



IDENTIFICAÇÃO DO PROJETO

O projeto TIPSS - Tools for Innovative Product-Service-Systems for Global Tool and Die Networks, procura dar resposta à globalização dos mercados e à emergência de novos modelos de negócio na indústria de Moldes e Ferramentas, através do desenvolvimento de ferramentas colaborativas que permitem a integração da informação entre fornecedor e cliente, bem como gerir todo o processo de conceção, desenvolvimento e industrialização de um produto e respetivos serviços de assistência técnica durante a produção.

Serão desenvolvidos, no decorrer do projeto, vários produtos – hardware e software – que terão impacto direto na relação cliente-fornecedor, bem como na gestão operacional e acompanhamento do status quo processual

O projeto teve início a 1 de julho de 2008 e termina a 1 de julho de 2011. Durante este período serão desenvolvidas as seguintes atividades:

Atividade Descritivo:

- WP1 Relação Fornecedor-Cliente
- WP 2 Sistema industrial Produto-Serviço (IPS)
- WP 3 Definição do interface de dados
- WP 4 Desenho da rede de empresas virtual
- WP 5 Modelos de negócio colaborativos para sistemas industriais Produto-Serviço
- WP 6 Demonstração e validação
- WP 7 Disseminação & exploração
- WP 8 Gestão do projeto

OBJETIVOS

As vantagens para empresas de processamento de polímeros:

- Prevenção de falhas,
- Garantia de conformidade,
- Monitorização do processo e da ferramenta em tempo real,
- Possibilidade de acompanhamento de diversos processos e/ou ferramentas em tempo real, em simultâneo e em pontos geográficos distintos

As vantagens para empresas de fabrico de ferramentas:

- Facilidade na comunicação com o cliente
- Prestação de novos serviços relacionados com a manutenção e reparação de ferramentas
- Monitorização das condições de utilização das ferramentas para fins de Gestão de Garantias e aconselhamento ao cliente
- Prestação de novos serviços relacionados com a otimização de ferramentas e processos
- Prestação de novos serviços a uma escala global

TIPSS

Tools for Innovative
Product-Service-Systems
for Global Tool
and Die Networks



The main focus of the European research and development project »TIPSS« is to describe the role of toolmakers changing from producers to both product-service providers and managers of global business networks

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TIPSS is co-financed within the 7th framework programme of the European Commission

The technological advantage developed within the project is based on the so-called “smart tools”.

We invite you to discuss our ideas and results with us and help us to optimally position the European tooling industry in today’s world of global competition and challenges.

Dear Reader,

Today’s turbulent economic environment confronts the European tooling industry with new challenges: an exclusive differentiation in price has not worked out for European toolmakers over the last years. Furthermore the initial situation for such a differentiation is not given in Europe. Labour and non-wage labour costs have been a major focus in the political debate on Europe as an investment and industrial location. While the debate means an agonizing concern and increasingly acrimonious public discussion about the future of Europe’s economy, social makeup, research, social welfare and international competitiveness, every single European company has to deal with these costs in its own way to remain yet competitive.

Foreign competitors, that are stunningly boosting their product quality, incite local companies to high performances. Nevertheless, the question how long the pricing pressure can be born remains unanswered.

TIPSS addresses the needs of this industry which has lost its competitive edge over the last years: the technological advantage developed within the project is based on the so-called “smart tools”. Combined with the benefit of new solutions for collaboration the impact of smart tools increases the European tooling industry’s role as a knowledge-based industry, since this industry is far away from being knowledge-based nowadays.

Ten dedicated partners from seven EU member states and Switzerland with complementary knowledge and expertise have joined forces to be the first movers in terms of innovating the European tooling industry. Following the Lisboa Strategy TIPSS aims at achieving economic growth and stability, job creation and entrepreneurship, creativity and innovativeness as well as the EU becoming a union of competitive countries as the most important factors of its implementation.

