Jobs of the future

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Foreword by William D. Green
Chief Executive Officer, Accenture

At Accenture, we collaborate with clients in numerous industries and markets around the world to help them become high performance businesses and governments. To do this, we have been defining what makes a great organization consistently perform above others in its industry. Interestingly, our findings about what it takes to achieve and sustain high performance are also relevant in considering the competitiveness of industries and market segments. With that in mind, we set out to look at the challenges facing the European Union and its member economies in driving growth.

Growth in Europe is clearly of importance to our clients in the region as well as the global economy and our own business. At a time of slow growth and relatively high unemployment, the need for both business and government to focus on achieving dynamic and sustainable growth is greater than ever. As such, this study provides a timely view of some of the catalysts for growth and job creation in European Union economies.

The study highlights the critical role that investment in human capital plays in enabling a more productive and competitive workforce. We know through our research and work with clients that there is a direct link between human performance and business performance. Raising skill levels and enabling employees to operate in a knowledge-based environment is essential given the need to develop the European Union's capacity to commercialize innovation and make full use of new technology.

I have always maintained the view that the company with the best people wins. That means ensuring that employees have the right capabilities, as well as the energy and motivation to do extraordinary things. Organizations that excel in developing their people tend to be high performers and lead their markets. This holds true for countries and economies alike. A focused effort on the people who lie at the heart of every organization will help Europe unleash the potential of its workforce.

This study moves beyond analysis and proposes an action plan for reform. While this kind of structural and cultural change is rarely comfortable, the workforces and citizens of Europe hold the key. Stakeholders need to be fully engaged in the process of change, underpinned by strong communications from European business leaders and policymakers. The approach we suggest is not a silver bullet, but it does offer a framework through which Europe can lead itself to achieve real, sustainable growth and high performance.

William D. Green

Foreword by Paul Hofheinz
President, The Lisbon Council

It is often overlooked, but Europe is about jobs.

Fifty-five years ago, Robert Schuman called for a coal and steel community to be erected on the rubble of a war-torn European economy. Today, the trade bloc Mr. Schuman founded has expanded to include 25 countries, boasting an annual gross domestic product of €10.2 trillion (US$12 trillion). It also supports 194 million people in work – the vast majority of whom have attained a level of stable, middle-class living which their grandparents would have been hard pressed to imagine.

But that union finds itself in deep crisis today. The economy has slowed, causing public finances to deteriorate and driving unemployment up to levels not seen in some countries since the 1930s. The mood has turned sour, as well. Last Spring, more than 20 million Europeans voted against a European constitution in two founding member states.

We believe the solution is to re-focus on the values that made Europe great in the first place. We must learn to see the future not as a dangerous development that threatens our way of life, but as a challenge no less great than the ones our forefathers overcame. We must view the 21st century as a chance to re-launch the economic idea that gave Europe lasting peace and unprecedented prosperity: the social-market economy, and the value-driven social model it sustains.

Last year, we set out with Accenture to look more deeply at the process of economic modernization. We were concerned that too many people see modern economic life as a game Europe stands no chance of winning. Rather than embracing competition, some want to close our borders to trade, to pass laws that would block companies from restructuring, to ban even fellow member states from doing business freely within the European Union. Rather than focusing on building a modern, knowledge-based economy, some want to freeze Europe in a state of 20th century economic reality while the rest of the world is busy preparing for the 21st.

To be sure, the future will not be an easy one. But, as this report shows, Europe has everything it needs to compete. The important thing is that we embrace the challenge, and take the necessary steps to keep our economy at the forefront of modern developments. At the end of the day, the European Union is still about jobs. And, with the right set of policies, we can create a lot of them – not artificial jobs sustained from the public budget, but good jobs at the high-end of the global value-added chain. The future is ours for the making.

Paul Hofheinz

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Executive Summary

Urgent action is required if Europe is to reverse the recent trend of poor economic and employment growth.

Europe's failure on this front has not been for want of effort; however this effort has been misdirected. Too much emphasis has been placed on Europe's existing structural problems rather than looking at the potential for growth in critical industry sectors. This report aims to fill that gap.

Our analysis highlights some key industry sectors where employment can be increased in a sustainable way and shows that Europe has the potential to create 10-14 million new jobs over the next five years, as long as it puts in place the right conditions for growth.

Achieving this growth is about creating the right policy environment in which high performance businesses can flourish.

For policymakers, the key action points are as follows:

- Introduce a tiered regulatory environment for high-growth companies that differentiates between stages of their development.
- Implement industry-specific strategies around which all stakeholders are aligned.
- Improve the provision of relevant training and education to address the shortage of necessary skills.
- Channel support and frame suitable incentives to develop key 'innovational clusters' and maximize their impact on the wider economy.
- Strengthen the wider networks among business, government and academia to increase the commercialization of research.

For business, the key action points are as follows:

- Focus on identifying distinctive capabilities, in particular the specialization or mastery of key technologies.
- Develop 'talent multiplier systems' (i.e., systems that identify, develop and retain talent) to optimize use of human capital.
- Develop a culture of innovation and commercialization that motivates employees and acts as a catalyst to growth.
- Align around sectoral strategies with the wider network of stakeholders.
- Increase density of industrial linkages to generate more positive growth in the wider economy.

1

Europe's Employment Challenge

Europe has an unparalled opportunity to generate millions of extra jobs in emerging industries and growth sectors over the next decade. Without urgent action it risks missing this opportunity.

The challenge for the European Union and its member states is to create more jobs while continuing to improve incomes and living standards. Significant attention has already been paid to the structural performance of Europe's labor markets – in proposals for reform of tax-benefit systems, better labor market flexibility and lower employment costs, for example – as well as measures to improve the overall competitiveness of European Union economies. These measures are important, but form only part of the response needed to meet Europe's employment challenge. In particular, the question of where future job growth will come from has largely been overlooked.

This study, prepared jointly by Accenture and the Lisbon Council, aims to bridge this gap by identifying a range of potential growth sectors that, under the right conditions, could yield significant employment growth in Europe. The growth sectors we have identified are drawn from the full breadth of European industry, from transport to pharmaceuticals and from health care to defence.

How many more jobs could Europe create?

Reliable projections of employment growth are notoriously difficult to make. However, our analysis suggests that when looked at from each of three different perspectives, Europe has the potential to create between 10 and 14 million jobs over the next five years. This analysis may be broken down as follows:

The potential for targeted industrial growth

If Europe could manage just a three percent annual growth rate over the next five years in the 15 industries of the future identified in this report, it could add an extra 11 million jobs to the European Union economy. This would represent a 6 percent increase in total European employment and would raise the EU employment rate to around 66 percent from its current level of 63 percent.

The potential for faster and more efficient economic growth

In comparison with the United States, economic growth in Europe has contributed far less to employment growth. For every one percent increase in EU25[1] gross domestic product there is a 0.29 percent increase in employment, compared with an

equivalent figure for the United States of 0.41 percent. This lower employment intensity reflects to a large degree the impact of structural rigidities in Europe's labor markets (comparatively limited flexibility and higher labor costs), as well as social models that tend to favor social equity over efficiency. In addition, Europe's employment performance is constrained by lower long-term economic growth rates than the United States – 2.1 percent per annum against 3.09 percent per annum over the period 1990-2005. If the EU25 could implement sufficient structural reform to achieve the same employment intensity as the United States over the next five years, then even on its lower forecast growth an extra 9 million jobs would be generated. If the EU25 could complement such structural policies with focused growth policies and thereby raise its economic growth rates to match the United States, an extra 13 million jobs could be created.

