

BUSINESS CONSULTING MANAGEMENT- TRANSITION OF THE IPD APPROACH

Dr.- Ing. Carsten Burchardt

*Keywords: Business Consulting Management, Product Lifecycle Management,
Integrated Product Development*

1 Introduction

The manufacturing industry is under great pressure because the complexity of operating in a dynamic, global environment has increased dramatically for manufacturers across every industry. Business conditions shift in an instant. Customers are more demanding and diverse. Industry and government regulations change constantly. Competition appear overnight through mergers, new business models or new innovations.

In today's highly competitive global markets, the manufacturers must generate growth through continuous innovation around their products. That requires the manufacturers has to improve dramatically their ability to manage their resources and processes to develop, manufacture and support them. To be successful – to be an innovation-driven company – manufacture must focus on their product with their functions and the processes surround their products. That includes the entire value chain and the ability to efficiently manage the product lifecycle process – from initial requirements planning to product definition, production, distribution, maintenance and repair, retirement and recycling and furthermore the involvement of strategic partners, key suppliers and customers.

2 About Unigraphics Solutions GmbH – UGS

UGS is recognized as a visionary market leader in providing effective product lifecycle management software and services with nearly 4 million licensed seats and 46,000 customers worldwide. Headquartered in Plano, Texas (USA).

UGS PLM solutions are providing a digital environment for collaboration across company organization, these solutions helped the company to innovate more and innovate faster while optimizing their resources and addressing business constraints. UGS PLM solutions support all stages of the product lifecycle process and based on open, standards-based portfolio of PLM software solutions. UGS offers a portfolio of solutions and expertise that should put their customer on the road of innovation.

UGS vision is to enable a world where organizations and their partners collaborate through global innovation networks to deliver world-class products and services, allowing them to deal swiftly with emerging risks and opportunities.

3 What is Product Lifecycle Management - PLM?

Product Lifecycle Management is an integrated, information-driven strategy that speeds the innovation and launch of successful products. It's built on common access to a single repository of all product-related knowledge, data and processes. As a business strategy, PLM lets distributed organizations innovate, develop, support and retire products throughout their lifecycles as a single company. It captures best practices and lessons learned, creating a storehouse of valuable intellectual capital for re-use.

As an information technology strategy, PLM establishes a coherent data structure that enables real-time, virtual collaboration and data sharing among geographically distributed teams. It lets companies consolidate systems while leveraging existing investments during their live. Through open APIs and adherence to industry standards, it minimizes data translation issues while providing information access and visibility into workflows and dependencies to those who need it at every stage of the product's life.

Product Lifecycle Management is the digital product platform on which Global Innovation Networks are built. Through PLM, distributed organizations can innovate at every stage of the product lifecycle, all along the value chain. As a result, companies are better able to meet key business requirements:

- Speeding time to market
- Lowering costs
- Improving quality
- Leveraging intellectual capital
- Increasing innovation
- Collaborating globally

4 The PLM Strategy – The Innovation Process

A PLM strategy based on information, integration and collaboration and is fundamental to build a solid foundation for future. Such a PLM strategy unites multiple constituencies including engineering, manufacturing, marketing, packaging, training and support through an open yet secure digital environment. For example, PLM involves data from many siloed databases and people from different business functions, often in different organizations around the world. It provides a vehicle to establish coherent, repeatable functions and processes as well as consistent and accurate information over the life of the product – from ideation to retirement. PLM solutions with their high performance, interoperability and depth of embedded industry knowledge should enabling customers to implement solutions that meet customer needs, **see figure 1**.