This brochure provides you with an overview of TIPSS. Besides, you learn about our main objectives and our ambitious solutions. We invite you to discuss our ideas and results with us and help us to optimally position the European tooling industry in today’s world of global competition and challenges.

Project overview

In a nutshell, the European tooling industry faces locally varying competitive arenas with a large number of heterogeneous stakeholders. Against this background today's situation of European toolmakers needs to be described both concerning its local and global performances:

Local performance

- There are no adequate interfaces and sporadic, undefined loops between the product development process of the customer and the tool development process of the toolmaker.
- Only few toolmakers offer product-services along with the product development process, hardly any offers product-services along with the production phase.

Global performance

- Established markets migrate eastwards, new markets emerge.
- European SME are locally-focused and have limited capacities, general conditions in the EU in terms of labour costs, legal requirements or interminable administrative processes narrow their abilities to be competitive.
- Many toolmakers think and manage their company conservatively – thinking of “fear”, lacking risk appetite and being inflexible: they do not see the chances of globalisation, not even in terms of sourcing and purchasing.
- Fearing the loss of know-how and not obtaining any knowledge on the abilities or the business conduct of (foreign) competitors cooperation is currently not the trend among toolmakers.
- Hardly any toolmaker pursues a proficient external presentation, nor does the entire branch as a whole. Established platforms and associations are barely taken advantage of.

In general, only a little number of European toolmakers uses global cost potentials, markets and flexibility to cope with this situation. Toolmakers mostly stick to their own value-adding chains. The strategies of forwards and backwards integration are not common practice in this peculiar industry. Without the integration of suppliers and partners into one's own value-adding (backwards) chains or integrating oneself into product design / development and production phases for the customer, a toolmaker becomes replaceable for the latter due to the following reasons:

1. Customers only focus on the acquisition price
2. Tool purchases are often managed only by monetary objectives
3. Massive over-capacities exist in European markets
4. New competitors from low labour cost countries rapidly gain both knowledge and abilities
5. Added-value of innovative and complex tools can barely be proven, advantages along with the tool life cycle can not yet be shown in advance

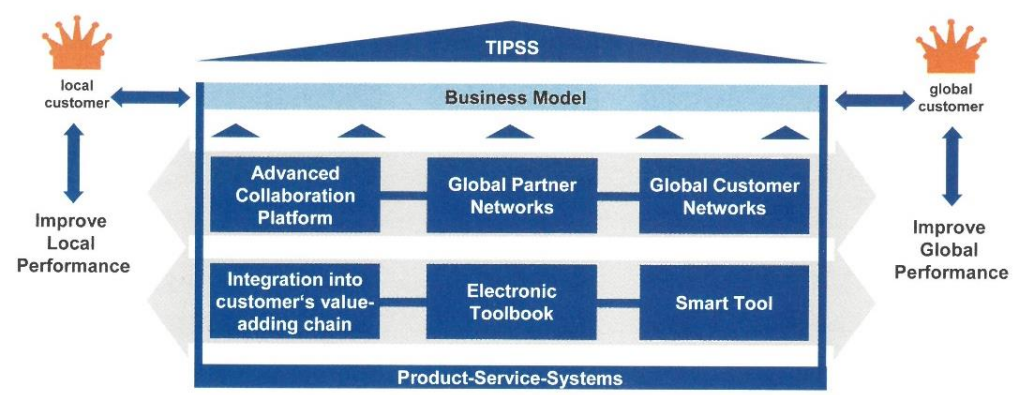
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... the toolmaker gets an "insight" into the tool and a broad knowledge of the actual condition of the latter can be gained.

Within TIPSS new business models with suitable methods and techniques are developed to optimally position the European tooling industry in today's world of global competition and challenges.