The capacity for small business growth

Compared with the United States and Japan, the distribution of employment in the European Union is skewed towards small- to medium-sized enterprises (SMEs) and especially micro enterprises i.e. those with less than three employees. If only 5 percent of EU25 micro enterprises could grow into the next category of small enterprises (those with an average of 19 employees), the result would be an additional 14 million jobs in Europe. If 50 percent of Europe's SMEs (i.e., micro, small and medium-sized enterprises) could employ one extra person there would be an additional 10 million jobs.

Figure 1: Three views of Europe's future employment potential[2]

Analysis	Assumption	Job Creation EU25
1. High-growth industries	Net 3 percent per annum growth over 5 years in 15 high-growth industries identified later in this report	c. 11 million jobs
2. Employment/economic growth dynamics		
a. Baseline	Current European Union employment intensity of gross domestic product (GDP) growth and forecast EU growth rates over next 5 years	c. 7 million jobs
b. Structural reform only	European Union achieves United States employment intensity of GDP growth but only meets EU forecast growth rates (over 5 years)	c. 9 million jobs
c. Structural reform and focused growth policies	EU achieves both United States employment intensity of GDP growth and GDP growth rates over next 5 years	c. 13 million jobs
3. Growth of Small-to Medium-Sized Enterprises		
a. Foster high-potential micro enterprises	5 percent of EU's micro enterprises (those with less than 3 employees) grow into small enterprises (those with an average of 19 employees)	c. 14 million jobs
b. Grow SME sector generally	Half of EU's 19.27 million SMEs create one extra job	c. 10 million jobs

How can Europe realise this potential?

Such an outcome can only come from stronger policy focus and better alignment between governments, business, employees and other stakeholders to create the conditions for growth. This study aims to provoke discussion on these issues by highlighting the key trends shaping European markets (section 2 – "Unlocking the future") and illustrating the industries and market segments where these forces are creating new growth and efficiency potential (section 3 – "What will the new jobs be?").

Having identified these industries, the next step is to define likely catalysts for growth within them. In the past Europe's reform efforts have sometimes operated on too many fronts at once. This study highlights the most important things to get right for the European Union and individual member states to have a fighting chance of exploiting growth in emerging industries of the future (section 4 – "Creating the framework").

This leads to the challenge of how to make all of this happen at member-state level given the political dynamics and constraints existing across the EU. To this end the study highlights some key requirements for successful transformational change in the European Union, as well as attendant issues such as the geographical dimension to future innovation and growth in Europe, the implications for social protection systems and the division of responsibilities for driving such an agenda within the EU, at national and local levels (section 5 – "Making it happen").

2

Unlocking the Future

What kind of world will Europe have to compete in over the coming decades? We cannot know for certain, but already a series of forces are gathering momentum to transform global macroeconomics, technology, production, consumer markets and demography.

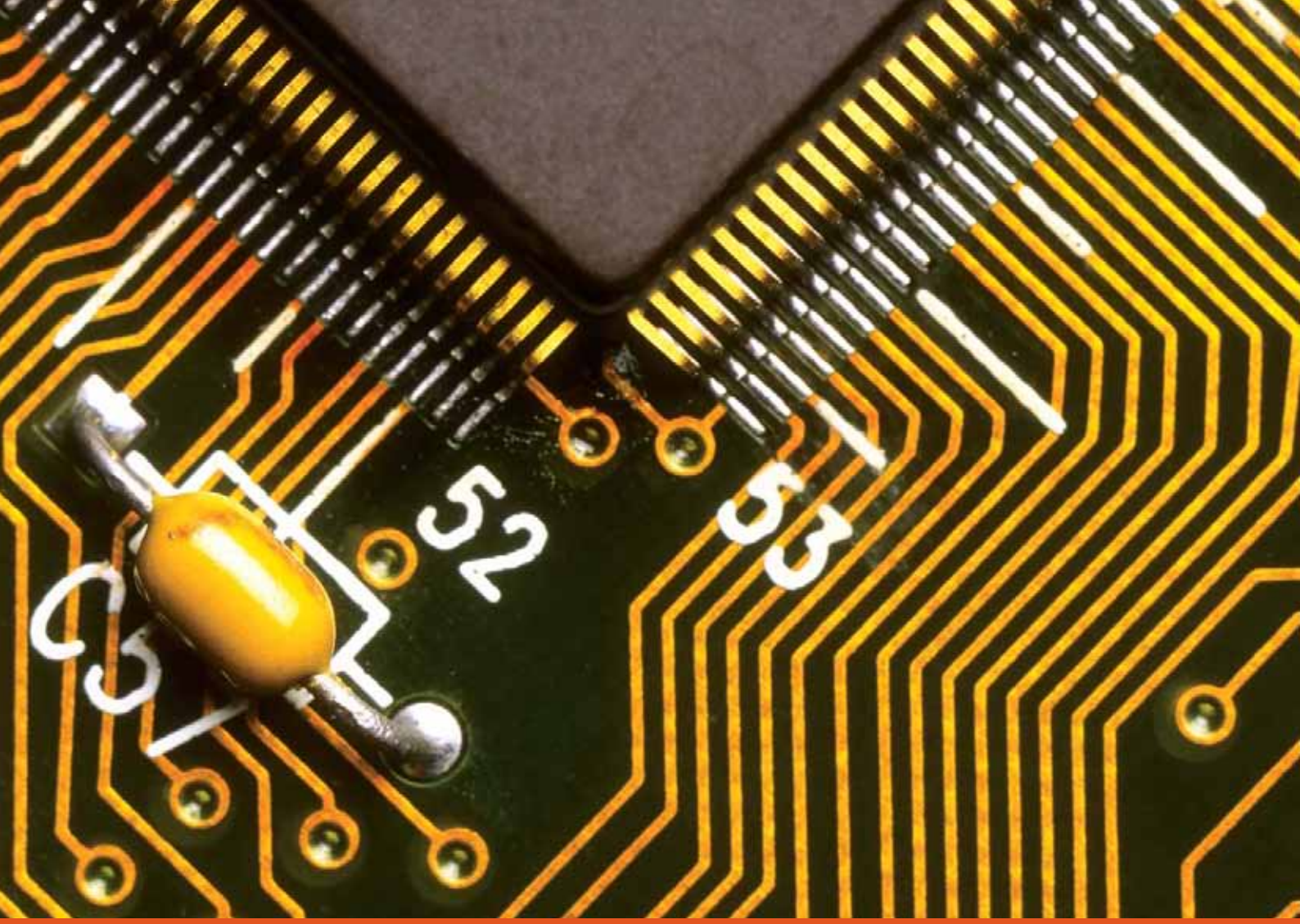
Where will Europe stand in the world?

