Growth Programme – Key Action 1 – TRA 1.5

"Product-Services of the Future"

The "Product and Service of the future" in a sustainable society

The latter part of the 20th Century saw a shift in employment trends from agriculture to industry. We are now witnessing a move to a more service-oriented workforce. In fact, today in Europe over 80% of workers are employed in the service industry (health, education, retail, travel and tourism, entertainment, etc). This global trend is creating fast-growing and dynamic markets as well as a new perception of industrial products. In future, relations between products and services and the added value they will bring via improving knowledge content and service support will play a key role in the consolidation of a sustainable society.

Knowledge, intelligence and other high functional value can be added to all phases in the "design-production-service-end of life" chain of industrial products. For example, the products involved should be designed such that they can be upgraded during their life time to support the service provision. The product might integrate microsystems, which should be capable of providing innovative customised solutions for social and environmental problems and could be resource saving.

The product service systems could be customised, user friendly and incorporate intelligence and information gathering and processing. Below are depicted some aspects that are specific for the two components of a product-service system.

Aspects of Product-Service Systems

♦ *Product Parts*	♦ *Service Parts*
• Increased Functionality • Ergonomy • Upgradeability • Embedded Intelligence, etc.	• Serving the customer • Resource saving and optimised life-cycle • Organisation, Logistics, etc.

"Product-Service Systems" are a combination of products and services needed to jointly fulfil (future) customer needs.

Integrated "Miniaturised Systems" are providing higher added value to products.

"Product-Service Systems" fulfil functions and provide services to end users without necessarily transferring the ownership of the product to them.

The TRA "Product-Services of the Future": an EU RTD approach

The TRA "product-services" aims to support the shift of technology-driven production towards customised solutions to consumer needs. It focuses on improved relations between products and services and on the added value that future products will bring via improving knowledge content and service support.

European society needs novel approaches that underpin this evolution, targeting research for

- Innovative product-service systems and
- Miniaturised and intelligent products.

To achieve this, RTD actions should be carried out at a global level, considering social factors, the environment, processes, technologies and organisation in a holistic manner. Novel RTD approaches could also address methods to codify end-user knowledge and measure value, performance and life-cycle impact of industrial product-service systems. This research might be accompanied by specific socio-economic and benchmarking studies.

RTD activities on Product-Services of the future can be pivotal in enabling industrial innovation.

The research activities should be derived from a complete product-service system.