Therefore, to meet these challenges the main objective of TIPSS is to develop suitable tools to enable toolmakers to improve their local and global performance at internationally networked locations. These methods/ techniques and technologies are based on the so-called "smart tools" which represent injection moulds equipped with state-of-the-art sensor technology delivering real-time data from the production process. In doing so the toolmaker gets an "insight" view into the tool and a broad knowledge of the actual condition of the latter can be gained. A cost-effective and rapid creation of both knowledge and technology-based industrial services is made possible. TIPSS' mission can therefore be described as follows:



Process-integration and partnering helps toolmakers to meet customer expectations both in global and domestic markets. Within TIPSS new business models with suitable methods and techniques are developed to optimally position the European tooling industry in today's world of global competition and challenges.

Description of most important results

Mould jini

Mould jini is the electronic log book of the injection mould shown in figure 1. Referring to the equipment of the mould different data may be stored for nearly all sequences of injection and maintenance.

Mould jini will supervise and alarm all temperatures and pressures for years beginning with the commissioning. The actual values of each injection cycle will be stored in a data logger to be used for a statistic analysis. This enables the user to avoid damages and loss of production by early detection. Mould jini supervises even itself. A busy Led flashes during operation and indicates the state of readiness. This fails if Mould jini fails. Mould jini supervises the input of the cycle counter permanently. Each recognised cycle will increase two counters.



Figure 1: Mould jini

The non resettable counter sums the total of the cycles. A further one will be reset after maintenance. Independently of the cycle counter all measured values of the mould will be supervised and will set the alarms in question in case of deviation from the adjusted tolerances.

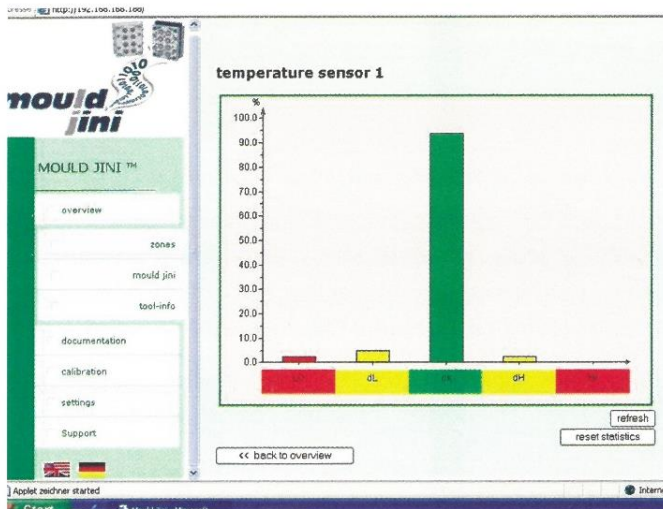


Figure 2: Mould jini via web browser

The actually measured and stored values can be read out from Mould jini via web browser, as shown in figure 2. Mould jini has to be configured via web browser as well.

An optional acceleration sensor can be connected to supervise the cycles. The tolerance of deviation may be set individually. Mould jini may be extended by a double line 16 sign display via interface RS232. 6 small LEDs indicate actual alarms and internal status of Mould jini.

... the project will develop a software component named **toolbook** that can be considered as an integrated set of cooperating services and methods intended to collect and show real time information from the production process ...

Electronic Toolbook Software

To fully benefit from the potentialities of state-of-the-art tools provided by **Feller (Mould jini)**, equipped with advanced sensor technology to gather real time process data directly from the mould, the project will develop a **software component** named **toolbook**. It can be considered as an integrated **set of cooperating services and methods intended to collect and show real time information from the production process**, where each mould is operating. Moreover, the toolbook will be able to **provide data interpretation functionalities and algorithms for optimised control and preventive maintenance planning**.

Real time data is the basic information TIPSS value added services will be based on. The latter will be effectively used in a wide range of business scenarios involving cooperating actors like toolmakers, partners, moulders and mould owners. These actors are positioned throughout the **mould (product & service) delivery life cycle**, ranging from mould qualification and maintenance instruction definition to remote process supervision & control and maintenance activity support.

