

PROCESS MANAGEMENT OF PRODUCT REALIZATION IN THE RAILWAY SECTOR

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ABSTRACT

The rail industry is a growing system, which is changing and becoming internationally important. To follow the changes and quality requirements of the railway industry, well-functioning management systems and industry requirements standards are of importance. Especially for companies who venture out new into this sector the industrial standards are far more important to participate in the global market. Also many companies from Turkey wish to participate in the market. But lack of know-how may result serious trouble at the beginning of production process. Why a process model for the development and innovation of products has been determined. It should serve as a guide company in key processes which are essential during production and innovation of the goods.

JEL CLASSIFICATION & KEYWORDS

■ L6 ■ M1 ■ O1 ■ O2 ■ R4 ■ PROJECT MANAGEMENT
■ PROCESS MANAGEMENT ■ IRIS ■ QUALITY MANAGEMENT
■ RAILWAY INDUSTRY

INTRODUCTION

The importance of rail transport is increasing. More and more countries are increasingly investing in the rail sector. It can be observed in new innovations, technologies and the increase in the usage of Computer Support Software. Turkey has also recognized the need for a good functioning rail network, which is why investment has been made in the development of rail transport in recent years. This includes projects like Marmaray or the construction of high-speed lines. Within a short time this was realized with the participation of foreign contractors. In the railway sector, the state-owned company TCDD has a monopoly, so until recently, the private sector was largely absent in this sector. But to widen the investments and innovations in this sector, many companies are prompted to participate actively on the market. New law regulation which requires a 51% local share of the production of each component, contributes to make this sector go further and creates competitive advantages for domestic entrepreneurs.

However, since many of these companies must first re-establish themselves in this sector, they lack in some areas such as the necessary know-how. To overcome this obstacle companies are trying hard through the establishment of research and development departments. However, this alone cannot catch up to the decades of experience of other companies.

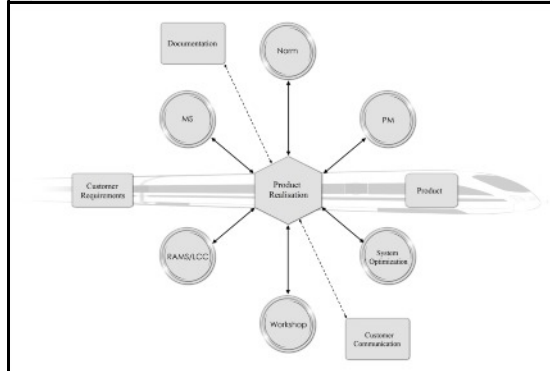
Designed therefore, is a key elements of product realization in the railway industry, to help the companies administrate the processes of developing and innovating new products.

In the course of product realization, it is important to define key processes that aims both to ensure customer satisfaction which is vitally important and cuts cost and time. Key elements of product realization in the railway industry

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are therefore to be considered as a guide that will help businesses in particular, which still have little knowledge and experience in the rail industry or newly venturing into the development and production of products.

Figure 1: Key Elements of Product Realization in the Railway Industry



Source: Author

Customer Requirements

Prior to initiation of planning and product definition, are the customers' requirements and an exact calculation of this importance. Each organization should carry a detailed cost report based on previous data, knowledge and experience to evaluate any of security requirements at the beginning. Also, the organization should be aware of their own capacities and resources and must have the accurate calculations to reach the desired requirements. A self-assessment is also of priority.

A detailed documentation and contractual agreement with the supplier is essential, which also includes possible contract adjustments and customer relationship. However, the control of the company which is provided by IRIS is advantageous. An identification and definition of customer requirements should be clearly defined for all stakeholders and understood by all stakeholders. The feasibility of the product in the company should be clearly stated.

Management systems (MS)

One of the key processes during product realization are the requirements of management systems. An efficient and internationally recognized management system is a guarantee of quality and a form of business card to be able to participate in the market and be a form of proof for any organization.

Quality Management System, ISO 9001 (2008), is a widely used management system which has an international reputation and is defined by many as an absolute necessity to come at all as a business partner in question. Therefore, it also serves as a base for some industry standards basis, as well as for the automotive industry ISO 16949 and the Railway Industry Standard IRIS.

For businesses that need to be active in the railway industry such as suppliers, therefore, a detailed analysis of their own management system is needed and yet it should further be taken into account what other management system requirements are.

It turns out that it is necessary, especially in Turkey, to recognize IRIS as a certification. Other management systems such as environmental management system, occupational health and safety management, energy management as well as risk management are those of management systems for many companies are important, which is why an integration management system that can be made to save unnecessary costs is already being thought about in advance. This consideration is especially suitable for those countries such as Turkey, where the certification is not too common with a management system. An accurate determination of the required management systems and their integration would result in a lot of time and cost savings.

