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EVENTS

"World Fair For The Forestry and Wood Industries"

**14-18 May 2007
Hannover, Germany**

DomusLegno (Wood Fair)

**24-27 Nov 2007
Rimini, Italy**

Editorial

Paolo Pedrazzoli TTS

KoBas is going to end...

KoBaS is fostering a business network, methods and tools that will facilitate the development of 'intelligent' manufacturing machines incorporating cutting-edge technologies into SME-tailored integrated software solutions, for machine task and process planning, maintenance, training, and management support.

Six months to go, and this vision is coming more and more close to real exploitation. Several meetings with machine builders and end-user, and hundreds of demo sessions, showed that they understand that KoBaS brings increasing productivity through more efficient use of machines and better customer services, and that they are eager to implement the KoBaS solutions. Cause powerful and innovative information technology, exploited

in design stage engineering, has hardly penetrated the traditional manufacturing sector. There is no comprehensive software for managing complex, versatile manufacturing machines. And Machine builder and end-users grasp the cutting edge advantage this would bring.

These last six months will be a crucial test bed, where the industrial partners will be able to actually reckon the KoBaS solution advantages and pave the way for large scale software engineering and exploitation.

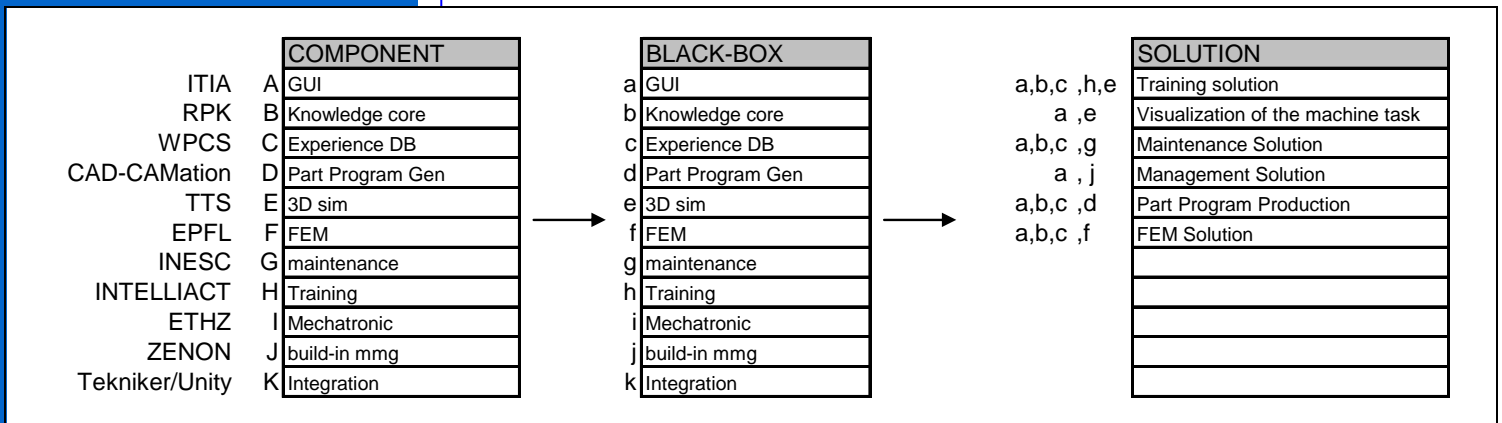
In order to help the traditional European manufacturing and machine tool builder SMEs to become more competitive and face daily increasing requirements in terms of productivity, flexibility and quality, it is necessary to bring added value to the machines and systems they design, produce and use. KoBaS is providing an effective answer to these needs.

