



EUROPEAN
COMMISSION

Community Research

Background note

Manufuture Strategic Research Agenda: a master plan to secure the EU's global competitiveness

The third Manufuture Conference – taking place in Derby, UK, on 6-7 December 2005 – continues a process aiming to unite all stakeholders in ensuring a competitive future for European manufacturing industry. A Manufuture Technology Platform was launched at the 2004 conference in Enschede, the Netherlands, which also saw the publication of a vision document recommending the development of a Strategic Research Agenda (SRA) that would propose framework conditions for the transformation from a resource-based to a knowledge-based sector. With the help of a specially convened Support Group, the SRA has now been drafted, and will form the basis for on-going consultation in the run-up to the launch of the Seventh RTD Framework programme.

The economic importance of sustaining a strong manufacturing base in Europe is indicated by the fact that it provides jobs for around 27 million people, and produces an added value exceeding €1 300 billion from 230 000 enterprises with 20 and more employees (2001). Some 70% of this total derives from six main areas – automotive engineering, electrical and optical equipment, foodstuffs, chemicals, basic and fabricated metal products, and mechanical engineering.

Although European manufacturing has huge potential for generating wealth, jobs and a better quality of life, it faces intense and growing competitive pressure on two fronts. In the high-tech sector, especially, other developed economies pose the greatest threat. On the other hand, manufacturing in more traditional sectors is increasingly migrating to low-wage countries such as China and India. And these, too, are rapidly modernising their production methods and enhancing their technological capabilities.

Apart from its economic significance, manufacturing is also indispensable as a stimulus to research and innovation. If there is no local industry to capitalise on new discoveries and develop them into marketable products and processes, European knowledge creation will inevitably decline.

Retention of a strong manufacturing sector is thus vital to the realisation of the Lisbon Council goal of making the EU the world's strongest knowledge-based economy, while continuing to meet the Community's social and environmental aspirations.

Giving substance to the vision

Manufuture – a Vision for 2020, the document launched at the *Manufuture* 2004 conference, recommended the preparation of a more detailed Strategic Research Agenda, paving the way for the definition of research priorities to be implemented via the EU's future RTD Framework Programmes, in coordination with initiatives at Member State, regional and individual stakeholder levels.

The Support Group charged with this task comprises a distinguished group of industrialists and academics from across Europe. As well as drawing on contributions from the *Manufuture* High Level Group established in 2003, its proposed solutions and research priorities are anchored in a number of recent strategic foresight studies, reports and workshops. Among the most significant are *MANVIS* (Manufacturing Visions - Integrating Diverse perspectives into Pan-European Foresight) and *FuTMan* (Future of manufacturing in Europe 2015-2020 – the challenge for sustainable development).

The findings, collated with the help of Commission staff, outline an ambitious plan inviting European organisations to invest in a set of targeted research, innovation and education activities that could transform the competitive basis of producing and delivering the products and services society desires and expects.

Rather than specifying a specific work programme, the SRA envisages a structure within which medium- to long-term strategic measures can be undertaken with synergistic effect in aiding the transition of European industry towards a new knowledge-based manufacturing system.

From cost-competition to added value

A number of 'vertical' action plans and Technology Platforms have already been established, or are in the course of preparation, to tackle this issue in various technology- or sector-specific contexts. *Manufuture* goes a step further by addressing underlying 'horizontal' approaches applicable across a broad spectrum of industries.

The initiative advocates a response based on strengthening Europe's ability to compete in terms of added value, since purely cost-based competition is not compatible with the goal of maintaining the Community's social and sustainability standards.

In the SRA, priorities for maximising added value are distilled into a reference model linking the principal drivers of change with a series of 'pillars' of activity spanning the short- to long-term timeframe.

The drivers are identified as:

- ?? competition, especially from emerging economies;
- ?? the shortening life cycle of enabling technologies;

?? environmental and sustainability issues;
?? socio-economic environment;
?? regulatory climate; and,
?? values and public acceptance'
??

The competitive and sustainable reaction to these challenges is seen in terms of five pillars and their associated enabling technologies:

?? new, added-value products and services
?? new business models
?? new advanced industrial engineering
?? new emerging manufacturing science and technologies
?? transformation of existing R&D and education infrastructure to support world-class manufacturing

Synergy in collective research

Because collective research will have a central part to play in realising the transformation, it will be essential to involve the largest possible number of stakeholders.

The existing and proposed Technology Platforms, whether applied at EU or national/regional level, therefore represent an extremely important conduit for sharing the *Manufuture* concepts and results.

Another stakeholder group of outstanding importance is the innovative SMEs and other independent enterprises, which figure largely in the structure of all manufacturing sectors. Their participation in the integration activities of engineering platforms will engage them in partnerships across Europe, reinforcing the ability of the manufacturing infrastructure to achieve rapid, reliable progress from research results towards marketable products.

Transformation of industry

Traditionally, European products are associated with high quality, appealing design and cutting-edge technology. The effectiveness of the *Manufuture* research agenda in transforming industry will depend upon manufacturers' readiness to leverage these strengths, while adapting continuously to change in an open, fast-moving global industrial environment

A fundamental concept of the *Manufuture* vision is that of 'innovating production', which embraces new business models, new modes of industrial 'manufacturing engineering' and an ability to profit from ground-breaking manufacturing sciences and technologies.

Even the factories in which these new forms of production take place are regarded as complex, long-lived products, operating with the latest technologies and adapting continuously to take account of customers' and market requirements. The 'virtual factory' of the future will manufacture in adaptable networks linking OEMs with value-chain partners (often SMEs) and suppliers of factory equipment/services selected according to needs at a given time. Its composition will not be limited by the

presumption of physical co-location, nor by a need to maintain rigid long-term relationships.

In such a dynamic environment, entrepreneurial spirit will be a vital commodity. This has to be fostered by RTD and educational infrastructures that promote the exchange of ideas, the mobility of researchers, the shift towards multidisciplinary and the lifelong learning that will be essential to tomorrow's 'knowledge workers'.

Favourable climate essential

Reaching these objectives, the SRA concludes, will depend on the implantation of supportive fiscal and legislative frameworks at EU, national and regional level. Given the realisation of such favourable boundary conditions, a consensus of support for the *Manufuture* vision will lead naturally to the creation of a European Manufacturing Innovation and Research Area (EMIRA) as an integral part of the European Research Area. It will promote the interests of European manufacturing industry, take account of regional and national needs, and recognise Europe's wider role in the global RTDI network.