Standardization

Standards are important instruments which give many areas of life safety and confidence. They can also be based on internationally recognized and tested standards and for cross-border business transactions which are considered standards of quality and safety guarantee. They provide a secure knowledge for resorting to consider when planning and implementing corporate activities and in particular in highly developed division of labor processes of immense importance (OENORM, 2012).

Standards are set out in part in management systems that are binding for the parties or determined by the customers. During the implementation process the contractual definition of standards and strict adherence to these are mandatory (Hahn, Häusler, & grosse Austing, 2013).

Project Management (PM)

In the railway industry the project-based work is of particular importance, which is why in the rules of the IRIS project management point deserves its own leadership.

Project management affects the entire circumference of a process from the beginning to the end of the product in that more professionals are involved in the organizations depending on responsibilities in interdisciplinary teams. As Interdisciplinary team not only its own personnel is understood, but that includes suppliers and also the customer may be during the process of great value. During the project management, a process should be established, in which the availability of the product and its parts will be scheduled for the agreed service life. It must be considered that the life of the products in the railway industry often involves a minimum period of 10 years. The work processes of project management is divided into eight IRIS management.

Integration Management

Integration Management is defined as a management system that controls an entire project planning throughout the project life cycle. Consideration is given to specific design rules, and the steering of changes in the course of project planning. (UNIFE, 2009).

Management of the circumference of projects

The entire scope of the project must be clearly documented, and any changes should be clearly visible in the project plan for everyone. An exact definition and scope of the work area is defined and divided according to responsibility (UNIFE, 2012).

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Time management

A Timely completion of the project is very important for the relationship between customer and supplier. Also, in addition to our contractual consequences also for non-compliance of the Agreed date financial statements with loss of reputation and expect the other with customer loss. A well-designed project scheduling, which is also threatening deviations factored mandatory, which is why project plans are always updated and re-evaluated (Friedel & Huke, 2006).

Cost Management

A statement of costs for the entire project should be placed before the start of the project by a budget for possible deviations are taken into account in case of emergency not to unnecessarily jeopardize the budget or the whole project (Friedel & Huke, 2006).

Quality management in the project

The quality management in the project itself as an object area in which special attention is paid to the outcome of the project. By items such as "identification, clarification, compliance and control, validation and delivery fulfillment, where necessary, approval by the customer, and supplier management within the project" will be directed and managed (Friedel & Huke, 2006).

Therefore periodic documentation, monitoring and evaluation are important to the release of the next phases of the process for quality management to start (Friedel & Huke, 2006).

Management of human resources

One of the most important resources of an organization are qualified and dedicated employees. However, equally important is the line that can use these resources well and to improve the skills and performance of its employees in group-related skills (Friedel & Huke, 2006).

Communication Management

Communication between the parties and the determination or changes must be documented. Any information about the requirements, changes or error message and risks should be reported in time the project participants.

Management of risks and opportunities.

Risk-based thinking should be established and also used in the entire project process by quantitative and qualitative methods and must be well documented. Importantly process is carried out to be transformed into opportunities. A regular risk assessment and regular communication can occur with other team members. Learning purposes promotes it on a great scale (Vanini, 2012).

System Optimization

Due to the rapidly changing technology, competitive pressures and partly limited resources, organization are constantly asked to perform system optimization. As a system optimization, the definition of a process is to be understood by the organization have on any changes that affect the implementation and realization of product to be able to react in time. For example making use of new production technologies.

Workshop

Regular workshops at certain intervals are particularly important for all employees. Not only tuning the system, but also the know-how of the staff are significant for the growth of innovation in businesses.

RAMS/LCC

Risk-based thinking is taking on importance and therefore also particularly took RAMS management collection in the railway industry.

RAMS - is the abbreviation for Reliability, Availability, Maintainability and Safety. The definition of RAMS can be found in the standard of EN 50126, which sees itself as a methodology to prevent errors and risks during the planning phase of projects. RAMS is used during the development and introduction of new products. In RAMS Management Risk analyzes are performed to determine hazard rates and proof is created (a more detailed description can be found in the previous chapters). Under LCC (Life Cycle Cost) life cycle costs are to be understood, which are closely related to safety and reliability. The aim of RAMS/LCC management is to minimize the risks, or the risk potential and to increase the reliability and safety of the products.

Documentation - Customer Communication

Documentation is an important part of product realization. Throughout the project and in the individual processes, a detailed documentation of the information, technical data, operations, safety requirements are obligatory. A well-documented process also allows a better assessment of hazards and risks for future projects.

Besides the documentation, permanent, interactive exchange of information with the customer throughout the process of product realization is important because on the one hand a profitable customer relationship can be built and can react quickly to others on any deviations during product realization.

A customer support system during the commissioning of the product and the provision of resources and activities for problems after delivery of the goods should be considered in compliance with the maintenance contract.

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