for innovative small molecules and biopharmaceuticals of Merck KGaA, a global pharmaceutical and chemical group. Merck Serono is a market leader in the treatment of Multiple Sclerosis (MS) with Rebif®, approved for the treatment of relapsing-remitting MS in over 80 countries worldwide with sales rising to 1.7B€ in 2010 from 1.5B€ in 2009. Reinoud is responsible for the Lifecycle Management program of Rebif® since January 2007 and has successfully led the development teams to regulatory approval of new formulations, presentations and injection devices for self-injection of Rebif® by patients with MS (RebiSmart™ and RebiDose™). He has 20+ years of experience in international biopharmaceutical companies as a product quality expert and an excellent track record as a cross-functional team and project leader. Reinoud completed his Pharmacy study in 1984 and received his Ph.D. degree in 1987, both at the University of Utrecht, The Netherlands.*

### **An Architecture Framework to support PLM Harmonization and Deployment**

PLM has become strategic for any enterprise as it enables efficient management of product data all along its life cycle and thus reduces costs and time to market. However, implementation of a PLM programme is complex notably because it must encompass all engineering domains (Design, Simulation, Software, Systems, etc.) in an extended enterprise environment

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requiring exchanges with all other Enterprise functions (ERP, CRM, SCM, etc.). In 2007, EADS launched a strategic PLM programme called PHENIX aimed at harmonizing methods, processes and tools within all EADS Divisions. In order to support the overall Information System view combining Business and IT (independently from the technical solutions for implementation), an Architecture Framework was developed and deployed. The presentation focuses on this Architecture Framework which is composed of four levels (Business, Functions, Applications, IT).

*Frédéric FERU is a PLM Senior Expert who joined the EADS Research Centre (EADS Innovation Works) in 1996. A member of the Scientific Council, he works in the Information Technologies department and is in charge of introducing new PLM methods, processes and tools in the EADS Group. He has participated in, and managed successfully several National and European projects such as DIECoM, ENHANCE and VIVACE for which he developed new paradigms for Engineering & Simulation data management. From 2007 to 2010, he was part of the PHENIX Project for which he developed the PLM Architecture Framework to support the harmonization of PLM processes, methods and tools within all EADS Divisions. Since 2011, he is part of the new EADS permanent organisation named PHC (PLM Harmonization Centre) that manages PLM harmonization for the EADS Group.*

### **Lifecycle Impacts on the Design of High-Energy Particle Accelerators**

High-energy particle accelerators are among the largest scientific instruments built by man. Born a century ago, and cross-fertilized by technical progress and emerging technologies, they have shown sustained development over the years to become global engineering projects with long development and construction periods. Concurrently, the desire to maximize scientific return on investment has led to extend their useful life as research tools to several decades, spanning generations of scientists, engineers and technicians, with upgrades in functionality through multiple cycles of technology. High-energy accelerators are also characterized by high operating costs dominated by that of electrical energy, a factor affecting their long-term economics, environmental footprint and social acceptance. We develop these different facets of accelerator lifecycle and show how they impact on their design, with examples from past and future projects.

*Since joining CERN in 1974, Philippe Lebrun has taken part in most of CERN's accelerator projects, including the ISR, LEP and LHC. He has led the LHC Division from 1999 to 2001, and the Accelerator Technology Department from 2002 to 2008, including responsibility for the design and construction of the LHC superconducting magnet and cryogenic systems. He is currently a member of the CLIC steering committee, working on the conceptual design of the future Compact Linear Collider, the high-energy accelerator after the LHC. Philippe has degrees from Ecole Nationale Supérieure des Mines and California Institute of Technology, and a doctorate honoris causa from the Wroclaw University of Technology.*

### **Sustainability Opportunities in the Flavors and Fragrances Industry**

#### **Translating a Vision into Actions: the Example of Givaudan**

In a context of increasing population and urbanisation, the pressure exerted on raw materials, and global warming, the flavors and fragrances industry is at the center of the challenges of Sustainable Development. Givaudan, as a leading player in this industry, translated a strategic vision of a sustainable company into a management system based on 5 major pillars which cover the product lifecycle: responsible procurement of raw materials; development of its human resources; innovation and development of solutions for sustainable development; excellence in its operations; commitment and partnership with its customers.