The ATHENS 2004 Olympic Games - Men's 100m Final



After the end of KoBaS project, machine tool and production Consortium partners will constitute a business network to cooperate on the marketing of KoBaS products and services, in order to exploit results. The business network is an innovative management paradigm that can be used by enterprises to compete in today's world complicated context. In an environment where globalisation, progress in Information and Communication Technologies, customer awareness and uncertainty make obsolete traditional business models based only on efficient competition, business networking can help companies to reach flexibility and critical mass, especially in difficult markets like

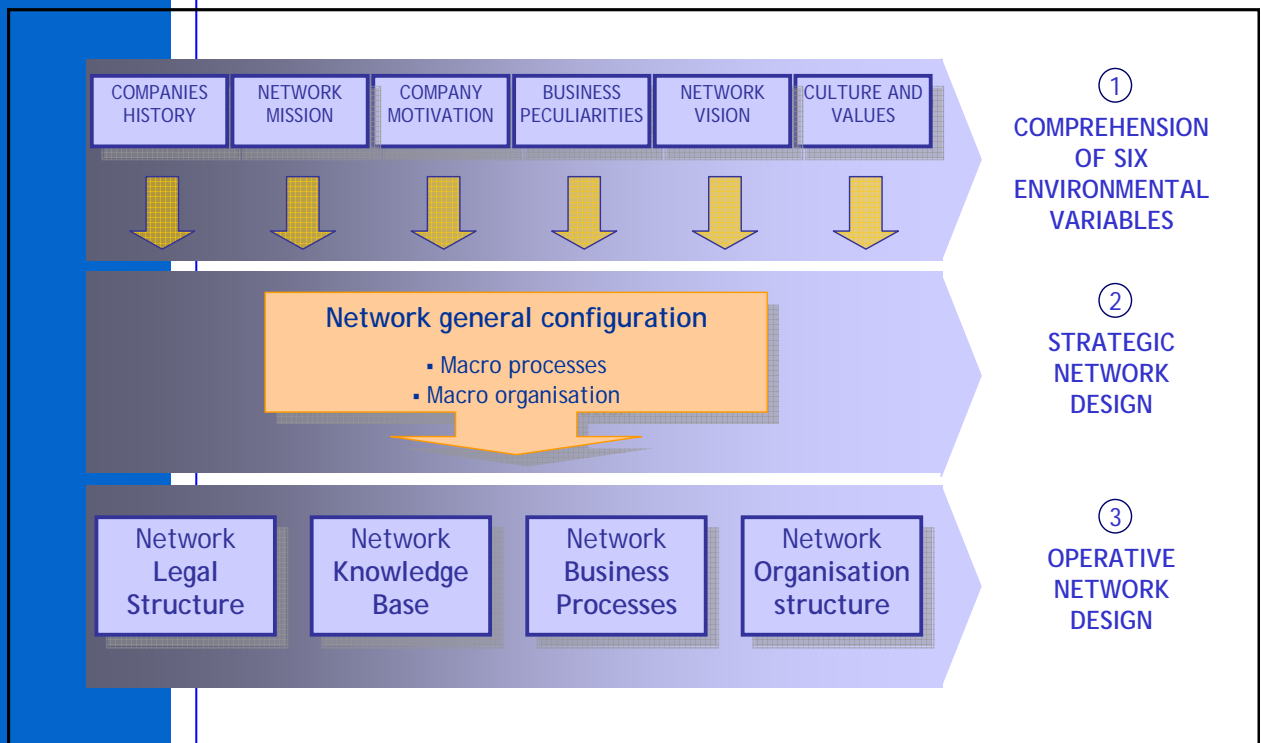
systems industry. Networking is the ideal way to prosecute the business activity of KoBaS project after the end of the project, saw partners their geographic dispersion, limited dimensions and the need of close cooperation to implement and offer KoBaS solutions, realised through the integration of different component, always customised on customer needs. The following table summaries the KoBaS solutions that will be potentially offered by the Network, together with the partners that are the owners of the knowledge to be integrated for each solution.