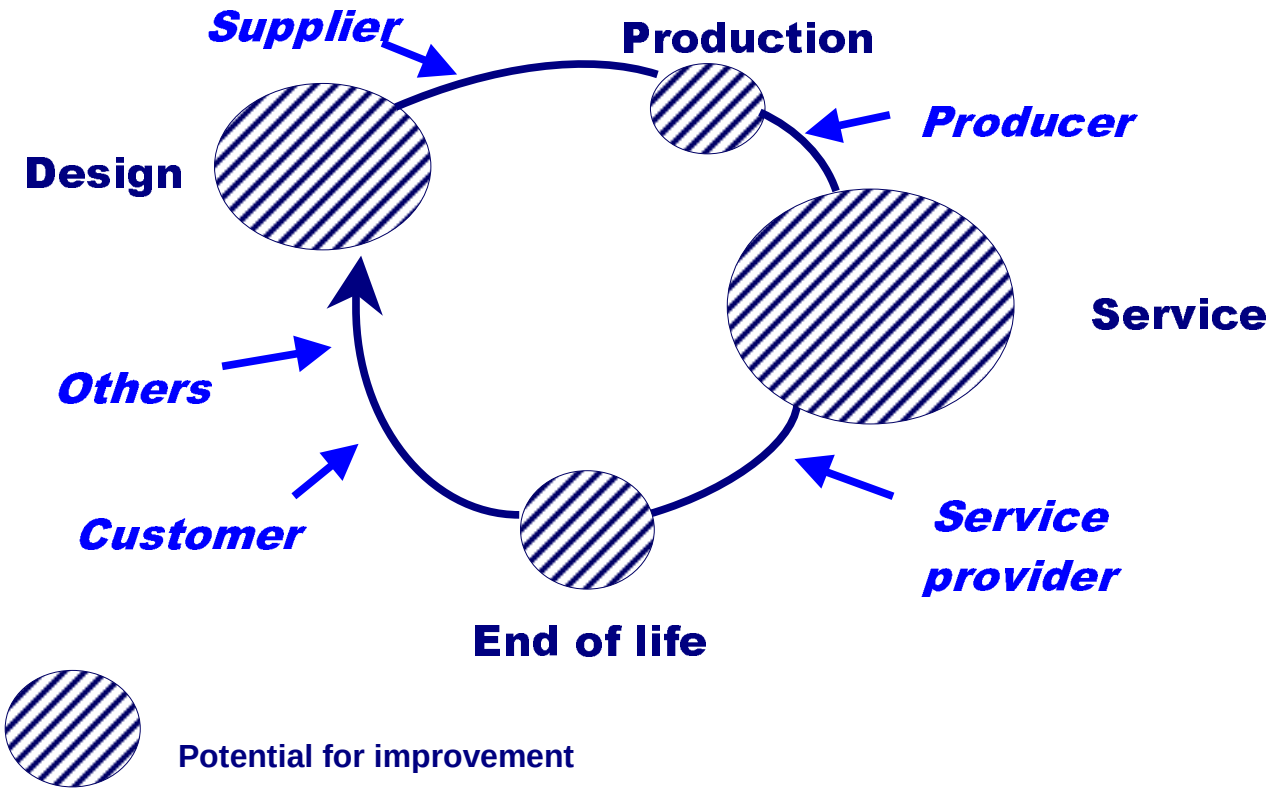
Research underpinning the development of future "Product-Service Systems" should address all important life cycle aspects.

Medium to long-term RTD activities are sought, which should focus on multi-disciplinary, system oriented and strategic research approaches.

The research activities encompass the modalities RTD and Demonstration projects. Networking and replication training activities are also targeted.

Large projects that function as an umbrella for smaller projects are encouraged. These should integrate various disciplines, key players from different industrial sectors and the above-mentioned modalities.

Sustainable Competitiveness ……
Need for System and Life Cycle Approaches



RTD should support activities throughout the extended value chain from basic components to end-use products and services. This chain will probably consist of more than one company. RTD for product-service systems could therefore take into consideration the role of the networked interdependencies between firms, organisations and institutions (i.e. outsourcing or networking).

The Research Areas

- The concept of a "Product-Service system" requires new RTD developments for the integration of products, services, knowledge, logistics and networking. Activities to be supported to the design of product-services for the future, should cover and integrate in particular the following research areas, which are detailed in the Growth Work Programme 2001:

  1.1.1 Integrated product-service design
  1.1.3 Safe and reliable extended life of products and industrial systems
  1.2.1 Design of products and production-service systems
  1.2.3 Monitoring and optimal use of industrial systems
  1.4.1 New methods of organisation, work and human capital improvement
  1.4.3 Knowledge, learning and management

New forms of organisations (companies as flexible networks) and new relationships between producers and users are emerging together with the rise of the new economy and also addressed by the TRA 1.7 "Extended Enterprise".

- RTD for miniaturisated and intelligent systems as well as integration of microsystems could address design for maintenance, precision engineering, life cycle enhancement and assessment. Such research activities could lead to optimisation of product material content, enhanced product functionality, improvement of the capability to evolve and increased life expectancy. Another aspect of these products could be the ability to continuously evolve by allowing the incorporation and later upgrading of technological advances, so that the level of "utility" for customers compared to totally new products is maintained (i.e. need for adaptability, modularity, consumer interface, upgradeability, etc.). Activities to be supported relating to the miniaturised part of product-services for the future should cover and integrate in particular the following research areas, which are detailed in the Growth Work Programme 2001:

  1.1.2 Advanced production and construction technologies
  1.2.2 Intelligent manufacturing and processing
  1.3.1 Eco-efficient design of products and processes
  1.4.2 Adaptation of enterprises and human oriented production

  This research activity within the GROWTH programme will be co-ordinated with action line "Microsystems" of the IST programme.

