INNOVATIVE EDUCATIONAL SYSTEM "EDUCATIONAL COMPANY" AT DMS

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Abstract

The article shows innovative form of education that is developed at the Department of Manufacturing Systems (DMS). In complex project students can "pass through whole company" also with its processes. That way students gain expert knowledge and skills and they learn to use it in its contexts.

Key words: innovation, education, complex training project

1. Introduce

Nowadays, it is usual to talk about turbulent markets, supersonic changes and hyper-competition. Most of companies are reflecting hard market requirements by implementing new technologies or modern management principles. However, lean and agile organizational structures are bringing on "thoughts changes". In that context we talk about complex, logistical, process oriented thinking in this matter.

To think in contexts – It is the requirement in these times and it has to be reflected not only in the training and education of employees, but also sooner in the education at technical universities. That is why Department of Manufacturing Systems is implementing innovative forms of education, which reflect this requirement and enrich traditional education "in front of blackboard" with practical elements.

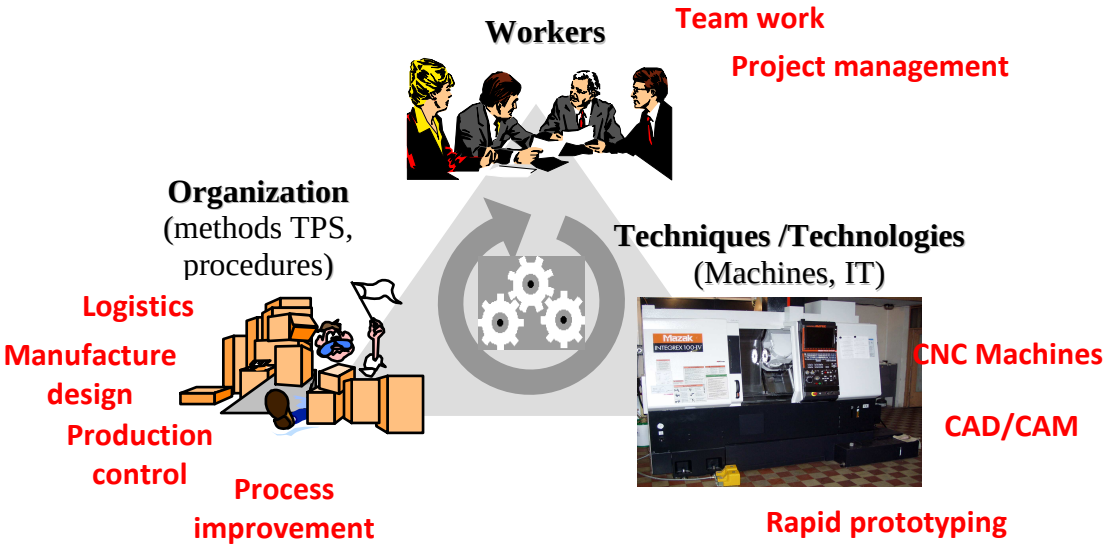

Fig. 1 - "Educational company" at DMS – the complex perspective on company processes (Synergy of people – technology – organization)

2. "Educational company" DMS

"Educational company" simulates real company including its processes. Essential idea comes from suggested requirement – learn to think in context. The way is systematically connection of each potentiality (facilities, software and learning techniques) to one complex educational system.