The new macroeconomics:

- The global economic map is being redrawn: while the global economy is expected to see sustained growth of three percent per annum over the next decade, the balance of economic power is tilting inexorably toward Asia, led by the emerging giants of China and India, which are set to top the world growth league with rates of 6.23 percent and 5.07 percent per annum respectively up to 2012.[3] China is set to overtake Germany and the United States as the world's largest exporter by 2012, when it will also become the second largest importer.[4] China is also becoming an important centre for research and development (R&D) and innovation, and Chinese companies are increasingly looking to become global operators via acquisition of global brands, assets and know-how. The rise of China and India alongside other emerging markets clearly offers immense opportunities for new market development, while giving international business new possibilities for flexible sourcing of skills, products and services.

- New investment patterns are emerging: while foreign direct investment (FDI) flows have resumed their upward climb after a sharp decline in recent years, the destination and nature of FDI are dramatically altering. Greater inflows to emerging markets are being seen with a marked shift toward services investment. In 2003 China surpassed the United States for the first time as the world's foremost recipient of FDI. Services now account for 75 percent of FDI inflows into the OECD area, up from around 50 percent in 1990. The distribution of FDI in the services sector is also shifting, from traditional services such as trade and finance to business services (up from 3.5 percent of services investment in 1990 to 31.7 percent in 2002).[5]

- Globalization is producing a new regionalization of trade: spurred by liberalization of markets and new technology, globalization continues to link the world's economies ever more closely through trade, investment, and factor mobility. A marked feature is the growing internationalization of labor as new technologies allow skills, knowledge and services to be transferred seamlessly across international boundaries. Alongside globalization though is a parallel trend toward regionalization of trade and investment through regional agreements – by 2012 the European Union is expected to have extended its web of free trade agreements to economies in Latin America and



North Africa. Likewise trade blocs such as the Association of South East Asian Nations (ASEAN) are extending their reach, with ASEAN looking to form trade agreements with South Korea, Japan and China. Businesses in Europe will need to be alert and nimble enough to respond to the shifting patterns of trade and investment likely to result from these parallel developments of globalization and regionalization.

Power of new technologies:

- Information and communication technologies (ICT) continually evolve: ICT transforms patterns of production and consumption, delivery of public services, and the nature of work. The integration of ICT within business is facilitating developments such as integrated supply chains, strategic sourcing and partnerships and alliances with a much wider web of organizations than was previously possible. The application of ICT also has significant potential to expand choice, access and service delivery in the public sector – for example, in areas such as e-government and e-health. The transition to a knowledge-based economy continues to fuel demand for workers with deeper cognitive skills, and makes education and training a lifelong process rather than a discrete one-off activity.[6]

- Emerging technologies are improving quality of life: biotechnologies have the potential to produce dramatic improvements in areas such as life expectancy, food production, control of pollution, treatment of disease, crime and security. Advances in smart materials, agile manufacturing, and nanotechnology will change the way products are produced and used – products that adapt to different environments, such as clothing and vehicles that respond to different weather conditions; and smart products that know their location in the supply chain and that signal when they need to be restocked or replaced. All of these developments will have substantial effects on manufacturing, logistics and personal lifestyles.[7]

New forms of production and organization:

- Corporations are becoming more decentralized: as vertically-integrated business structures begin to break up, the boundaries of the corporation are becoming far more blurred, with non-core functions performed through a network of alliances and partner organizations. Changes in technology are also facilitating a greater geographic dispersal of business functions, increasingly in service activities.

The new markets:

- Deregulation is advancing: the general trend toward product market deregulation – via removal of price controls and direct government control over firms, for example – is likely to continue within developed economies. At the European Union level there has been significant liberalization of markets such as air transport and telecommunications, with continuing efforts to speed up liberalization

of network industries and financial services. The proposed Services Directive – which would create an internal market in services provision to mirror the free market for goods – remains stalled but could be re-activated given sufficient political will. At the global level, progress toward a successful conclusion to the Doha trade talks in Hong Kong in December 2005 would free up significant volumes of trade in agriculture, industrial goods and services.

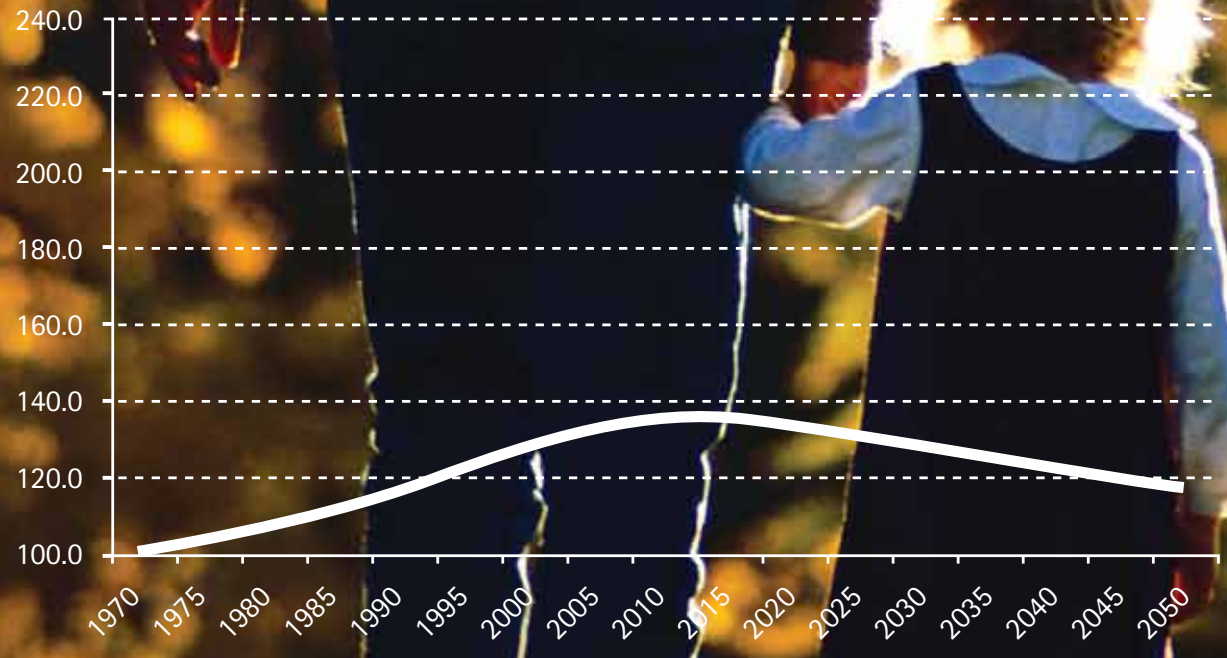
- Consumers are becoming more discerning: aided by the explosion of information media and increase in real incomes, consumers are seeking more differentiation in products and services. They are selectively trading up in categories that are important to them (e.g., luxury brands or specialized holidays) and trading down in categories that are less important (such as basic brands or low-cost airlines).