*Mickael Blais, Executive MBA (Social Responsibility and Sustainability, Strasbourg Business School), and Givaudan Sustainability Program Leader, presents, for each of these pillars, the commitments made by Givaudan for the coming years and the actions carried out at the Group level.*

### **Managing the End-of-Life (EOL) of an Accelerator**

The End-of-Life of a particle accelerator raises many issues. At CERN, there are currently 9 particle accelerators. However, world-wide, nearly 20,000 particle accelerators are operational in scientific research, medical applications and industry. Based on experience with dismantling of CERN's LEP accelerator, the presentation addresses issues faced at End-of-Life such as: the high volume of activated material; classification of materials with different levels of activity; the distinctions between waste and other material; identification and tracking of individual items; and the many legal requirements and regulations, often country-specific, that have to be taken into account. Guidelines for the future are proposed.

*Marco Silari received a degree in applied physics in 1982 and a PhD in medical physics in 1985, both from the University of Milano. After working in medical radiation research he joined CERN in 1996. A senior physicist, he has worked on radiation protection around the SPS, PS and LEP accelerators and was responsible for radiation protection of LEP decommissioning. He has also been involved with radiation protection of the LHC experiments, and radiation studies for the future CERN accelerators. Marco is the author of more than 120 publications in international journals and international conference proceedings.*

### **PLM Standardisation and Benchmarking**

The PLM Interest Group (PLMIG) is running a global initiative throughout 2011 with the aim of formalising the best practices that have been developed within the PLM industry over the past ten years. The initiative is underpinned by a series of

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international workshops that launched in Gothenburg in May 2011, followed by an event in Munich in June. The series moves to Italy in September, and is expected to continue via the UK to the USA. New results from the initiative include a PLM Governance Standard, a Product Structure Standard that fixes the relationship between PLM and ERP, and a PLM Best Practice Library that equips the PLM Team to carry the PLM implementation throughout the extended enterprise. There will also be a multi-company benchmark at the start of 2012 to generate metrics and performance scores for PLM governance at the operational level. This presentation will outline the main results from the initiative so far, and show how companies can benefit from PLM standardisation and best practice.

*Roger Tempest graduated in Mechanical Engineering, and worked as a design engineer in the aerospace industry and the Mars Group before moving to AMT consultancy with Coopers & Lybrand. He has extensive experience of CAD, PDM and PLM with a wide range of industrial companies. Roger is co-Founder of the PLMIG, and has directed the Group since 2004. The PLMIG was formed with the aim of being an international, neutral and proactive body for the PLM industry. It has produced standard tools such as the PLM Benchmarking Handbook and the PLM Maturity Reference Manual, as well as methodologies for Self-Assessment and quantifying the commercial value of PLM.*

### **Project Phases and Safety**

CERN is one of the world's largest scientific research centres. CERN deals with diverse projects which vary in terms of duration, size and organization. Projects range from a few days to a few years; some projects involve a few people and others several hundred people representing numerous countries. Independently of the complexity of the design, the source of the products and the scale of operation, all projects must comply with CERN Safety Rules. This presentation will describe how this challenge is met, focusing on project Safety requirements, project phases and Safety files.

*Joao Carlos Batista Lopes is a member of the Safety Engineering and Environment Group, part of CERN's Occupational Health & Safety and Environmental Protection Unit. He is involved with several scientific projects, ensuring that all Safety aspects are integrated from the earliest stage of a project, and that the best Safety practices are shared, harmonised and disseminated. Joao Carlos Batista Lopes graduated from the University of Coimbra in 2001 with a degree in Civil Engineering.*

### **PLM<sup>2</sup>: People and Product Lifecycle Management**

SR Technics is one of the world's leading independent providers of technical services for the civil aviation sector, offering its customer airlines comprehensive and tailored solutions for the technical support and management of their aircraft fleets, engines and components. SR Technics provides its services to over 500 airline customers, including SWISS.