Despite the fact that business networking is a valuable organisational instrument that can create considerable competitive advantage for small firms, unfortunately, its practical implementation is very complicated. Some studies estimate that up to 60% of the alliances fail to meet their initial objectives, because of the strategic and management complexity that it implies. To maximise the success probability of KoBaS network, a specific design methodology has been developed and applied by IICS Srl involving all future network stakeholders. After having analysed the environmental conditions of KoBaS partners, a strategic network model, defining fundamental business principles, has been proposed and a general satisfaction about it has been reached through incremental adjustments. Detailed aspects such as operative business processes, knowledge structure to support them and network legal form and organisation have been then designed.

This procedure permitted to follow a hierarchical design logic which avoided efforts dispersion, and to involve future Network members in all important decisions about management strategies.

Thus, it permitted to maximise the probability that partners will operate in a network that they have actively contribute to create and to which they will recognise value. The methodology for network design is graphically represented in the following figure:



KoBaS Network will be an Incorporated Association grouping companies that share the following mission: "To provide in a sustainable way products, training and other services developed in KoBaS to Small and Medium Enterprises and to continue developing in the future new products and services under KoBaS philosophy. Products and services will be: KoBaS solutions, the integration of KoBaS solutions for customised applications, technical and process oriented consulting". Partners will have different roles according to their skills and intentions and will chose to be members of the following Network organisms:

Network Supply and Business Hub (S&BH)

It will be the "production and research-development department" of KoBaS network and it will generate, supply and maintain the technological products that will be the object of network business. S&BH will also be the engine of the Network and it will play a major role in the definition of strategies and network development directions. Members of S&BH will be the owners of the solutions (they will initially be KoBaS partners) and, after a first phase of "business test", they will build a limited liability company to run the business.

Competence Centres (CC)

They will be the “commercial and marketing departments” of the KoBaS Network, selling KoBaS solutions in their local markets and offering consultancy. They will act autonomously with customers and, depending on the relationship, they will decide to keep with S&BH, they will sign direct contracts with customers (and have then supply contracts with S&BH for solution implementation), or they will act as agents finding customers that will establish a direct relationship with S&BH. CC will be accredited by S&BH to sell specific solutions in well defined markets and they will have to accept conditions proposed by S&BH in terms of prices, market approach, etc.