Key Concepts:

- State-of-the-art smart tools
- Real time data collection from the mould in process
- Data interpretation for optimised control and preventive maintenance planning

Based on the order specification the toolmaker shall be able to decide which partner to activate in a certain service case to fulfil the customer demands.

Linking new innovative services to the core product and thereby creating so called hybrid products or product-service systems is one of the most promising ways to create more customer value and to gain a true competitive advantage.

Collaboration Platform

One of the relevant project results will be the **framework for ad-hoc cross-company and cross-country temporary collaboration of toolmakers and global partners** in (virtual) teams. Based on the order specification the toolmaker shall be able to decide which partner to activate in a certain service case to fulfil the customer demands.

Dynamic temporary organisations then can work together by **sharing skills, core competences and resources in order to better respond to specific business opportunities** and produce value-added services.

This will support and make sustainable the innovative business model based on the product & service paradigm.

IT support along with the collaboration life-cycle will be provided by an **internet-based platform** which the toolmaker will use to configure and manage the partner network by an order related selection of the appropriate collaborating companies.

Key Concepts:

- Dynamic & Temporary Nature
- Distribute business-process supervision
- Full Life-cycle support

Industrial Product Service Systems

The transition from product oriented business to service businesses is in full swing. As products get more and more exchangeable, companies have to find a way to differentiate themselves from their competitors. Linking new innovative services to the core product and thereby creating the so called hybrid products or product-service systems is one of the most promising ways to create more customer value and to gain a true competitive advantage.

Especially the tooling and die industry has not yet benefited from this “new manufacturing” that enables producers to profit from higher service profit margins, growth opportunities in mature markets and longer lasting customer relationships that often result in exclusive collaborations on a par that prevent purely price based competition.

Services have always been provided by many product organizations, whereas the key difference between the “old service model” and the “new” is the customer. While the old system just provided services to support the product, the new service model focuses on the customer and supports him and his processes.

Business Model

Going beyond the state-of-the-art in business modelling the TIPSS business model provides a chance for European toolmakers to sustainably improve their competitive position in the highly dynamic environment. Strategies to achieve a stable competitive position can be subdivided into cost leadership and differentiation. Both strategies correspond with one or both of these positions via its narrow market target. Criteria for differentiation with other companies can be:

- Time in terms of adherence to schedule and lead time reduction,
- Productivity over the life span of the tool,
- Reduction of complexity (e.g. through parts manufacturing)

as each allows a real differentiation and a price premium.

The main enabler for the TIPSS business model is the availability of life-cycle data from the production process. Such data makes transparent in which areas services can meet the customer's needs more precisely. State-of-the-art measurement technology developed by partners of the consortium helps to receive extended process data from an injection mould in operation. An intelligent data interpretation helps to determine which service shall be offered to which customer. These services go along with the physical product (speaking of the tool itself) and expand existing solutions concentrically as shown in figure 3.