The new demography:

- The workforce is shrinking: in contrast to the United States, whose economic growth has been driven in part by rapid population growth, Europe's population growth is slowing down and set to decline after 2025, due to a combination of low fertility and a projected decline in migration. The EU25 working-age population (15-64 years) is set to fall from 306.8 million people in 2004 to 254.9 million people by 2050 – i.e., from 67.2 percent of total European Union population in 2004 to 56.7 percent by 2050.[8] The implications are stark – to avert a catastrophic decline in economic growth and simply sustain current income levels, Europe would need to increase its employment rate to more than 70 percent (from 63 percent at present) and / or dramatically raise productivity levels.

- The population is greying fast: a combination of low fertility and increased life expectancy means that Europe's population is aging quickly. The proportion of elderly people (aged 65+) is expected to double from 16.4 percent in 2004 to 29.9 percent in 2050, equivalent to an additional 59.2 million elderly people.[9] The proportion of very old people (80+) in the EU25 is forecast to triple from 4 percent in 2004 to 11.4 percent in 2050. The ageing of the population will have dramatic implications across consumer markets – we can expect more demand for pharmaceuticals and tourism and less for other products and services, such as household electrical goods, typically consumed by younger households. Saving and investment patterns will also alter, as older households save less and draw down accumulated wealth. An ageing workforce puts a premium on retraining and lifelong learning to keep skills relevant and sustain productivity, as well creating demands for more flexible working arrangements that combine part-time working with partial retirement.[10]

Figure 2: The impact of aging on labor supply in EU15 (OECD index where 1970 = 100)[11]



3

What Will the New Jobs Be?

These forces of change shaping a new context for Europe's economies are powerful and unstoppable. Europe cannot hope to resist or avoid them, but it can harness them to its advantage by identifying how they can lead to new sources of growth and efficiency opportunities across a range of industries and sectors.

Figure 3 illustrates potential high growth segments and projected employment gains for 15 broad industry categories within the EU, based on an assumed growth rate of 3 percent per annum. Our analysis is intended to provide a framework for thinking about areas where Europe could place some good strategic bets on the future.

Aerospace

The European Aerospace industry had a turnover of €74.6 billion (US$90.6 billion) and employed 407,800 people in 2002. The largest market segment, accounting for about 46 percent of total industry turnover, is aircraft final products, of which civilian aircraft in turn accounts for about half (54.4 percent). Employment is concentrated heavily in the United Kingdom, France and, to a lesser extent, Germany and Italy.[12] The aerospace industry has a highly skewed size structure with a small number of extremely large firms and a much longer tail of small and medium-sized enterprises, often non-branded sub-suppliers and specialist contractors. Trends driving future growth include the recovery in the civil aviation market and the popularity of budget airline travel that has increased the customer pool for large commercial aircraft; continued investment in research and development (especially in terms of making air travel more environmentally-friendly); and the single European Sky Initiative that is expected to provide seamless air traffic management and boost capacity.[13] One of the biggest drivers, however, is the rapid growth of demand from new geographic markets in the Middle East and Asia. Sales to China in particular, where the number of airports is forecast to increase from 145 in 2004 to at least 245 by 2010,[14] are expected to be of major significance.

Nevertheless, the industry faces some real impediments to future growth, including over-capacity in some segments, disputes over government subsidies and rising fuel prices. Skills shortages are an additional serious barrier, due to insufficient numbers of graduates in science and engineering disciplines; barriers to the mobility of skilled workers within and outside Europe and a lack of mutual recognition of qualifications; and a general lack of appeal to students of technical jobs and research careers. To counter skills shortages, aerospace companies have been investing in initiatives to attract graduates into the industry and promote mobility of key workers, for example by partnering with universities, training schemes and overseas exchanges.[15]

Audiovisual industries[16]

The EU15 audiovisual market generated revenue of €98.6billion (US$119.7 billion) in 2002, and directly employed about half a million people[17] in sectors such as radio and television broadcasting, TV and radio advertising, records and DVDs, cinema, and content production.[18] The size structure of the industry is highly skewed, with some very large producers and distributors and a long tail of

Figure 3: Future potential high-growth sectors in Europe

Industry	High growth segments	Minimum estimate for current market size (employment)	Increase in employment, based on assumed 3% growth over 5 years
Aerospace	Chinese market, business jets; IT improvement to drive efficiency (IATA Invoiceworks); Galileo project	407,800	64,952
Audiovisual industries	Digital content and broadband is expected to have impact in all sectors	500,000	79,637
Aviation	Short-haul, low cost travel; China and APAC destinations	368,000	58,613
Banking and insurance	New markets following EU enlargement; value-added financial advice	4,175,000	664,969
Defence	Growth in EU, US and Asia-Pacific markets; modern technologies and equipment for high tech armed forces	300,000	47,782
The eco-economy	Environmental technologies, wind-powered electricity generation; recycling and waste management; fish farming; environmental architecture (buildings that are energy- and materials-efficient)	Not available	-
Health care provision	E-health (electronic patient records, health information networks, electronic prescriptions etc.); private medical insurance; outsourcing of services and cross-border health provision	18,000,000	2,866,933
Information technology	Global enterprise voice and data communications; software as a service model (SAASM); customer management services, contact centre operations and HR services support; network business services such as design, planning, maintenance and management. Key verticals: health care, government, education, and utilities	5,000,000	796,370
Pharmaceuticals	Key growth in bio-tech; products for aging populations; Chinese market growing rapidly	588,000	93,653
Security	Information security is key: client security software market, infrastructure and identity security / biometrics	406,893	64,808
Social and community	Ageing of population leading to increased demand for geriatric care services; more demand for child care as employment participation rates of females increase; export of educational services, via distance and e-learning	21,900,000	3,488,102
Space	Space-based applications and services (e.g., management of natural resources, mobility, environment, security and information economy applications)	40,000	6,371
Telecommunications	Voice over broadband (VoBB), outsourcing, mobile and Internet in Russia; global enterprise voice and data communications services	1,000,000	159,274
Transport	Land transport of goods and passengers; management of public service transport; IT for ticketing and tolling; third party logistics	10,000,000	1,592,741
Travel and tourism	EU enlargement brings new destinations and potential customers; increased use of IT; aging population require different locations; more personalised holidays, breaks tailored to specific hobbies and interests, more short-break offerings; activity and spa holidays	8,100,000	1,290,120
Total		70,785,693	11,274,325

smaller enterprises, often independent companies and contractors with a small number of permanent employees. The audiovisual sector grew by 6.5 percent over the period 1998-2002, with the largest growth in sales and rentals of DVDs (average annual growth 223 percent), home shopping channels (24.2 percent), and digital TV packages (20.4 percent). Technology is driving potential growth opportunities, including digital video recorders (DVRs), on-line content distribution (e.g., films and music) via digital cable and satellite, and electronic gaming. In the United Kingdom, the specialist interactive media sector has been growing fast with a proliferation of agencies and freelancers, although as the market expands[19] more interactive content may be developed by companies in-house. The diversity of the European audiovisual market is both its principal strength and weakness – it contributes to the creativity of the sector but limits the circulation of European products across the EU, preventing the emergence of an internal market to approach that of the scale and depth of the United States. Growth prospects are further hindered by an industry structure composed of micro-enterprises limiting the potential for economies of scale, the need to recruit a more technology-oriented workforce, and the high risks generally associated with projects in the audiovisual sector given the unpredictability of public tastes.