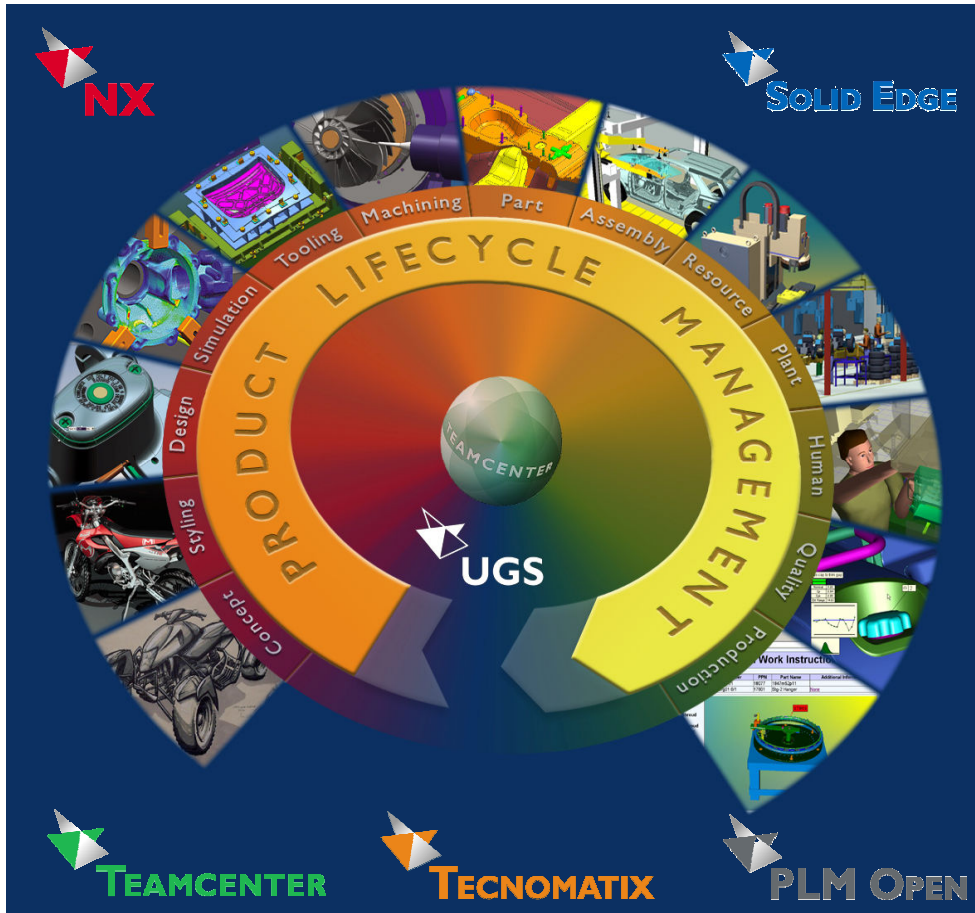


Figure 1.: UGS Product Lifecycle Solutions Components

The PLM strategy should help the company to move forward strategically while achieving near term results. Along that way, the company are on the road to more innovation and measurable growth.

These conditions heighten the challenge in the PLM strategy of balancing to address successful specific issues or product-centric areas of the individual company business and using - if possible - standard PLM solutions. The PLM strategy should address the company needs. Business aims are:

- Increasing the yield on product and process innovations
- Compressing time-to-market
- Addressing dynamic business constraints and regulatory requirements in ways that reduce costs
- Optimizing resources to increase efficiency

The impact of the PLM strategy will be significant. PLM can drive the effectiveness of global partner, supplier and customer relationships, the productivity and agility of customer innovation cycles and the efficiency of product launch and market uptake. UGS as a PLM software solutions provider offers their customer professional service expertise in product lifecycle management and a portfolio of PLM solutions.

Choosing a PLM solution would be less of a strategic decision if it just a matter of installing software. Rather the implementation and fully exploiting PLM software solutions is critical and will make the difference between market leaders or an “also ran” in today’s fast-paced PLM environment.

The key to have success in the PLM environment are the employees with their know-ledge in a PLM Company.

5 Know How Sharing - Consulting Service Team

UGS PLM Solutions compromise best-practice solutions that enable the customer to manage their comprehensive product lifecycles effectively – and to optimize key processes that determine a lifecycle’s operational effectiveness. These solutions are built on a rich set of knowledge management, process management and collaboration capabilities that UGS has derived from its experience as the leading provider of product lifecycle management technology. To ensure successful projects in this PLM environment, UGS consolidated their project management experience of many customer project and developed a PLM PM 2 Project Methodology. Activities in different phases supports effectively the PLM implementation process, see figure 2.