From a PLM viewpoint, SR Technics is in a special situation. It maintains products that are developed and manufactured by other companies such as Airbus, Boeing and GE. In such a highly-regulated environment, human resources are one of the key components of Product Lifecycle Management. By analogy to the product in PLM, their management starts with an idea of a product (job requirement) and continues all the way through to the end of the lifecycle with the exit of an employee and beyond. The aim of managing the People Lifecycle is to optimise value creation as well as sustainability and development of the know-how and engagement between the company and its people.

*Dr Thomas Boesch joined SR Technics in April 2007, serving as Senior Vice President Human Resources. In May 2009, he was appointed Chief Human Resource Officer and at the same time a Member of SR Technics' Executive Leadership Team. Previously he was with the Syngenta group, where he served as Head of Human Resources Europe, Africa and Middle East, heading the HR management organisation for over 7,000 employees in more than 40 countries. Previously he held HR positions with Schindler, the international lift manufacturer, living and working in both Hong Kong and the UK. Thomas has a doctorate from St. Gallen University.*

### **Magnets at CERN: Manufacturing, Test, Installation & Maintenance**

The manufacturing, tests, installation, operation and maintenance of the magnets of the LHC is a huge challenge. There are more than 9,000 of these hi-tech components around the 27km circumference accelerator ring. The environment is extreme: temperatures as low as -271C; an ultra-high vacuum ; radiation; huge mechanical forces; precisions of a few tens of microns. The slightest error can result in months of operating time being lost. The presentation describes: experience with the magnets; the procedures, techniques and tools used to support them; and lessons learned for their successful management over a lifetime of several decades.

*Dr. Andrzej Siemko is a senior physicist at CERN. After graduating from Warsaw University of Technology in 1984, he worked at the Institute of Physics of the Polish Academy of Sciences - where he obtained his PhD. In 1992, he joined CERN, and was involved in the development of superconductors and superconducting magnets for the Large Hadron Collider (LHC). Since 2009, Dr. Siemko is Head of the Machine Protection and Electrical Integrity Group, which is responsible for safe operation of the LHC and other accelerators at CERN. Dr Siemko is the author or co-author of over 100 scientific papers in the areas of physics of magnetism, superconducting magnets, accelerator technologies and experimental particle physics.*

### **Beyond PROMISE to Quantum Lifecycle Management (QLM)**

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David Potter describes results of the FP6 PROMISE (Product Lifecycle Management and Information Tracking using Smart Embedded Systems) Project. He then looks beyond PROMISE to the QLM standards that are necessary to support the natural progression and extension of Product Lifecycle Management (PLM), and describes the activities of the QLM Work Group.

*David Potter is Chief Technical Officer at PROMISE Innovation International Oy, Helsinki, and Chair, Quantum Lifecycle Management (QLM) Work Group at The Open Group. Previously he was Project Steering Board Chairman for the EU PROMISE Project.*

### **The EC FP7 LinkedDesign and ActionPlanT Projects**

Dr Dimitris Kiritsis describes these two leading-edge research projects. The LinkedDesign project will provide an integrated, holistic view on data, people and processes across the product lifecycle as a vital resource for the outstanding competitive design of novel products and manufacturing processes. The project will develop the Linked Engineering and mAnufacturing Platform (LEAP) as an integrated information system for manufacturing design. LEAP federates all product lifecycle information relevant to drive engineering and manufacturing processes, independent of its format, location, originator, and time of creation. LinkedDesign starts in September 2011 and will end in February 2015. The ActionPlanT project aims to develop a vision on the short, medium, and long term role of Information and Communication Technology (ICT) in the European manufacturing industry. ActionPlanT started in June 2010 and will end in May 2012.