Aviation

The demand for air travel in Europe grew three-fold between 1980 and 2000, and is set to double by 2020.[20] The 31 operators of the Association of European Airlines (AEA) together accounted for employment of around 368,000 in 2003. After a series of crises in the early 2000s – including recession, the impact of September 11, and the outbreak of SARS – a significant period of consolidation and re-structuring has helped to put the industry on a more sound financial footing and air travel is beginning to resume its long-term upward trend. Key drivers include the success of budget operators, who are continually opening up new routes and destinations while keeping capacity rates up; a series of EU liberalization packages allowing new entry and more flexibility in fare-setting; the growth of international tourism; and the emergence of regions such as China and Asia Pacific as significant destinations for passengers and freight.

However, technology is also playing an important role in terms of yielding efficiencies in back-office processing (i.e. reducing staff headcount), with the increased use of e-ticketing to speed check-in, and the application of innovative IT such as International Air Transport Association (IATA) InvoiceWorks, which allows the electronic issuing and management of invoices.

Banking and Insurance

Banking employs about 2.8 million people in the EU15, Iceland, Norway and Switzerland and around 500,000 people in other European countries. There is evidence that some European economies are overbanked, suggesting significant scope for improvements to bottom-line profitability from consolidation among industry operators, a simplified operating model including rationalization of back office functions, and integration at different stages of the value chain (e.g., integration of financing activities, with some banks becoming retailers or distributors of others' financial products). Top-line growth will come from product and services innovation, the ability to build a differentiated position in the marketplace, and the ability to cross-sell products to different customer segments. There is also more scope for top-line growth in the new member states where banking markets are less mature. As the number of employees per branch falls over time, growth in European banking will also depend on an ability to move branches from an administrative or transaction centre role to a "sales office" function offering higher-value services and advice to customers and thereby generating higher demand in other parts of the business. Barriers to growth include dense branch networks and national labor laws limiting flexibility and the ability to control costs in some of the large European markets such as France, Germany and Italy.

The insurance industry employs around 875,000 people across Europe. There is potential for some growth in the new markets of Central and Eastern Europe as well as in the provision of private pensions, although in aggregate terms this growth may well be offset by the decline in employment brought about by the disappearance of direct sales forces.[21]

Defence[22]

EU25 governments spend approximately €160 billion (US$190 billion) annually on defence, of which about €40 billion (US$49 billion) is used to buy and develop military equipment. While overall defence budgets are static or falling, there are moves to follow the United States approach of focusing defence spending more heavily on new equipment – long-range transport planes and ships, unmanned aerial vehicles, precision-guided missiles – and less on personnel and outdated weapons systems. The new European Defence Agency is expected to accelerate this transition by encouraging member states to boost their military capabilities, harmonizing military requirements, co-ordinating research, and encouraging convergence of procurement processes.

There is also a greater focus on the interoperability of systems across European Union and North Atlantic Treaty Organization forces for joint missions. Key growth drivers are expected to be increased spending on modern technologies and equipment, including current projects such as the Eurofighter Typhoon, A400M Future Large Aircraft (FLA), F-35 Joint Strike Fighter (JSF) and CVF aircraft carriers. Another driver is the growth in demand outside the European Union, particularly in Asia and the United States. While United States firms account for about half of European defence purchases, European firms supply only three percent of the US market, suggesting significant potential for expanded market share. EU enlargement may also help stimulate new demand, as many of the armies of the new member states are personnel-heavy and in need of significant re-equipping and modernization.

However, a potential barrier to overall employment growth is the process of consolidation as evidenced by the formation of the tri-national European Aeronautic Defence and Space Company (EADS), comprising Germany's DASA, France's Aerospatiale Matra and Spain's SEPI; Finmeccanica's takeover of Westland helicopters; and the tie-up between two French defence companies, jet-engine-maker SNECMA

and electronics group SAGEM. While cross-border mergers continue to be politically sensitive, though, the speed of this consolidation will remain slow.

The eco-economy

Despite its relative infancy, there are a number of potential growth sectors within the 'eco-economy' that could contribute to employment growth, the most important of which are as follows:

- Environmental technologies – by 2001, the sector had a turnover of €180 billion (US$218.5 billion) per annum and had created more than half a million new jobs in the previous five years.

- Recycling and waste management – according to the Federation of European Employers (FEE), the fastest growth area for industrial jobs in the EU25 countries since the year 2000 has been recycling. Working time in this sector has risen by 8.8 percent and salaries by 27.4 percent.

- Wind-powered electricity generation - significant local employment opportunities exist, as shown by the example of Denmark, where 20,000 people are employed in wind turbine manufacture. This generates a turnover of almost €3 billion (US$3.6 billion) per annum, representing approximately 40 percent of the world market.

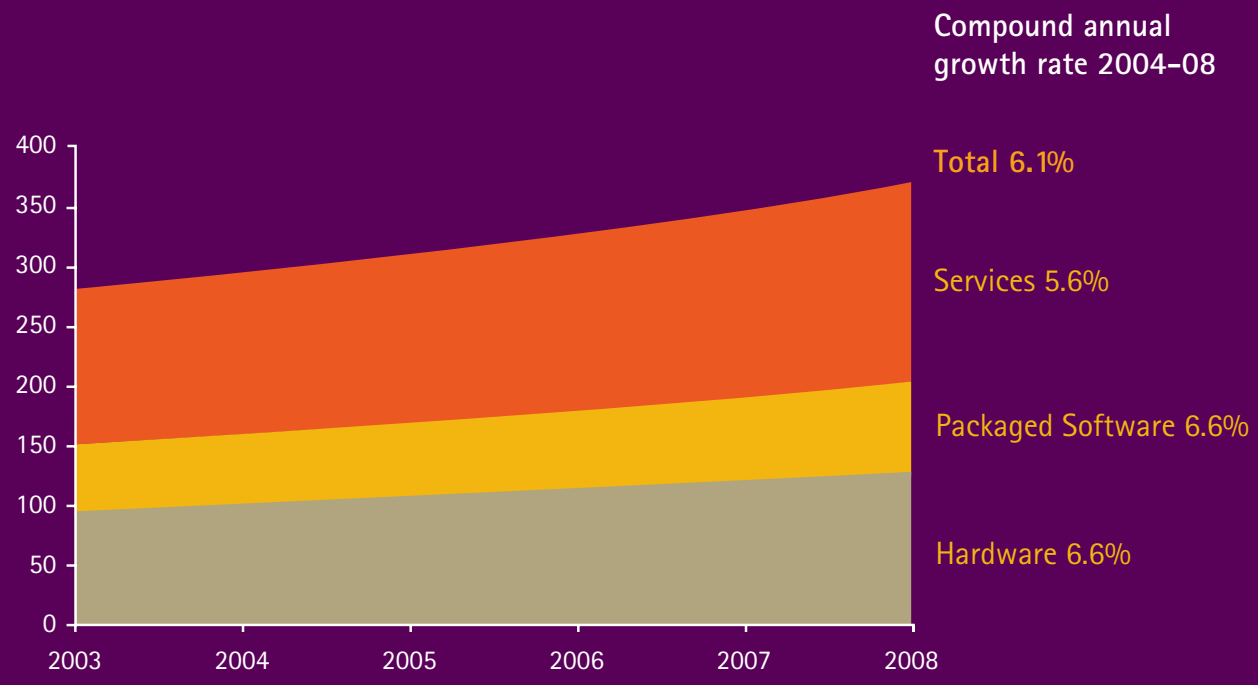
- Organic food production – organic agriculture has increased at a very rapid pace in many European countries due to both consumer demand and also government and European Union support (through subsidies and research and development budgets).