UGS PLM PM2 Project Methodology

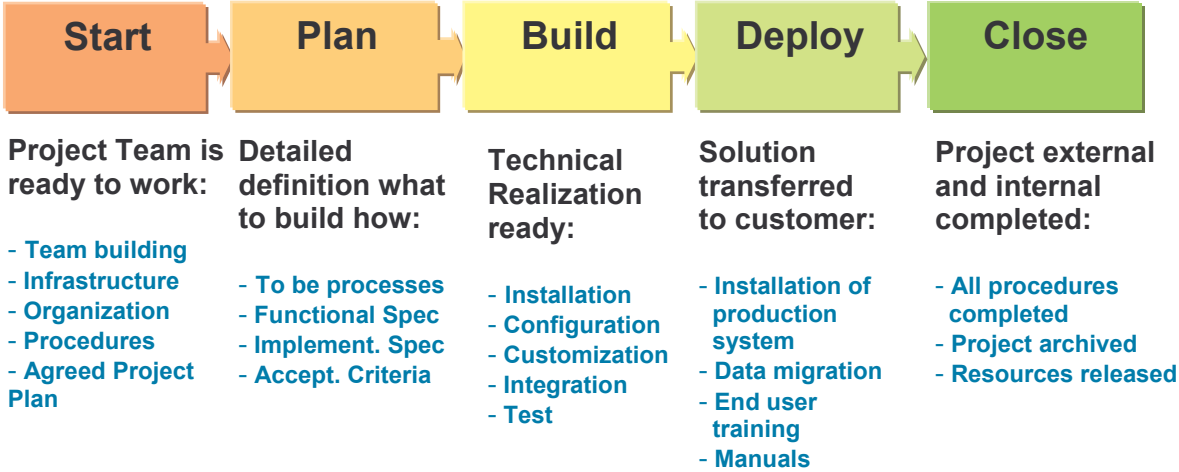


Figure 2.: UGS PLM PM2 Project Methodology

UGS PLM experiences based on more than 35 years of practical, hands-on PLM projects supporting companies in virtually for every industry. UGS developed and documented metrics, methodologies, best practices, techniques and templates that not only jumpstart company process improvement at the outset, but also smooth out the entire process by learning from other companies’ experiences. The consultant service team is structured in different roles and responsibilities to link business goals to process initiatives, for best practices solutions for each major step throughout the product lifecycle, see figure 3. UGS provides all the support and services the customer requires from initial implementation onward - from specialized industry solutions through product lifecycle management planning

and execution, to tailored engineering and implementation assistance, to process implementation expertise, to an array of educational services, to technical assistance by telephone or via the Internet.