- To support the added value and resource optimisation aspects, complementary materials research activities (area 5 of the workprogramme) may be part of the proposal (*), in particular on cross-cutting technologies (e.g. material design), on new functional materials (e.g. "smart", multifunctional, packaging materials), or on more added value, safer and "intelligent" structural materials.

(*) This is however only true if these activities are embedded in a Product-Service System research proposal.

Reminder

The call for proposals for the TRA "Product-Services of the Future" is open from December 2000 until 15 May 2001.

Proposers should realise that this TRA is a topic within the KA1 "Products, processes, organisations". They should thus contribute to solving clear user problems through medium to long term technological research and they should keep in mind the KA1 objectives:

- ***Contribution to modernisation of industry*** and adaptation to change, through the combined effects of improved industrial capability and innovation capacity, while introducing more flexibility to respond in real time to customer needs. Medium to long term research should stimulate cross-sectoral exchanges and the participation of SMEs, as well as addressing the maintenance and creation of employment in European industry.

- ***Substantial improvement of overall quality*** within the value chain and consequently reducing "inefficiencies" and life-cycle product costs is a key factor. Quality is intrinsically linked to customer-value and timely satisfaction of customer needs at the lowest costs.

- To ***minimise resource consumption*** (e.g. materials, energy, water) to reduce substantially the overall life cycle impact of Product-Service provision and use.

Proposals should refer to high quality long-term technology or methodology research, supporting optimised interactions between the components of Product-Service systems or supporting miniaturised and intelligent systems.

Potential applications and expected impact of proposals

As stated above, the outcome of RTD activities of this TRA should contribute effectively to sustainable growth, reducing negative environmental impact, increasing added-value to customers by higher quality, customisation, services, comfort, better performance and cost reduction.

Proposals could have potential in virtually all sectors ranging from consumer products, packaging, medical instruments, housing, transport logistics of industrial

goods, IST related products, safety monitoring, to numerous other applications within more traditional sectors.

It is also expected that results from RTD activities would in the *medium to long term* stimulate effective development of new Product-Services and related processes. One may expect that results of Product-Services RTD would lead to a changed production/consumption pattern contributing to *long-term* changes in society, economy and manufacturing systems, making them more sustainable.

These product-service systems and miniaturised components are expected to lead to innovation and diversification of new business opportunities, in particular for SMEs, generating new jobs and encouraging the development of new emerging types of work requiring appropriate skills.

Results from RTD actions would have an impact on EU policies (in particular environment, consumer protection, employment, etc) and could represent an effective decision support tool for policy makers and citizens.

Summary

Through the Framework Programme, European activities stimulate and support international co-operation between academia, research organisations and industries for the development of "*tomorrow's society*". With the inclusion of the TRA "*Product - Services of the future"* in this call, the Community research action is directed towards long term changes in the production and consumer patterns and towards making the transition to the new economy based on knowledge and innovation. At the same time, the research action aims at modernisation of European industry, the preservation of employment, protection of the environment and the improvement in safety, health and living conditions. Furthermore, co-ordination and networking activities support the achievement of strategic common objectives and contribute to the strengthening of a true European Research Area.

Proposals should demonstrate scientific and technical excellence, innovative character and a sound European dimension. They should ensure wide socio-economic impact at EU level and demonstrate the necessary critical mass. Clusters and large integrating proposals around a strategic issue are encouraged.

Proposers should use the pre-proposal check whenever appropriate in order to verify the eligibility of their proposal.

For further information consult:

GROWTH help-line: growth@cec.eu.int
CORDIS: www.cordis.lu/growth/home.html