Health care provision

The health care sector is one of the largest service industries in developed European countries – larger than either financial services or retail. By 2003, the health and social work sector employed almost 18 million people in EU25, around 9 percent of total EU25 workers. From 1998-2003, employment in this sector grew by 2.6 percent per annum, generating more than 2 million new jobs.[23] However, the number of physicians only increased very marginally from 1999-2001 and the number of nurses and midwives, dentists and pharmacists actually declined very slightly in those two years.

Demography will play a key role in sustaining future growth in health care, where an increasing proportion of older people living longer and requiring health care for greater periods of time will increase overall demand for geriatric care (e.g., rest homes and in-home carers). Diseases often seen in older people that require intensive and usually costly treatment will therefore be more prevalent (e.g., strokes, diabetes, respiratory illness, cancers, dementia), as well as certain infectious diseases (e.g., HIV/AIDS, hepatitis C and tuberculosis). Furthermore, the participation of the private sector in

Figure 4: IT Spending in Western Europe, 2003-2008 (US$ billion)[24]



the provision of health care will increase due to the unsustainable nature of public-funded services as the aging population requires more care. Medical advances in pharmaceuticals, medical technology and biotech will mean that increasingly effective (and expensive) treatments become available. As a result, patients' expectations about the level of treatment they receive will also increase. Preventative treatment (i.e., promoting exercise, targeting smoking, alcohol abuse and obesity) will be an increasingly prominent feature of the industry as will e-health, whereby IT will be used to share information across health care providers (all part of the eEurope Action Plan). In the same vein of cross-border co-operation, health care professionals will become more mobile – as will patients – increasing choice and potentially generating efficiencies.

Controlling costs is the central issue across all European Union health systems. Savings need to be generated in administrative functions to allow increased spending on pharmaceuticals and other treatments. Investment in the provision of access to medical studies and promotion of the health professions will be key if Europe is to address a skills shortage among general practitioners / nurses and an over-reliance on immigrant workers, as well as an aging profile of health care professionals.

Information technology

Apart from its indirect effects on industry-wide productivity, knowledge diffusion and innovation across related industries, information technology is itself an important industry, with the Western European IT market accounting for €230.6 billion (US$280 billion) in revenues in 2003, split by three sectors: hardware (about a third of the market); software (about 20 percent), and services (about 45 percent). ICT-related sectors employed about three percent of the EU15 workforce in 2003. The Western European IT market is expected to grow at an annual average rate of 6.1 percent between 2004-08[25] (see figure 4). The software market is expected to increase by around 6.6 percent per annum, driven in part by innovations such as the software-as-a-service model (SAASM), in which the implementation and management of a company's software is undertaken externally, creating organizational efficiencies and allowing a business to focus on its core competences. While currently a small part of the market, SAASM could become increasingly important to small- to medium-sized enterprises and mid-market operators. The trend towards open source software is also significant but is not expected to account for more than 15 percent of software revenues by 2010, mainly from support and installation charges. In the services market, forecast to show growth of 5.6 percent per annum,[26] a key driver will be large business demand for outsourcing – both of process and IT management functions. The principal industry-level sources of demand for IT services are likely to be health care (7.8 percent), government (annual growth of 7.2 percent 2003-2008), education (6.6 percent) and utilities (6.1 percent). Geographically, the Central and Eastern European economies

will represent an important source of growth, with the market expected to swell by 13.2 percent per annum between 2004 and 2008.[27] The pattern of growth is likely to vary according to the level of economic development, with more mature economies focusing on advanced software solutions and IT services, and less developed economies preoccupied with infrastructure investments.

Pharmaceuticals[28]

The global pharmaceuticals market was worth around €453 billion (US$550 billion) in revenues in 2004, of which North America accounted for almost half (45 percent), well ahead of Europe (26 percent) and Japan (10.5 percent). This indicates a dramatic reversal in fortune for the European pharmaceutical industry – up until the early 1990s Europe was the world leader in pharmaceuticals, but it has since ceded pole position as a consequence of lower investment, particularly in research and development (R&D), resulting in fewer new drug launches.

Despite this downturn, the pharmaceutical industry remains an important one, directly employing 588,091 people in Europe in 2002 and supporting three to four times that figure indirectly in upstream and downstream activities. There are significant prospects for growth, forecast at 5.2 percent per year from 2002 to 2007. Some of the main growth drivers include an aging population that increases the addressable market for pharmaceuticals as lifespan outpaces health span; the rise of new geographic markets such as China, where the market grew at 28 percent to €7.8 billion (US$9.5 billion) in 2004 and is expected to become the world's eighth largest market by 2008; and the impact of new technologies such as biotech that are redefining the industry: 30 percent of marketed medicines and 50 percent of medicines in the pipeline originate from biotech. These are real opportunities, but Europe's ability to exploit them is circumscribed in several ways. The R&D gap is perhaps the biggest obstacle – in 2003 R&D investment in the United States was approximately 37 percent higher than Europe, the effects of which are increasingly felt in terms of pharmaceutical innovations. From 1993 to 1997, Europe accounted for 81 unique new drugs, compared with 48 launched in the United States – between 1998-2002 the figures were 44 to 85 in favor of the United States.[29] The European Union biotech sector is less mature in terms of value added and less R&D intensive, hampered by funding shortages (from government funding to venture capital). The United States biotech industry invests almost three times as much in R&D, raises three or four times as much venture capital, and has access to four times as much debt finance as European firms. A final barrier is the highly fragmented nature of the European marketplace – in terms of regulation, regional pricing, and national and regional research programmes – which compounds the costs and risks of innovation.

Security

The security market in Europe, worth around €30billion (US$36.4 billion) in 2000, divides into a number of

segments: physical security products and services; enterprise (IT) security; and identity security, which encompasses the development and use of biometric technologies. Industry forecasts suggest that the information security workforce will expand by an estimated 13.7 percent annually to reach 2.1 million workers by 2008, of which about 680,000 will be in Europe.[30] According to the International Information Systems Security Certification Consortium (ISC), growth in the information security industry is spurred by the wider use of Internet technologies, a dynamic threat environment and increasingly stringent government regulations of business. High-growth sectors include:

- The security appliance market, with strong demand for unified threat management appliances that incorporate firewall, gateway antivirus and intrusion prevention and detection capabilities.