*Dimitris Kiritsis, PhD, is Faculty Member at EPFL/STI leading the research group on Closed Loop Lifecycle Management. He is also Guest Professor at the Intelligent Maintenance Systems Center of the University of Cincinnati. Dimitris is the initiator and scientific coordinator of the FP6-IP-507100 PROMISE project, and is currently involved in a number of FP7 projects (ActionPlanT, PLANTCockpit, LinkedDesign, SuPLight, e-SAVE) with the focus of his research on the Factory of the Future, ICT for Manufacturing, Ontology Based Engineering, Closed Loop Lifecycle Management, Industrial Learning, etc. He has more than 100 publications in scientific journals, conferences and book chapters.*

### **The Importance of PLM for European Industry**

In late 2008, the Factories of the Future initiative was launched by the European Commission. The initiative aims to support Europe's industry in meeting increasing global consumer demand for greener, more customised and higher quality products by converting to a demand-driven industry with lower waste generation and less energy consumption. Under this initiative, the European Commission encourages the rapid set up of industry-driven R&D projects for the years 2010-2013 under its 7th Framework Programme for research. The initiative is implemented as a public-private partnership with a particular emphasis on SMEs. Its total budget envelope is € 1.2 billion, with more than half of the funds provided by the public sector. The thematic content of the foreseen four annual calls has been elaborated in cooperation with industry and laid down in a multiannual roadmap. The "ICT-enabled Intelligent Manufacturing" part of this roadmap builds on a three-fold concept for ICT-driven factories, namely "smart factories" - based on shop floor optimisation through automation, "virtual factories" - supporting an optimal management of distributed factory assets and "digital factories" - addressing design, simulation across the total lifecycle. Eight R&D projects related to PLM were selected in 2011 with a total public funding support of EUR 35 million. The presentation will focus on the portfolio of these eight industry-driven projects and will further provide a perspective on the potential impact of those technologies in the Factories of the Future context.

*Erastos Filos is Head of the Sector "Intelligent Manufacturing Systems" at the European Commission. He coordinates ICT Programme activities in Factories of the Future and in IMS, a global R&D collaborative programme. Born in Greece, he obtained an MSc in Physics from Hamburg University and holds a PhD from Constance University, Germany. After his university research he went to industry, first at Perkin Elmer Corp. and then at Bosch in Germany. In 1993 he joined the European Commission's ESPRIT programme to work as Research Administrator. Mr Filos is the author of over 40 research publications and has contributed to four books.*

### **FOFdatation towards Integrated Information Management**

#### **Aligning Plant (PLM-MES) & Corporate (ERP) IT in the Factory of the Future**

The vision of the Factory of the Future (FOF) emerged in the early 60s as a "no man's plant" in which robots were expected to replace workers. In today's FOF concept though, knowledge workers are more than ever wanted. Rather than moving materials and parts, they are expected to intelligently manage information to innovate and support products and services from cradle-to-cradle. FOFdatation envisions an FOF based on the end-to-end digitalisation of process-product-resource throughout the lifecycle, thus addressing the issue of multiple non-compatible information systems and lack of data interoperability and integration between PLM, MES and ERP. The converging IT architecture will give a broader and richer context to the management of information and knowledge, thus bringing an important impact to the implementation of new paradigms based on the ubiquitous society and triple bottom-line objectives.

*Van Khai Nguyen graduated from EPFL in 1976. Since then he has embraced a multiple and intensive research career in manufacturing industry, from the design of turbo-machines (Atelier des Charmilles) to the development of NC machine tools (Fidia, Agie-Charmilles) and CAD/CAM software (Battelle Geneva Research Centre). In 1998, he was appointed by the Geneva government to manage the transformation of the Geneva vocational engineering school into the University of*

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*Applied Sciences. In 2007, he returned to CADCAMation, the company he had founded in 1993, where is fully dedicated to manufacturing research and PLM-BIM business. CADCAMation is currently participating as a key partner in four large "IP" manufacturing projects funded by the European Commission.*

### **Modelling & Management of Engineering Processes in PLM**

Dynamic Process Navigation (DPN) is a proven approach to handling processes successfully in a turbulent environment characterised by: requirements that are not fully mature and frequently change; by disturbances due to changing resources; as well as by lack of communication. These characteristics are common in the PLM environment. In this context, "successfully" implies delivering the project objective while keeping to budget and time targets. DPN makes it possible to continuously know well, monitor, and control an entire running project. It provides a supporting system, which, at each decision point along a process or project, provides different evaluated alternatives to the user. However, it is the user himself, who takes the final decision of how, with which means, and where to continue the process.