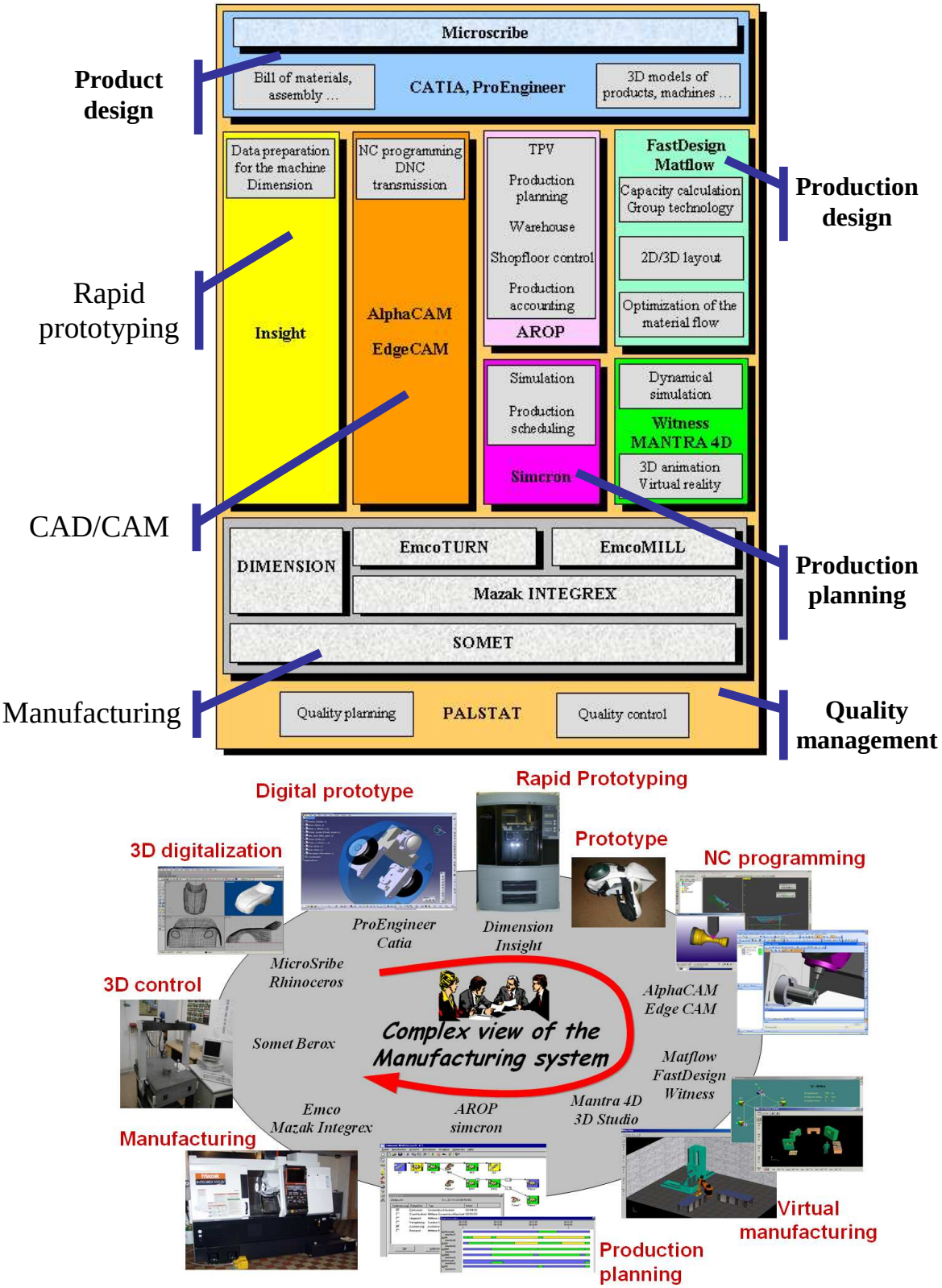

Figure n. 2. "Educational Company" on DMS

Each department specialized courses are connected within complex project (figure 3). Students in this project are:

- considering marketing strategy,
- designing prototype in CAD respectively in CAD/CAM system,
- developing prototype (by Rapid prototyping or CNC machines),
- designing serial production (workshop layout including logistics and production data),
- optimizing each activity (e.g. operator movement or setup schedule) and processes by improvement techniques.