- The managed IT security market, which is expected to grow to €3.8 billion (US$4.6 billion) in Europe by 2008, of which about 66 percent will derive from small- to medium-sized enterprises (SMEs).[31]

- The security consulting and education services market is expected to grow globally from €2.8 billion (US$3.4 billion) in 2003 to €5.4 billion (US$6.5 billion) by 2007, as businesses look to develop more effective security policies to back up their security architecture.[32]

Identity security is another fast-growing sector, as shown by the explosion in biometric technologies (the electronic measurement of biological characteristics via fingerprinting, iris scanning, and facial recognition). Underpinning such growth is the increasing focus on national security and border control, the rise of identity theft, a trend towards data sharing in areas such as health, and the need for secure business transactions. The market for biometric systems is forecast to grow at a disproportionately fast rate – fingerprint technology is currently the biggest segment accounting for 28 percent of the market, but facial recognition is expected to overtake it as the biggest growth segment in the future.[33] These developments present strong employment possibilities both in research and development (to develop more accurate biometric security technologies) as well as in building and installing the systems to support these. Barriers to growth include the need for continued investment in innovation, and public concerns over the privacy implications of such technologies.

Social and community

Employment in the community, social and personal service sector between 1998 and 2003 grew by 1.8 percent per annum to 8.9 million or 4.5 percent of the total EU25 employment.[34] In the same period, the education sector grew by 2 percent per annum to reach a total of 13 million jobs or 6.7 percent of EU employment in 2003. Both the non-profit sector and volunteers play an increasingly important role in this sector.

The overall context for the social and community sector will be one of increasing demand to provide higher

quality, more personalized services at a reduced cost. Reforms such as decentralization, de-institutionalization and deregulation (increasing private sector participation, particularly in education, employment and child care services) are changing the very nature of these organizations and in some cases leading to regional employment growth. Within this context, the aging population is increasing demand for social services in the same way that it is for health care. Rising unemployment will potentially lead to greater demand for employment services while demand for child care services will also increase as a greater proportion of women have full-time jobs. The increased use of information and communications technologies in public service provision and administration will increase the demand for IT skills and an aging civil servant profile in Europe means that many public administrations are facing a serious skills shortage, particularly among senior staff.

Space

The European Space Industry has an annual turnover of approximately €5.5 billion (US$6.7 billion) and directly employs 40,000 Europeans. Due to consolidation, the sector is heavily concentrated among four European companies – Alcatel SA, EADS, Finmceccanica and Snecma SA – that employ 62.5 percent of Europe's space workforce.[35] With sufficient investment and planning, space-based applications have the potential to yield significant long-term socio-economic benefits and employment creation across five main areas:[36]

- The environment – space-based remote sensors, in conjunction with ground instruments, can collect and map complex data on climate change over time at the global and regional level, including deforestation, tropical rainfall, crop health, and loss of Arctic ice cover.[37]

- Improved management of natural resources – including more efficient production of energy (for example, meteorological satellites providing sunshine maps to optimize the location of new solar-cell plants or providing data for the selection of wind farms); the improved modelling of regional water resources and usage; and the use of remote-sensing, high-resolution satellite imagery and geographic information systems to combat deforestation.[38] Space-based technologies also have important agricultural applications, such as precision farming to assess agronomic conditions and the automated control and treatment of crops.[39]

- Better management of mobility – space-based technologies could yield significant benefits to the organization of transport fleets, road and rail traffic monitoring, the tracking of goods, and the operation of emergency services. Other important mobility applications include real-time passenger information systems, automated toll collection and intelligent transport systems to ease congestion on roads.[40]

- Security – including satellite communications to assist in disaster prevention and management, monitoring of compliance with international security treaties and tracking of dangerous materials while in transit.[41]

- Increased access to the knowledge economy – for example, increasing educational opportunities through distance learning or supporting the spread of telemedicine in areas such as the developing world where infrastructure on the ground is thin.[42]

Apart from these significant knock-on benefits to related industries and sectors, space programmes help bring together many of today's advanced technologies in a way that will help Europe's high tech industries retain a competitive edge. While Europe has some important factors working in its favor, such as leading-edge research institutes, investment remains a formidable barrier to growth, with Europe's spending of about €5.5 billion (US$6.7 billion) dwarfed by a US space budget of almost €35billion (US$42.5 billion).

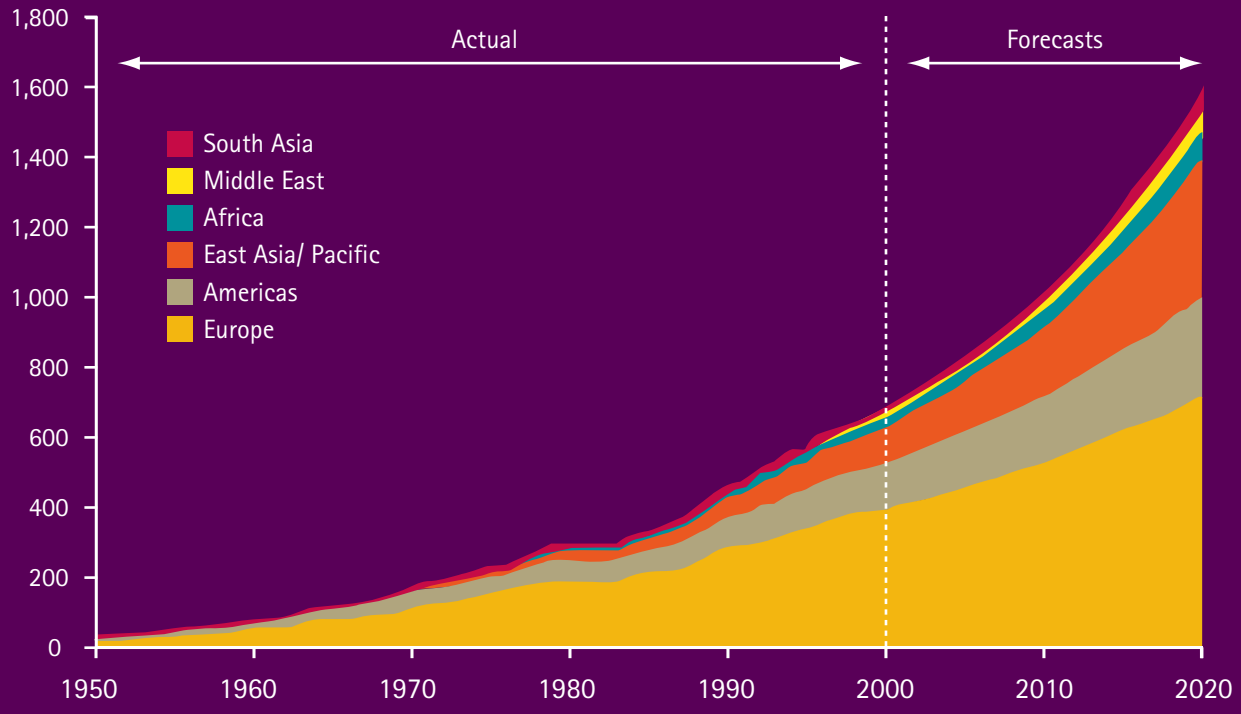
Telecommunications

Telecommunications is a €316.7 billion (US$384.4 billion) industry representing about 3.4 percent of EU25 gross domestic product in 2004. Before the technology crash in 2001, telecoms employed about 1.14 million people in the EU15 and the Czech Republic, Hungary, Poland and Slovakia. Fixed-line services still account for the largest market share in Western Europe (58.6 percent) while in Central and Eastern Europe mobile services predominate. Geographically, there should be a rapid increase in demand for telecoms services in Central and Eastern Europe as these economies develop further.