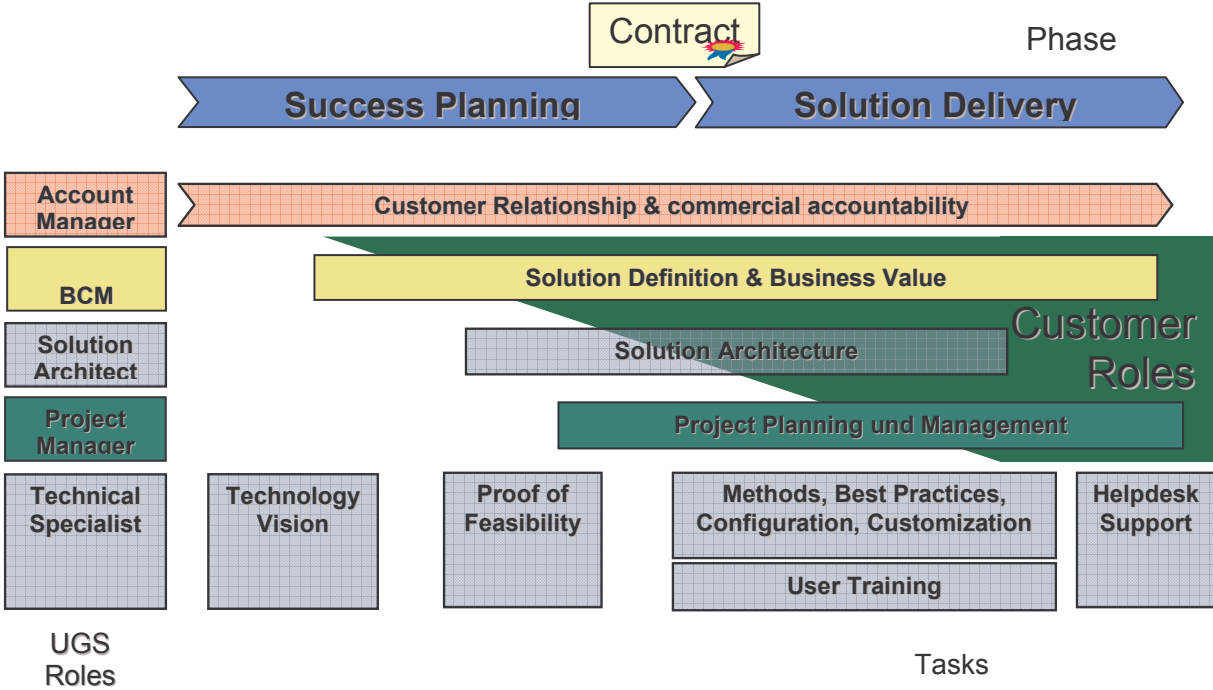


Figure 3.: Roles and Responsibilities of UGS Consultant Service Team

The consulting services team have to ensure that the product-life-cycle management process at customer side works. They helped the customer to bring new products to market faster than before and capture new markets with innovative solutions, unique product features, special options and tailored solutions with the aims:

- Continuously improve the efficiency and effectiveness of the customer product lifecycle
- Eliminate the boundaries that isolate people, organizations and mission-critical systems to support customer product lifecycle
- Enable company suppliers, business allies and customers to fully collaborate in an extended enterprise
- Establish trusted relationships that allow companies globally to share information and product knowledge while maintaining the integrity of every participant’s business interests

This foundation of best practices is aligned with a production implementation methodology and delivered via a streamlined delivery process which reduces the cost of deployment, cuts learning curve and roll-out time and provides rapid payback. In collaboration with top companies in major industries, UGS has extended the concept of “best practices” into industry-focused templates that extract and apply standards, government regulations and best

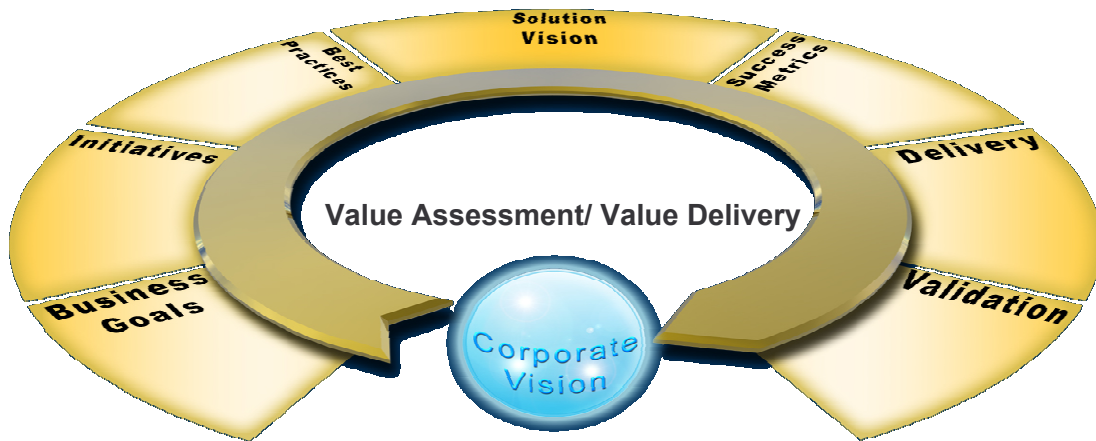
practices common for industries. Example will be found in the aerospace and defence industries with specific requirements for program, configuration and change management, as well as parts list documentation and requirements management.