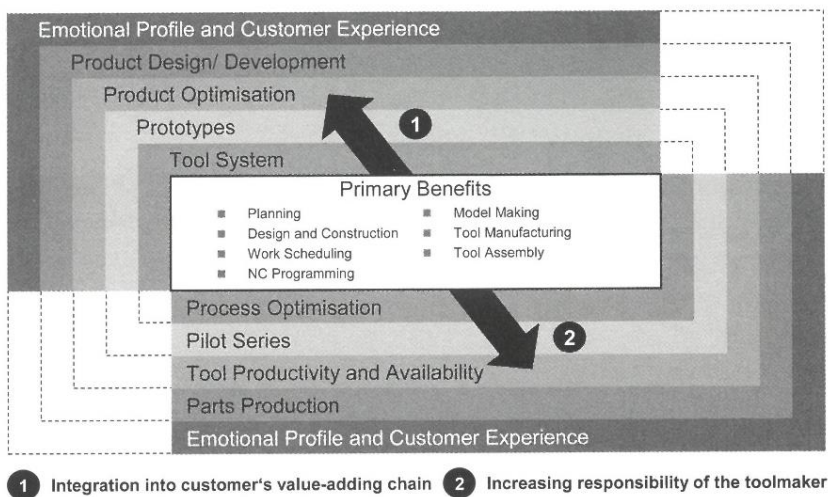


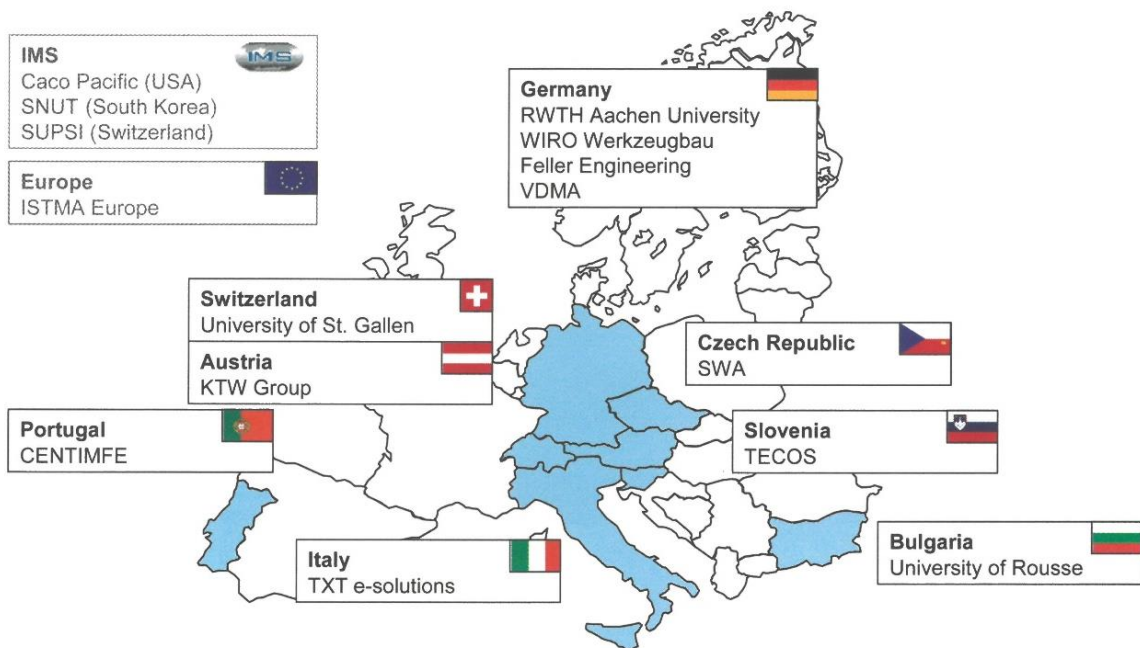
Figure 3: Extended product-services within the TIPSS Business Model

Companies have to focus on the development of hybrid products, which means the integration of products and product-services which go beyond established business models. On this basis a smart tool represents a practical application of the so-called service delivery model. It puts the toolmaker in the position to configure customised services he had not been able to render before: he becomes capable of monitoring the process and of installing a preventive maintenance; forecasts for proper service intervals can thereby be made and be scheduled to non-production times. The operational availability of both the tool and machine can be increased. At the same time the toolmaker is now able to integrate the knowledge gained into new product development processes – fulfilling his role as an enabler for a knowledge-based and highly productive European industry.

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Project Consortium

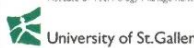


For more information please go to the project website www.tipss-fp7.eu or send us an email to info@tipss-fp7.eu.



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www.wiro.com



Feller Engineering GmbH

www.fellereng.de



TXT e-Solutions SpA

www.txtgroup.com



Tecos, Slovenian Tool and Die Development Centre

www.tecos.si



Centimfe, Centro Tecnológico da indústria des Moldes, Ferramentas Especiais e Plásticos

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