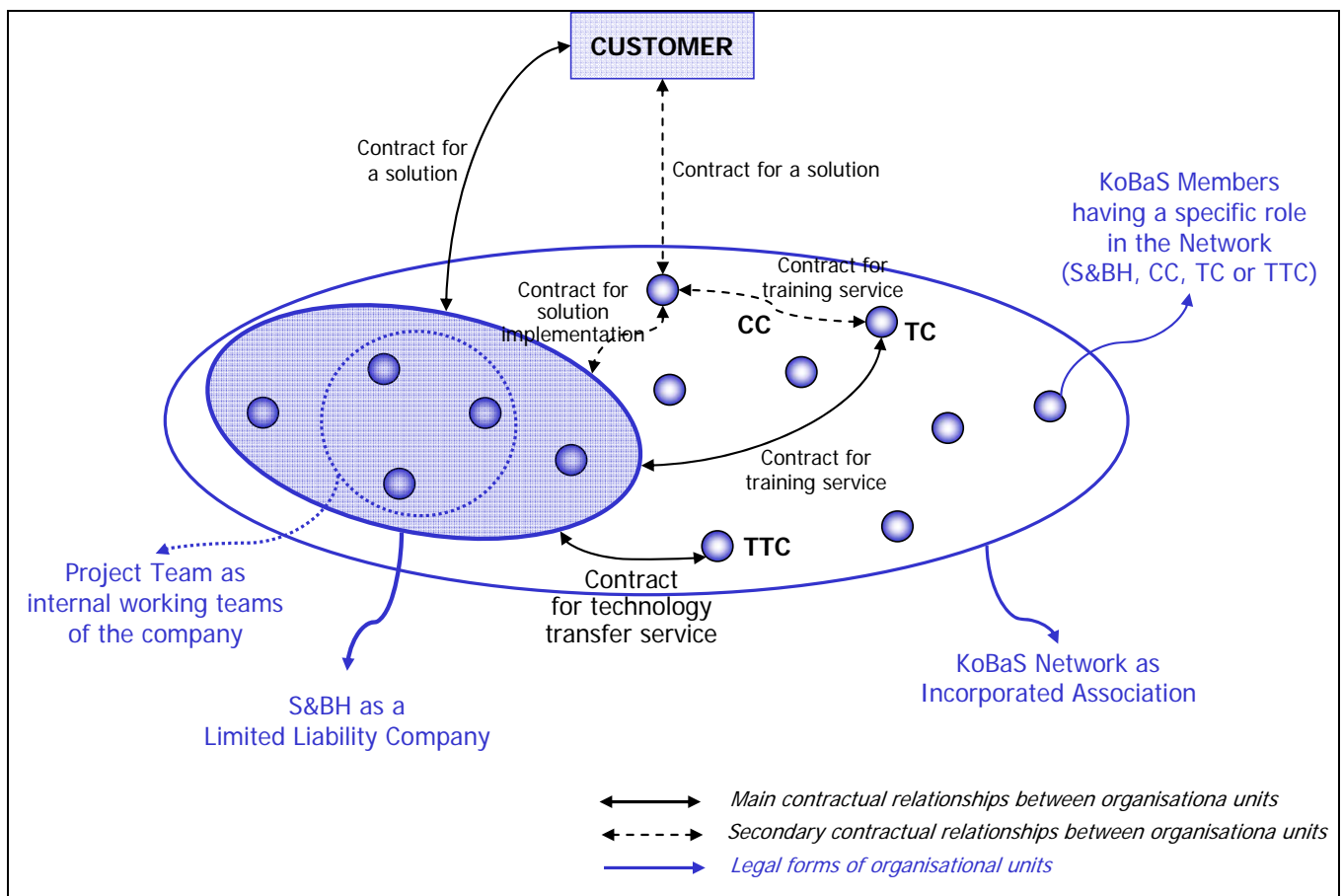
Training Centres (TC)

TC will be the “training department” of the KoBaS Network and will be responsible for the organisation of training activities of the Network. TC will entertain business relationships

with CC finalised to the training of CC personnel (that will train customers) or to customers direct training on supplied solutions. They will be accredited by S&BH to offer training on specific solutions and they will have to accept conditions proposed by S&BH in terms of prices, market approach, etc.

Technology Transfer Centres (TTC)

TTC will support the S&BH in business development, transferring KoBaS technologies to other manufacturing and non manufacturing sectors not exploited yet on one side, and transferring new emerging technologies from the external research community to KoBaS Network on the other. Like others core Network organisms, they will be accredited by S&BH and they will work “on demand” through the assignment of specific development contracts by S&BH.



The condition described will be reached through incremental steps and a transitory phase is foreseen before core partners engage themselves in the creation of a S&BH company. This period will be needed to test solutions market potential and partners cooperation performances before taking formal decisions and establishing fixed rules, which would be difficult to change. In this phase, CC will act exclusively as independent agents on the market signing direct contracts with customers, and solution implementation will be carried out by a contractual Joint Venture composed of all Network members that will have to cooperate for that solution.

Each member will be responsible for its scope of work and detailed supply conditions and liabilities will be contained in a contract signed between the Joint Venture and the CC who sold the solution to the customer.

General business processes implementing the above described Network model have been designed and they represent, together with the organisation, the legal model and the knowledge base, a guideline to start the business through the Networking cooperation form, deeply customised on KoBaS Consortium partners. Thus, future Network members will have to follow indications here proposed and put them in practice: the agenda for the first network meeting has been already defined.