6 Managing Solution oriented Implementation Project - Business Consulting Management

UGS recognize during their 35 years of experience at the PLM market that customer needs are unique. To address customer business needs UGS developed at the consulting service team a profession which is strong focused on the customer to realize the business goals, to promote the customer operational initiatives and to implement best practise solutions at customer side. These experts – called Business Consulting Manager – are managing the business service for solution oriented implementation projects. Often these experts have varied experience as process expert, project manager or technical manager and worked long time in the PLM environment.

Business Consulting Managers are managing solution oriented implementation projects and are responsible for the whole project lifecycle. They identify the business needs and tailoring a solution to customer objectives. Elements of this work are:

- Work closely together with customer and sharing the knowledge of solution in a true partnership for developing a tactical success plan that is custom-tailored for the customer objectives.
- Identify business needs with value justification and offering value business improvement and address operational initiatives, **see figures 4**.
- Share vision with the customer about the improvement/development of UGS software, new processes and new infrastructure to support the customer business objectives, e.g. with process analyse and process assessment, **see figures 5**. Based on a shared vision of the future “to be” environment and the implementation strategy.
- Develop an implementation strategy as a solution roadmaps, **see figures 6**. This map should achieve all needed major milestones of customer specific business goals such as a phased implementation schedule, as well as training requirements. Ensure proven existing solutions and establish new solutions in respect of the customer business goals
- Define functional roles, responsibilities and resource levels at customer and UGS side. This will include schedules, deliverables and estimated costs.
- Establish an executive steering committee, solution delivery organization, implementation and success metrics, as well as a communications program



- ▶ Focus on customer goals, needs and benefits
- ▶ Define the right solution and the right implementation approach based on UGS best practices and knowledge management
- ▶ Prove benefits based on defined metrics

Figure 4.: Value Assessment/Value Delivery

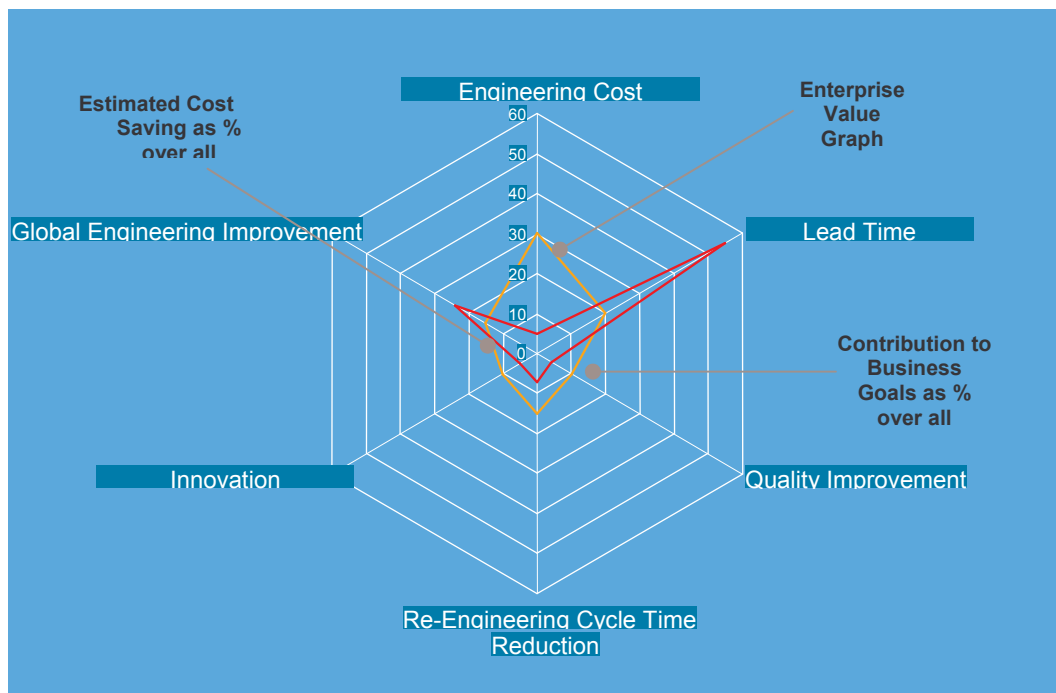


Figure 5.: Results of Enterprise Value Analyse (Example) – Focus on Cost Saving and Business Goals