*Prof. Dr.-Ing. Dr. h.c. Sándor Vajna received both his Diploma degree and his Doctor's degree in Mechanical Engineering from Karlsruhe University (topic of thesis was "Computer-Aided Adaptation Design"). After 12 years of working as an executive manager in product development in different industries, he was promoted to Full Professor of the Chair of Information Technologies in Mechanical Engineering at the Otto-von-Guericke University in Magdeburg in 1994. His research areas include Integrated Product Development, Dynamic Process Navigation, the Autogenetic Design Theory, knowledge-based product modelling, and the holistic evaluation of economical benefits of Engineering processes and of applications of new technologies.*

### **PLM at CERN - An Overview**

This presentation will give an overview of the PLM challenges faced at CERN, where some of the managed "products", such as the Large Hadron Collider (LHC), are among the largest and most complex machines ever built. The organization's overall approach to PLM will be presented as well as the implementation strategy chosen for the tools included in CERN's integrated PLM platform. The most important lessons learned since the initial PLM project launch in 1997 will be outlined. Some examples will be given of current efforts being put into the continuous evolution of PLM at CERN.

*David Widegren is in charge of the Engineering Processes Support unit at CERN which provides the organization with methodology and tools for Enterprise Asset Management, Product Lifecycle Management and Computer Aided Design. Before joining CERN in 1997, David ran his own consulting firm working with PDM and CAD tools. David has a M.Sc. degree in mechanical engineering from the Royal Institute of Technology, Stockholm, Sweden and an MBA degree in e-business from HIG, also Sweden.*

### **Innovation in the Cleantech Sector - From a Start-up Perspective**

Founded in 2008, and located in Zurich's Technopark, Celeroton AG is a high-tech company that develops and manufactures ultra-high-speed electrical drive systems. The presentation shows how the company started and has developed, and addresses the driving forces for innovation. Due to Celeroton's know-how and development expertise of electrical motors, power electronics, control systems and software, it achieves outstanding solutions in terms of compact size, efficiency and control performance of high-tech drive solutions. Application areas for Celeroton's solutions are in medical and dental tools, micromachining spindles and miniaturised turbocompressors for the Cleantech industry (e.g., in HVAC for hybrid and electric cars, and for heat pumps). Celeroton's progress has included winning prizes and funding, e.g. from venture kick (<http://www.venturekick.ch/>), the De Vigier Award and the Autodesk Cleantech Partner Program.

*Dr. Martin Bartholet is Co-Founder and Managing Director of Celeroton AG. He received his M.Sc. and Ph.D. degrees in electrical engineering from the Swiss Federal Institute of Technology (ETH) Zurich, Switzerland in 2004 and 2008, respectively. His Master's Thesis was on power electronics converters for wind turbines, which he wrote at Chalmers University in Gothenburg, Sweden. During his Ph.D. studies, he performed research on magnetically levitated motors and pumps for the semiconductor industry. Since the foundation of Celeroton in 2008 he is responsible for Business Development and Sales. Prior to Celeroton, Martin gained experience in engineering at Bosch and Hilti.*

### **Implementing Mechatronic PLM at Mettler Toledo**

The presentation starts with a brief introduction to Mettler Toledo, a \$1.9B global manufacturer and marketer of precision instruments for use in laboratory, industrial and food retailing applications. Products are developed and manufactured in Europe, the United States and China. Many of the products are mechatronic, with mechanical, electrical, electronic and software components. The need for, and objective of, PLM in such a complex environment are described. The history of PLM in the Company is outlined. The structure, approach and current status of the global PLM Project are described, along with the next steps. Finally, the lessons learned throughout the implementation of PLM are presented.