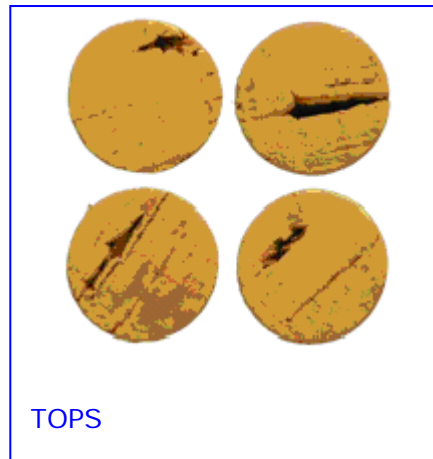
Demo Case: Azevedos Industrias

Equipment chose by Azevedos Indústria was Visual Inspection Machine (IVE-100). The purpose of this equipment is inspecting cork-stoppers surface (tops and bodies). Machine acquires tops and body images by CCD linear cameras, which are treated in an industrial PC. With a classification algorithm (defects detection), cork-stoppers are sorted and conducted to an outlet already defined in the algorithm. One of the most critical subjects in this equipment is the inspection speed. This equipment inspects an average of 12.000 cork-stoppers per hour, so it's real important that the speed of each part of the machine is very well monitorized.

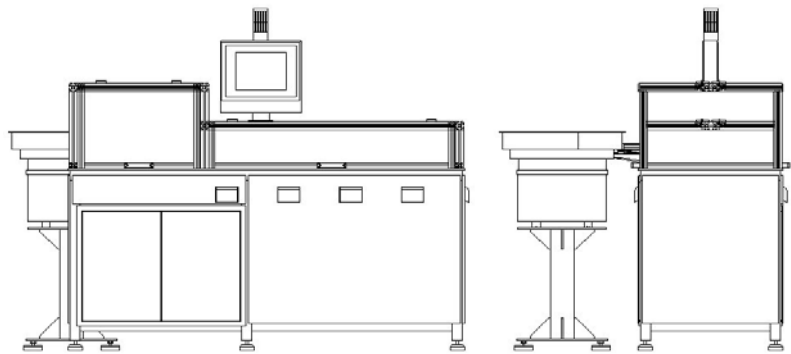
Reasons we chose IVE-100, were mainly because it's an equipment with a high interaction between operator and machine and due to the high level of technology and configuration which IVE-100 requires.

In order to support interaction between user and machine, we have decided to include two KoBaS components - maintenance and training.

Maintenance component will advise user to be careful with some details, like rolls speed and chain speed, so that equipment performance will be maintained. Training component will help user to change and configure machine to his needs. We have been working in partnership with INESC-Porto and with Intelliact. Those organisations are developing Maintenance Component and Training Component, respectively. In terms of maintenance component we described all potential breakdowns, components associated to each failure and breakdown limits, so INESC could develop our maintenance rules. We are know preparing all conditions needed (OPC Server installation) to do tests and validations.



Related to Training Component, project department prepared all 3D CAD models. Now we are adding more subjects to the technical document describing all subjects which have to be included in simulation and our model, so we can validate it.



Demo Case: Urpe

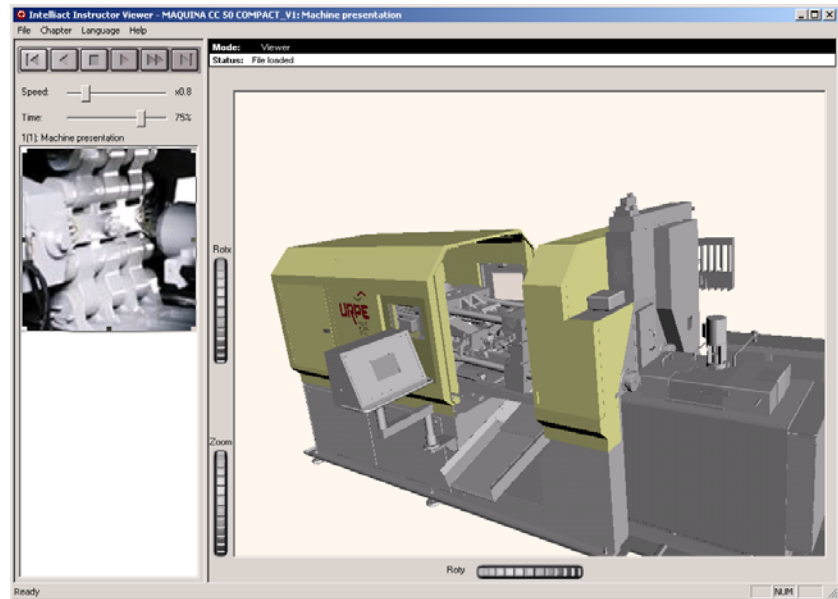
For the injection machines produced by URPEMAK Kobas offered from the beginning several Black Boxes of high interest. They selected to use three: Training, RBK and FEM, all of them to help operator in the process. Often the skilled operator is in charge of the setup of the injection process while the process itself once adjusted is operated by a not necessarily skilled staff. In this context: Training will assist operator in preparing changes or assisting him in maintaining spare parts; RBK will help