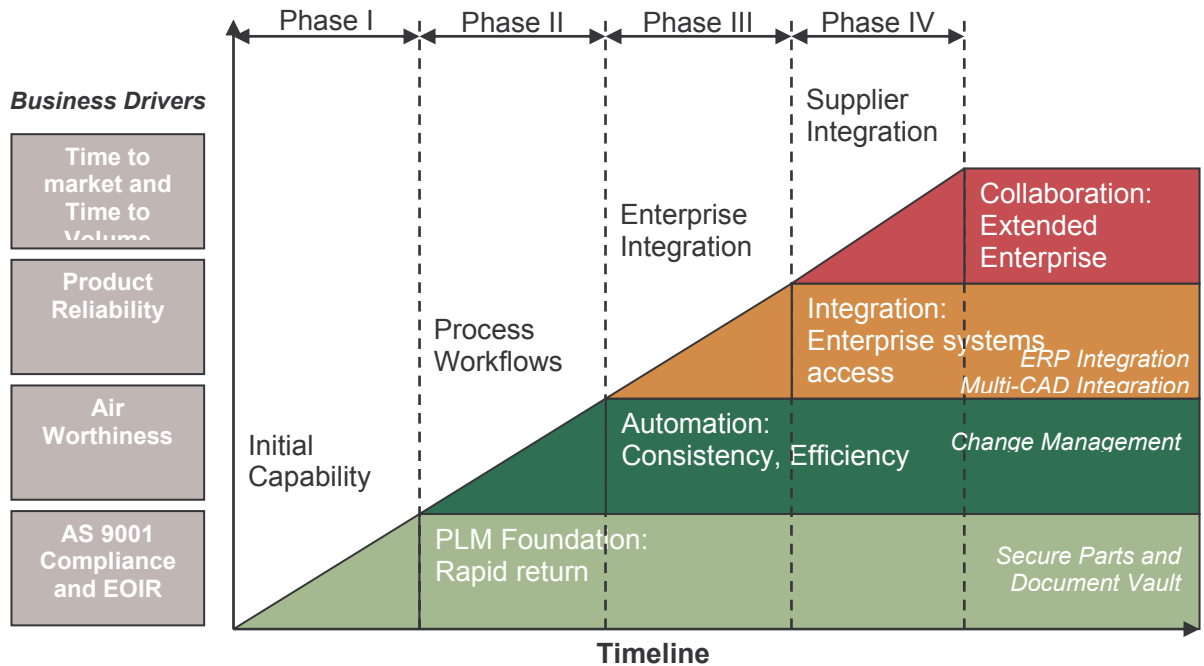


Figure 6.: Solutions Roadmap - Example

Business Consulting Manager worked with unites multiple constituencies including engineering, manufacturing, marketing, packaging, training and support through an open yet secure digital environment.

7 Business Consulting Management - Transition of the IPD Approach

The first Integrated Product Development concept was developed in 1985 from Olsson [OLS-85]. Different point of IPD views were discussed in further workshops, seminars and publications to complement the original IPD approach, e.g. Andreasen and Hein [AHH-87], Ehrlenspiel [EHR-85], Vajna and Burchardt [VAB-98], Norell and Hagmann [NOH-98], [Ottooson [OTT-99].

A common IPD understanding is defined 1997 from Vajna und Burchardt [VAB-97] and in the IPD Workshop 1998 with international participants:

The Integrated Product Development (IPD) is a human-centered procedure of developing competitive products or services of high quality, within a reasonable amount of time, and with an excellent price-performance ratio.

IPD describes the integrated application of holistic and multidisciplinary methods, organization forms, and both manual and computer-supported tools with minimized and sustainable use of production factors and resources

The IPD essentially includes the topics of the product development process, consideration of the product life cycle, human thinking and working methods, teamwork, holistic organization methods, employment of innovative technologies as well as expanded forms of communication and information, **see figure 7**.