*Dr. Ing. Mino Capobianco is currently Corporate PLM Manager at Mettler Toledo, managing the implementation of a new global PLM system. After graduating with a PhD in Mechanical Engineering and Biomechanics, Mino worked as a structural engineer at DEA, a leading manufacturer of Coordinate Measuring Machine technology. He then joined SDRC, working in structural and NVH (Noise, Vibration and Harshness) engineering. Before joining Mettler Toledo, Mino worked several years*

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*for Rieter, initially as NVH Director at Rieter Automotive Italy, and later as Global PLM Manager at Rieter Automotive Management in Switzerland. Mino has almost 30 years of multicultural experience of CAD/CAE/CAT, PDM and PLM, managing business processes and implementing PDM/PLM systems in different industrial fields.*

### **Global PLM at Synthes**

Synthes is a leading global medical device company. We develop, produce and market instruments, implants and biomaterials for the surgical fixation, correction and regeneration of the human skeleton and its soft tissues. Growing needs for flexibility in product development and production require global, harmonised processes and data management. Synthes is currently implementing a comprehensive global PLM solution. The presentation focuses on the importance and challenge of defining scope and processes prior to implementation of IT solutions.

*Matthias Kaese is PLM/CAx EMEA Group Manager at Synthes, located in Solothurn, Switzerland. Before joining Synthes in 2008, he held positions as PLM Consultant and PLM Manager in companies in various industry sectors. Matthias received a Diplom-Ingenieur degree from the University of Hannover, Germany in 1996.*

### **Facility Management, Facility Lifecycle Management**

The management of large facilities with limited resources requires a well organised and efficient structure, setting priorities and taking decisions whose impact has to be quantified. The principles of facility lifecycle management help in this situation since they provide a set of tools and a framework that can be used as a development base. This is particularly true in the case of old facilities whose lifecycle was not managed as such. The presentation will address issues of facility lifecycle management seen from a practical point of view with its advantages and its pitfalls.

*Luigi Scibile received a degree in electrical engineering from the University of Napoli, Italy, in 1992 and a Ph.D. degree in engineering science from the University of Oxford in 1997. From 1992 to 1997, he worked at the Joint European Torus, Abingdon, U.K.. He joined CERN in 1997 and his work mainly focused on the management of large projects in the field of safety and control engineering. Between 2008 and 2010, he worked for the ITER project on the setup of the overall protection and safety systems. Since 2010, he is leading the Site Engineering group at CERN.*

### **Ecodesign - Theory and Examples in Geneva**

Eco-Design involves designing products with "lifecycle thinking". This involves modelling the life of a product during the design and introducing environmental footprints as complementary constraints. Nevertheless, due to the multiplicity of processes and the many issues that have to be considered, modelling the reality of a product's life is a very complex task. LCA (Life Cycle Analysis) and use of Data Bases such as ECOINVENT are indispensable in designing new products. In this presentation, Eco-Design guidelines affecting choice of material and energy efficiency will be discussed in the context of practical examples encountered in Geneva.

*Jacques Richard graduated in Physics at the University of Geneva in 1983. He then worked for 15 years in industry, developing CAD/CAM and NC software, in particular for sculptured surface parts. From 2000 to 2003 he worked as a research scientist in hepia/HES-SO (University of Applied Sciences - Western Switzerland ; Geneva) and was involved in many research projects with industrial partners in areas such as reverse engineering and electro-discharge machining. Since 2004 he has been a Professor in Mechanical Engineering at hepia/HES-SO, in charge of manufacturing and eco-engineering courses at bachelor and master level. He is leading several industrial projects in parallel with the teaching activities. His main interest is in joining "lifecycle thinking" with industrial reality.*

### **Digital Prototyping for VVIP Aircraft Interiors**

Digital prototyping and PLM are, in many industrial areas, state of the art. This presentation shows, based on an example from aerospace, how digital prototyping can provide important advantages for a manufacturer of unique products. In this presentation, the business case, the savings potentials, the implementation tactics and the target processes are presented. The outlook for the future is given. A short presentation of Jet Aviation and its business units is provided to allow participants to understand the nature of the VVIP interiors business.

