

Chapter 2.4

Supporting Research and Development Processes Using Knowledge Management Methods

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EXECUTIVE SUMMARY

This chapter shows the integration of formal and informal knowledge and information exchange methodologies for an integrative product development process. It describes in detail how to transfer knowledge between organizational-related units to allow a smooth transition of development projects. Based on communities and information technology support, the concept offers a substantial way to bridge communication gaps to increase efficiency. Furthermore the authors hope that this chapter increases understanding of existing problems in manufacturing companies and enables practitioners to find a basic idea of how to solve their own challenges.

BACKGROUND

Trumpf Maschinen Austria (TAT) was founded 1990 near the city of Linz, Austria, as an independent subsidiary of the Trumpf group. TAT is a competence center for press brake and bending technology and produces TrumaBend® press brakes, the TRUMPF BendMaster®, and laser-hardened bending tools.

TAT had a turnover of 94.5 million euros and employs 168 people, and has a very low fluctuation rate. Two thirds of produced CNC machines are exported worldwide. The main focus of research and development (R&D) is on the process chain of “Blech” (sheet plates).

Currently three TrumaBend® press brakes are delivered every day and production capacities are in the process of being expanded to prepare to meet the constantly increasing demand for TRUMPF press brakes in future. Tool machines and production technology by TAT are in a leading position on the world market.

SETTING THE STAGE

The following case study is based on an information and communication problem between the R&D department and the construction department of a large machine manufacturing company with subsidiaries all over the world.

Problem Details

In the past the development of new machines was done in one big department (construction department) which also had to handle customer orders. Knowledge and experience transfer from R&D activities to order processing was an integrative part of daily business.

Later on, the fast growth of the company led to less R&D activities and required the split into an R&D department and a construction department. The R&D department was then responsible for the development of new machines, and the construction department was responsible for processing customer orders. In this department special needs of the customer concerning a machine had to be implemented within the general technical specifications. The specialization allows a more focused work and clear responsibilities for customer adoptions versus new product development.

Dividing the department caused cultural side effects. The staff of the construction team lost the status of being members of the “creative” R&D department and were very disappointed about this fact. This cultural problem resulted in a structural and emotional gap between these newly formed departments, which was reflected

by less communication. Additionally, the formal information exchange has not been defined anew, so the handover happened only after the finalization of the R&D activities.

Now the big challenge is to handle the formal and informal transfer of knowledge and experience produced in the development projects within the R&D department to the construction department, which has to use the project results when processing customer orders. So the overall target of a new concept for exchanging and sharing knowledge and experience is to include know-how and experiences of all departments of the company within development projects and to bridge the emotional gap and friction between these two departments.

General Conditions

Development projects in this company are of highest complexity and last up to three years, and a normal lifetime of such a machine (including modifications) is about 10 years. A development project in this context is defined as a project that develops a machine type in several similar specifications. Additionally the machine manufacturing company required that a new concept for optimizing knowledge and information transfer among the different departments, should support

- integration of know-how of all company departments (e.g., sales, assembly, production);
- reduction of the cycle time for machine development projects;
- serial production has to start right after finishing the R&D project;
- providing up-to-date information about R&D projects for all employees;
- and should also be complementary to an overall “integrated product development process,” which was worked out and applied in this company.

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