operator to fix an injection problem like generation of burr or an incomplete fulfilment of the piece; With FEM the objective will be to offer a tool to the operator that helps him in selecting the correct parameters to correctly drive the process.

Training Components

Training module will be used by Urpemak to avoid the required time to train the operators in knowing on how to make changes in the configuration of the machines and maintaining spare parts or consumables of

of the process. Furthermore they will use it for commercial purposes due to its possibilities to offer potential customers an interactive way of viewing the machine.

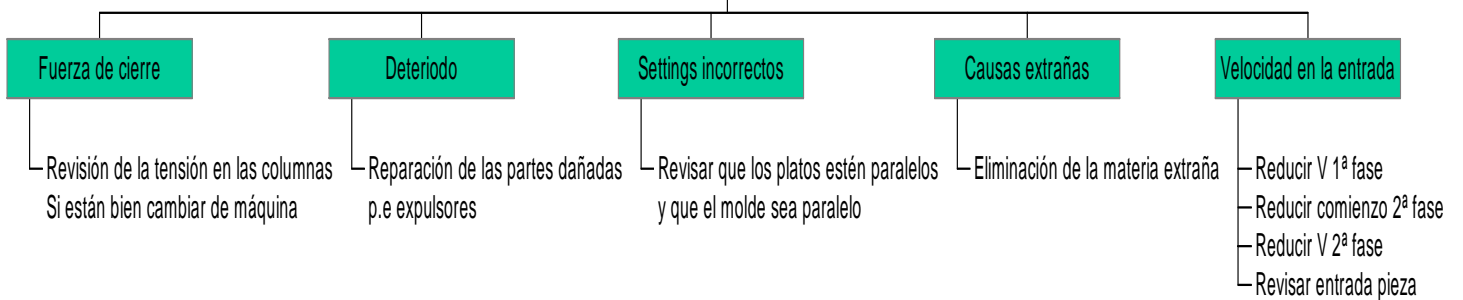


Knowledge core component

Once in operation several defects in the injection may arise. The expert knows the possible reasons and the possible solutions. The expertise of the knowledge engineer is trespassed to this Black Box. In this scenario it will be very profitable to

have a tool like the Kobas Rule-Based Knowledge Core Construction Component in order to guide the operator in the proper selection and adjustment of the parameters needed to adjust and to optimise the process avoiding problems like burr generation or not fulfilment of pieces..