*Ms Dagmar Heinrich has worked for almost 15 years in the PLM business. She has worked in different industry sectors such as automotive, transportation and aerospace, as a consultant and as a project manager. In April 2008 she joined Jet Aviation, with responsibility for technical data management. During the past three years, a major focus of her work has been the implementation of Catia V5/SmarTeam, and the implementation of a development process based on digital prototypes (Digital Mock-up). Recently, she handed the CAD/PDM Competence Centre over to Operations. As Director IPS (integrated planning and scheduling), she is now in charge of the implementation of an integrated planning and scheduling process for the VVIP completions process at Jet Aviation Basel.*

### **Innovation Execution - Agile PLM Implementation at Sun**

In late 2009, Oracle acquired Sun Microsystems for \$7.4B. As part of a large systems integration project, Oracle replaced 2 instances of MatrixOne PDM with Agile PLM 9.3. The implementation began in January 2010 with Phase 1 going live on September 27, 2010. The first phase included core Agile PLM plus interfaces to mCAD and eCAD on the front end, and a

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downstream integration to Oracle's existing eBusiness Suite R12.1.3 via the Agile Design-to-Release Process Integration Pack (D2R PIP). The project comprised 4 phases of which 3 are now live, realising true "art-to-part" enterprise PLM. David's presentation will cover the business issues encountered at the beginning of the implementation, the implementation methodology, the IT Topology and lessons learned.

*David Burton is the Director of PLM for Oracle Applications Development IT. He is responsible for all PLM implementations at Oracle, and was in charge of implementing Agile PLM for the Sun Systems Integration project from 2010-2011. David has been with Oracle since 2006, coming through the acquisition of Agile Software. He started his career in 1988 as a Mechanical Engineer in Vancouver, British Columbia, Canada. As an Engineer, David worked for several companies in the high-tech sector, designing and developing electro-mechanical equipment including robotics, medical devices and automotive vehicles. After several years in mechanical design, David moved into Engineering Management, managing teams at Rand Worldwide, Ballard Power Systems, Xcellsis Fuel Cell Engines, Kodak and others, and also ran his own consulting business. At Ballard Power, David also took on management of the Configuration Management/Agile PLM team for Ballard globally. David is a PMP certified Project Manager and has managed PLM implementation projects for Apple, HP, Brocade, Kodak, SanDisk, Kyocera, Illumina and others for Agile/Oracle Consulting.*

### **Next Generation Telco Product Lifecycle Management**

The management of the product lifecycle (PLM) is becoming important for communications service providers (CSP) in much the same way as it has for traditional manufacturing industry – due to steadily increasing product complexity as well as the constant shortening of product lifecycles. This is the conclusion of a study conducted worldwide by the ICT management consultancy Detecon International in collaboration with the Research Institute for Operations Management (FIR) at RWTH Aachen University. The study, entitled “Next Generation Telco Product Lifecycle Management: How to Overcome Complexity in Product Management by Implementing Best-Practice PLM” is the first ever presentation of a comprehensive PLM approach for service providers. It examines the concept closely on the basis of the survey results to determine its suitability for practical application. The study results can be used as a guideline to structure the many and diverse design options in a PLM framework that consists of strategy, process, product architecture and IT architecture, and to evaluate them for their impact on complexity.

*Julius Golovatchev is a Managing Consultant for Product and Process Lifecycle Management at Detecon International GmbH. He has a Diploma in Mathematics and a PhD in Economics. Julius has over 12 years experience in the telecommunication industry, specialising in innovation management as well as product lifecycle management. He has been the project manager for several innovation, R&D and product development projects in Germany and worldwide. Julius is the author of numerous publications on the subject of innovation management and product development. He is a foreign member of the Russian Academy of Natural Sciences (Branch of Information and Telecommunication Technologies). Prior to joining Detecon, he worked as a management consultant for German and American consulting companies.*

### **PLM Project in the Sporting Goods Industry**

Amer Sports, one of the global leader in the sporting goods industry, aims to develop new and better sporting goods that appeal to consumers and its trade customers. Offering a PLM system that responds to the requirements of the broad portfolio of products (from tennis, badminton, golf, American football, soccer, baseball, basketball, alpine and cross country skiing, snowboarding, fitness training, cycling, running, hiking, and diving) is certainly a challenge: how much harmonisation vs. customisation is good? Are standard out-of-the-box solutions good alternatives to the current internal PLM tool? These are the questions that the newly formed I2P (Idea to Product) team need to answer and that will be exposed to you during the presentation.