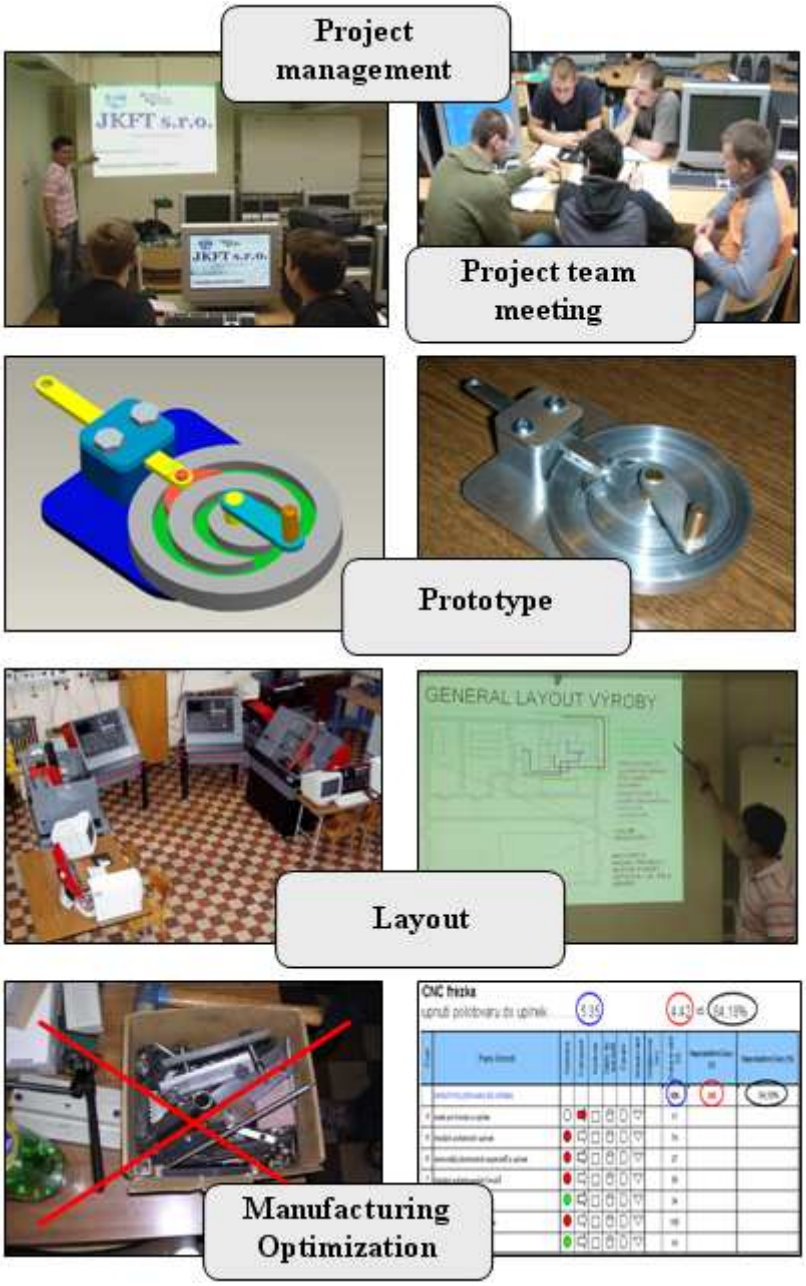

Figure n. 3. Illustration of the complex project

The Project is developed by students in their work groups – so they manage whole project. They discuss and evaluate solution variants with respect to several criteria and professions – so they fulfil goals in wide respective of each problem. That is the way how they gain experiences from about all activities and their mutual benefits – e.g. how can technology, chosen by CNC programmers, influence work of :

- foreman – e.g. machines work load,
- supply buyer– e.g. material change of purchased part,
- project engineer – e.g. change of material flow,
- scheduler – changes in previous and following manufacturing process,
- IT – actualization of database.

They assume bindings between e.g. design-technology, design -logistic, technology-logistic, design -quality, logistic-quality and logistic-administration altogether with "real" conditions of departmental laboratories and workshops (fig. 4).

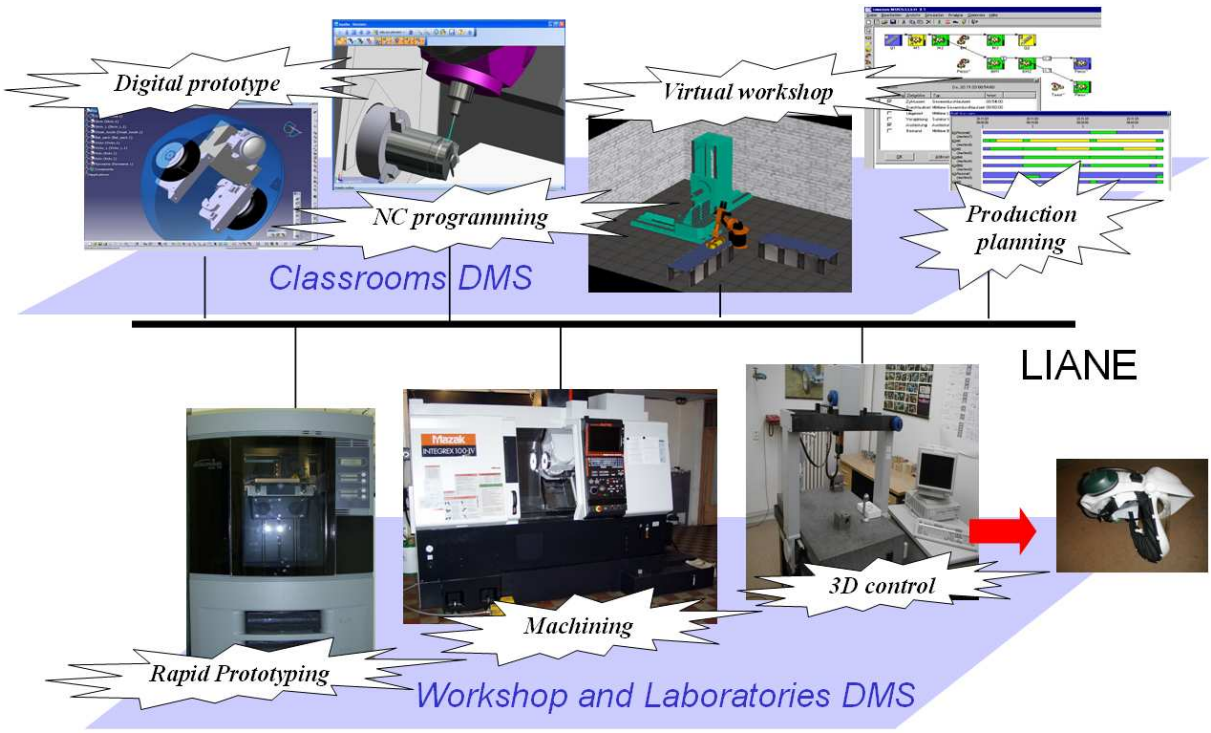

Fig. 4 "Educational Company" at DMS – departmental facilities

3. Conclusion

Educational system on Universities (high schools) has to meet market conditions and derive benefit from educational methods and systems, which reflects needs of industrial practice. Educational system "Educational Company" developed at Department of manufacturing systems is trying to connect "necessity of the tight binding" of theory and practice with demand to learn to thing in wider circumstances.

Students, by developing complex project in "real" departmental environment, gain not only professional knowledge and skills from the area of technical preparation of machinery, logistics, production control and its optimization, but also from practicing organizational

skills by managing and presenting the project. They learn to take burden of the complex company processes.

4. Literature

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