FLASHING

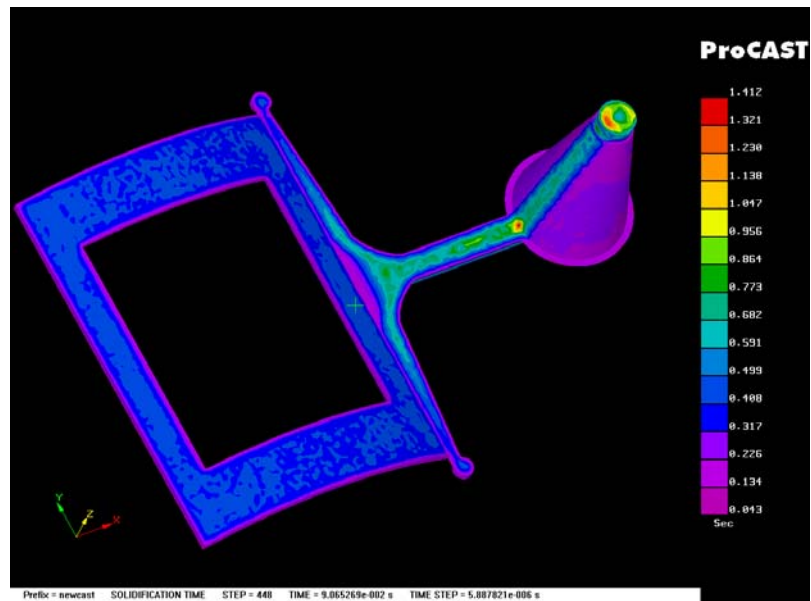


The FEM component is applied to analyse the thermal and the fluid behaviour inside the mould under the injection process. It will serve to optimise the process and to optimise the mould itself. During production and depending on the temperature of the melted metal and the frequency of the operation the

gradient of temperatures that results would affect in the quality of the part produced. For Urpemak the *Kobas FEM Component* will be applied to analyse the thermal behaviour and how it affects the fluid when it is filling the mould. This analysis will contribute to a better knowledge of the process and will serve to better

design the mould. Based in the results of a battery of analysis done by ProCast software in several conditions this BB can

offer to the operator an online assessment on what would he expect when selecting one injection parameter.



Demo Case: MCM

MCM and its customer Quinson Ets. have asked to the KoBaS network, solutions related to metal cutting process for the aerospace market.

At present aerospace industries are oriented towards a reduction in aircraft components, which allows them to reduce finish product assembly time, but which requires them to produce very large and highly complex pieces (sculptured pieces).