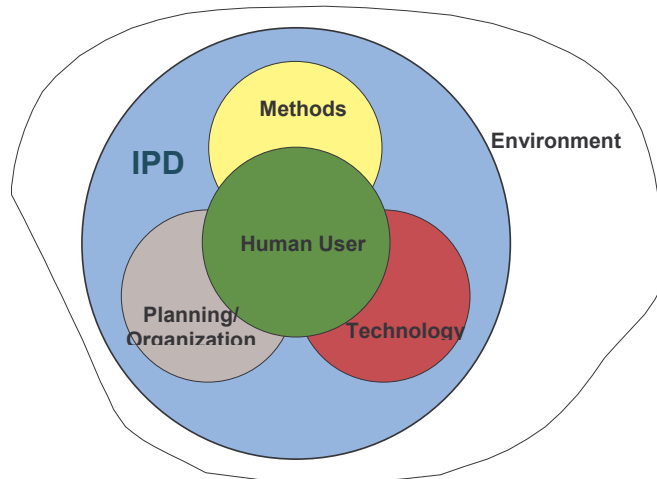


Figure 7.: The IPD Model - IPD Workshop Magdeburg 1998

The IPD concept is human centered approach of supporting a holistic and multidisciplinary procedure for the product lifecycle phases. It consist consensus elements for Business Consulting Management tasks. These will be point out:

- The Business Consulting Manager is responsible for the whole project. The projects are guided human being. The Business Consulting Manager has to coordinate and to guide the completely process in teamwork together with the customer and with the UGS Consultant Service Team => human focus
- The organization form and planning for business consulting management is essential. The Business Consulting Manager has to consider the organization form of the customer side and UGS side. The organisation mapping consider the task map (who worked in which department for which task), authority map (who reports for whom), relationship map (what is the relationship, consideration of employees and tasks), and the political map (who decided and make things happen). The planning considered e.g. the implementation project plan divided in project structure plan with miles stones and subdivided task with their relations of the development roadmap with their infrastructure and roll-out plan => organizational/planning focus
- Business needs are unique. Business Consulting Management use proven methods to establish a custom tailored solutions. E.g. risk assessment or solution visions, IDEF process analysis for best practise solutions, return on investment for success metrics, project management techniques for delivery, quality function deployment for quality assurance => methods focus
- The PLM solutions portfolio is supporting different technologies. The correct selection of the solution tool is essential to support effectively the final technology. The technology could be structured e.g. in digital product design, digital manufacturing, digital simulation, digital collaboration => technology focus

The reasonable combination and interaction of the elements behaviour of human, organizational/planning focus, methods - and technical focus in the Business Consulting

Management process are critical factors to implement a solution oriented PLM strategy successful.

The IPD approach with similar elements and procedure – partially addressed for another environment – could guide the Business Consulting Management service approach in a successful manner - to transform the process of innovation.

References

- [OLS-85] Olsson, F.: Integrerad Produktutveckling (in Swedish), Mekanförbundet, Stockholm, Sweden 1985
- [AHH-87] Andreasen, M.M.; Hein, L.: Integrated Product Development, Springer Verlag, Berlin 1987
- [EHR-85] Ehrlenspiel, K.: Integrierte Produktentwicklung, Carl Hanser Verlag München Wien, Germany 1985
- [VAB-97] Vajna, S.; Burchardt, C.: Dynamic Development Structures of Integrated Product Development, ICED'97, Prague
- [VAB-98] Vajna, S.; Burchardt, C.: Dynamic Development Structures of Integrated Product Development, Journal of Engineering Design, Nr 9, pages 3-15
- [NOH-98] Norell, M; Hagman L.: Integrated product Development – in reflective education, NordDesign '98, Stockholm, Sweden
- [OTT-99] Ottosson, S. (1999): Dynamisk Produktutveckling (in Swedish), Tervix, Floda, Sweden

Dr.-Ing. Carsten Burchardt
Business Consulting Manager

Unigraphics Solutions GmbH
Karl-Wiechert Alle 76
30 625 Hannover

Phone: +49 – 170 – 922 46 47
Fax: +49 – 511 – 560 98919
E-mail: carsten.burchardt@ugs.com