*Marie Daille is PLM Systems Project Manager at Amer Sports, a sporting goods company with internationally recognised brands including Salomon, Wilson, Atomic, Arc'teryx, Precor, Suunto and Mavic. Since Oct 2010, and after several years on SAP projects which led her across Europe, the US and Japan, Marie has joined the newly-formed I2P (Idea to Product) team and embraced the challenge of managing Amer PLM systems. Her main focus is to determine which systems(s), internal or out-of-the-box, will accompany Amer brands growth in the coming years.*

### **21st Century HR for Great Engineering**

Product Lifecycle Management is at the heart of engineering disciplines, and to do great engineering requires great engineers. However, latest studies indicate Europe will have a massive shortfall of engineers by 2020, and we are already seeing the signs of this today with hard-to-fill engineering positions. CERN is trying to contribute to solving this problem through its capacity building programmes, but companies are going to have to fight in a ‘war on talent’. Web 2.0, employer branding and the usage of social & professional networks are tools which can help employers attract the best. This presentation will look at the problem and some of the tools available to help companies tackle it.

*James Purvis is currently Head of Recruitment at CERN. With over 20 years' experience in modernisation and process improvement, working at the birthplace of the Web, James was previously Head of the Internet Development Services group where he was responsible for a wide range of innovative web-based solutions at CERN. In 2006, he was commissioned by the Director General to lead a taskforce on PLM solutions for a future Linear Collider. In 2007 he moved from IT to HR to join the*

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*new HR management team in implementing CERN's modern HR strategy. His initial projects included leading the implementation of Key Performance Indicators for HR. Now as Head of Recruitment he strives to modernise, innovate and make a difference. Achieving great science requires great skills, and James team's challenge is to help find, attract & select the skills CERN requires for today and tomorrow.*

### **Introducing RCM Techniques into the PLM of Railway Vehicles**

Guido Wenning will focus on RCM (Reliability Centered Maintenance) techniques - related to practical experience - defining and implementing a maintenance program for a STADLER vehicle. As a result of increasing customer requirements on product availability and cost efficiency, covering the complete product lifecycle, it is an indispensable need within the railway business to establish processes in order to achieve a high product maintainability. To be on track, STADLER incorporates the knowledge of all involved divisions by a structural procedure right from the beginning.

*Guido Wenning is Project Manager at STADLER's RAMS/LCC department with responsibility for the tendering phase. Previously, he worked as an electrical engineer for several leading electric companies such as ABB and Siemens in their development departments. For the last 9 years, he has been involved in railway projects which are characterised by safety, reliability and a long lifespan. He has a Dipl. Ing. in Electrical Engineering from RWTH Aachen.*

### **Geneva's Energy Service and the FP6 Concerto Project**

From the perspective of sustainable development, the mission of the Energy Service of the Canton of Geneva (ScanE) is to restrain/optimize energy consumption in the canton of Geneva, and to encourage the production and use of renewable energies that replace non-renewable energies. It is oriented in its activities by the concept, the vision, of a 2000 watt society.

Success in the rational use of energy and the development of renewable energy throughout the canton depends, on one hand, on the ability to assess and control the needs - in quantity and quality - for energy services and, on the other hand, in a detailed analysis of the opportunities and local renewable sources available in the perimeter considered and finally, in the mobilisation of the participants in the decision-making process, implementation and operational phases of projects.

The project for the Sécheron district, extended to the Place des Nations, and now called Geneva-Lac-Nations (GLN), is a first response to the above-mentioned challenges. This project is a practical demonstration of an approach to improve energy efficiency and develop renewable energies on the scale of a neighbourhood.

The concept of making the lake available to international organisations for summer comfort and heating is, in its application, constrained by the characteristics of the source and by the characteristics of the current demand of existing buildings. The concept then comes down to achieving compatibility between the need and a specific renewable resource. The European Concerto Project has strongly supported this concept, and the very positive results have led to an infrastructure programme an order of magnitude larger than GLN.

*Mr Rémy Beck is the Scientific Director of the Energy Service of the Canton of Geneva (ScanE), in charge of energy planning. After gaining wide and varied experience in the private sector, he joined the Geneva administrative authorities early in the development of its energy policies. After graduating in Mechanical Engineering, Rémy Beck completed his academic career with a Master in Energy Systems.*