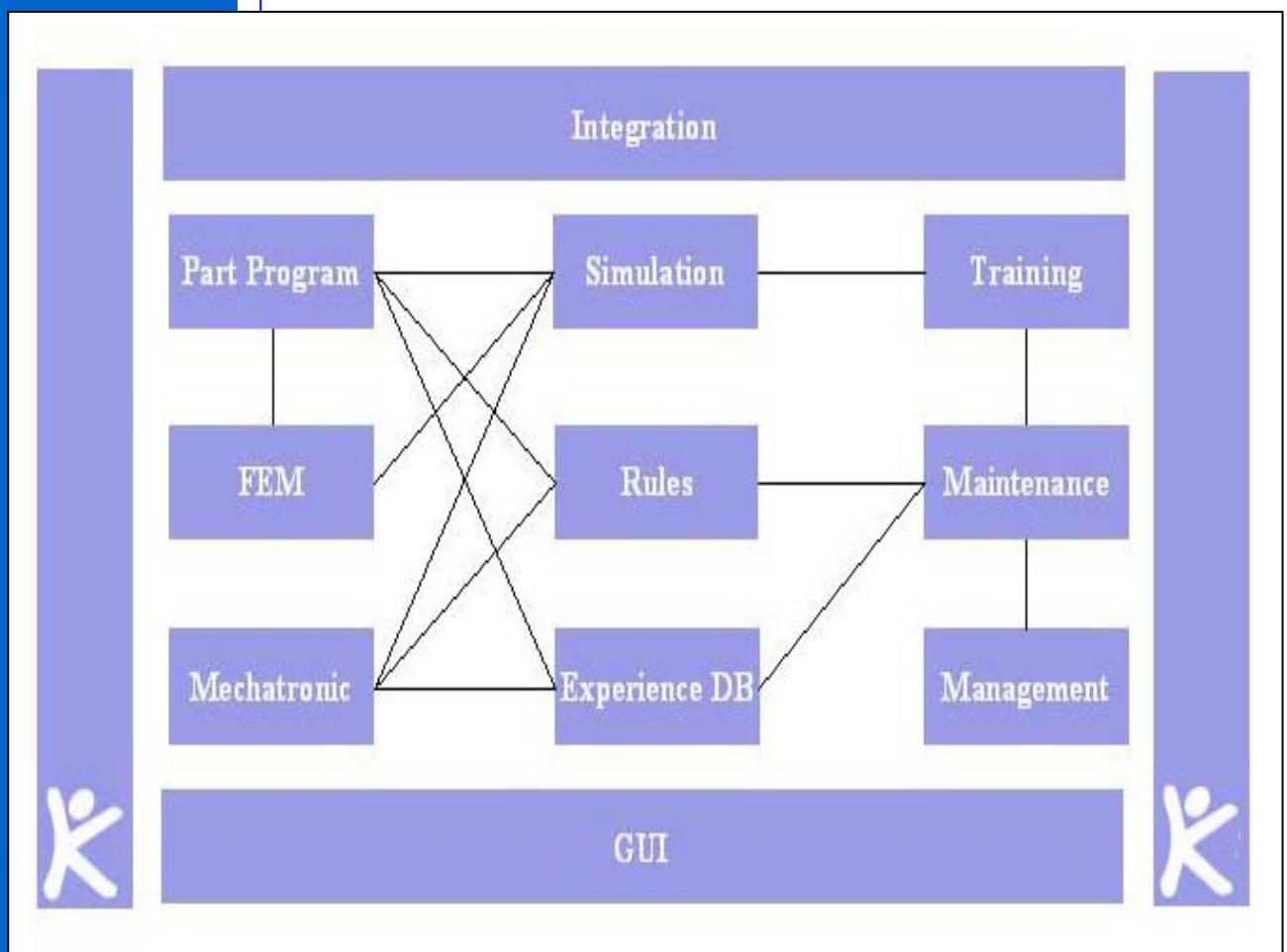
To efficiently meet this demand MCM has come up with Jet Five, a machining centre equipped with five axes and a very large working cube (X axis travel = 14 m, Y axis travel = 2 m).

JetFive is a newly conceived horizontal machining centre, with 5 axes and a very large work cube. JetFive is a machine with modern high-performance instruments whose potential must be exploited, to get the highest return on the investment made.

In order to boost machine usability, efficiency and effectiveness MCM has required the development of 4 specific solution to the KoBaS network. The following paragraphs provide short descriptions of the different pilots, the validation approach and the expected results during their validation.



Validation Approach and Kobas Pilots



The WorkPackage 4 is meant to validate all specific software components and functionalities, by both the HT-SMEs network

Orange boxes are related to components that will be involved in the complete solution for the specific

and the involvement of machine builders and SMEs end-users.

In order to achieve this goal the WP promotes the development of four demonstration cases related to different manufacturing sectors. KoBaS solutions, developed and customized for each demonstration case, will integrate different KoBaS components and black boxes.

The previous table presents the components involved in each demo-case. Red boxes indicate that one solution requests by the industrial partner indicated on the column, requires the KoBaS component indicated on the row.

industrial partner, but only as a support to other Components.

Validation will test different qualitative aspects of KoBaS solutions:

- Specific functionalities provided by each components
- Integration between KoBaS components and black boxes
- Integration with non KoBaS software related to the specific solution

The final goal is to demonstrate the capacity of the KoBaS network to deliver to SMEs' high quality, smooth integrated knowledge base services, supporting the use of complex manufacturing facilities.

	Azevedos	MCM	SCM	Urpemak
Experience DB				
FEM				
GUI				
Integration				
Maintenance	+Rulebase		+RuleBase	
Management				
Mechatronic		+ExperienceDB+Rulebase		
Part program		+Simulation+ ExperienceDB+ Rulebase		
RuleBase				
Simulation				
Training			+Simulation	+Simulation