Future growth in European telecoms is expected to derive predominantly from broadband (fixed Internet access) and wireless services. Another key driver is the trend toward globalization of production, which is increasing demand for global enterprise voice and data communications to support production facilities in low-cost countries. The pervasiveness of ICT is also a powerful generator of traffic across communications networks as technological innovations allow business and residential customers to undertake a wider range of activities electronically. An important growth segment is expected to be voice over broadband (VOBB), with analysts predicting that the market will reach more than 22 million connections in 2008, of which 60 percent will be consumers.[43] In addition to voice and TV services, broadband providers hope to tap into rising customer demand for management services such as storage of self-created content, health care applications, and home management services.[44] Broadband services will be supported in many European Union countries by regulatory changes such as local-loop unbundling (whereby operators can connect directly to the consumer via existing phone lines and then add their own equipment to offer broadband and other services), which will facilitate entry to new markets and increased competition. Changing patterns of production are also creating new opportunities for service providers, for example in outsourcing by telecom companies of customer management services, contact center operations, and human resources services support. There is also a rising trend among network operators to outsource parts of their network business such as design, planning, maintenance and management.[45]

While the potential for continued market expansion and new employment in telecoms is clear, industry momentum relies critically on continual innovation in value-added products and services, and the skills and expertise to support them.

Figure 5: International Tourist Arrivals 1950-2020 (millions)[46]



Transport

The transport industry, broadly defined, accounts for more than 10 percent of European Union GDP and employed more than 10 million people in 2001.[47] Demand for transportation has been growing rapidly in recent years, particularly for goods and especially road transport. Growth is being shaped by several factors, including the prospective deregulation of some transport modes; a growing focus on research and development to address the environmental impact of transportation; information technologies that allow major innovations in, for example, automated ticketing and tolling; and the increased importance attached to effective planning and management of public transport to anticipate and meet changing mobility requirements stemming, for example, from increased urbanization and an aging population.

Advances in technology underpin many of the high-potential future growth segments in transport. More effective use of IT, for example in areas such as e-ticketing, will reduce numbers of customer-facing personnel but increase demand for workers with IT skills. The focus will increasingly be on Intelligent Transport Systems that allow electronic fee collection, improved congestion management and the ability to operate between tolling systems for trans-European travel. Growth in efficient transport systems will be supported by the Galileo satellite-based positioning and navigation system, which will also have major spin-off benefits for Europe's high tech industries. The European Commission estimates that Galileo could result in 150,000 new jobs and a market for equipment and services worth €10 billion (US$12.1 billion) by 2010. Barriers to growth in all of these areas include the dependence on public sector investment and regulation, but more acutely the new and more sophisticated skills requirements for workers, particularly in IT and language proficiency.

Another high-growth segment is third-party logistics – outsourcing end-to-end transportation and warehousing – particularly in sectors such as food and beverages, general retail, pharmaceuticals, computers and high tech, automotive, and transport equipment[48] – although here again skills and labor shortages represent a barrier to growth.[49]

Travel and tourism[50]

Europe is the world's most visited region, attracting 58 percent of travellers globally in 2003. The European travel and tourism market accounts for about 8.1 million jobs directly in the EU, or 4.8 percent of total employment in 2004, and is expected to add a further 850,000 new jobs by 2014.[51] Tourism volumes into Europe are expected to continue growing

Figure 6: EU Travel and tourism employment (% of total employment)[52]

up to 2020 (see Figure 5), fuelled by an aging population with higher incomes and more leisure time, improvements in transport links, and increased availability of low-cost transport, especially air travel, which is opening demand among new travellers. A changing demographic profile – more young and old travellers, smaller households – and new holiday preferences – such as increasing health consciousness – are leading travellers to demand much greater "product differentiation" in the holiday experience: more personalized holidays, breaks tailored to specific hobbies and interests, more short-break offerings, activity and spa holidays etc. Information technology is also reshaping the market both by providing a much greater variety of information to increasingly sophisticated consumers and by diminishing the role of travel agents as travellers book on-line directly. Given these trends, the role of tourism organizations and boards is likely to evolve over time into more of an e-marketing role. Geographically, significant growth can be expected in tourism volumes within the new member states as they integrate within the European Union. Ensuring these opportunities materialize will mean addressing some significant barriers and challenges. These include the requirement for multiple visas for non-EU visitors; the need to market tourism products in a professional way; the pressure for continual innovation and specialization; and managing the impact of congestion and degradation on natural and cultural assets and infrastructure.

4

Creating the Framework

While it is not realistic to expect European Union economies to achieve a superior competitive position in all of the industries identified, it is reasonable to ask what the EU and individual member states can do to optimize their potential in as many high-growth sectors as possible. We approached this question by first considering the broad elements that need to be in place for competitive advantage and then applying this model to the European context to identify specific actions toward accelerated growth in the largest possible number of sectors.

What does Europe need to increase growth?

Figure 7 outlines the elements that could secure competitive advantage in the European Union. It is derived from models presented by Michael E. Porter in his book 'The Competitive Advantage of Nations'[53] and offers four perspectives on the conditions necessary to stimulate growth. Using this broad framework, we have analyzed what we believe to be the key elements of European competitive advantage.

How can demand be stimulated?

The demand-side is defined by the environment within which high-growth industries will either flourish or stagnate. The focus should be on building a critical mass of demand for different industries in a European marketplace that, despite significant integration, remains highly fragmented in some areas. The emphasis here must be on completing the single market, especially in areas such as services, and supporting a transition to higher-value-added products and services. Governments can exploit the potential role played by public procurement, which on its own can stimulate significant growth.

How can supply respond?

The supply-side is about the capabilities or 'enablers' that need to be put in place to support growth, such as developing common technology platforms that can operate across borders and improving access to venture capital.

One of the most important elements our analysis identified is the supply of talent to the marketplace, for which a coherent approach to training is critical. The emphasis should be on lifelong learning so that employees have the necessary skills and knowledge to adapt to a changing employment environment rather than relying on the safety blanket of protectionist labor laws. However, significant disparities exist in the approach to lifelong learning within the European Union. In terms of the

percentage of the population aged 22-65 involved in any form of learning activity, Denmark leads the way with 80 percent whereas Greece only accounts for 17 percent (the EU25 average is 42 percent).[54]

Europe must also ensure that it has the academic institutions of the highest caliber that can compete on the world stage. A recent poll of the best universities in the world placed only two European universities in the top 20, with the rest found in the United States and one in Japan.[55]

Furthermore, Europe must compete in the global war for talent by attracting and retaining the most skilled employees - in 2001, there were over 1 million researchers in the EU25, about 175,000 fewer than in the United States, where there are now 400,000 European researchers - most of them because of the more rewarding environment. In addressing this shortfall, not only is the standard and reputation of academic institutions important, but immigration policy also has a key role to play in terms of facilitating entry.

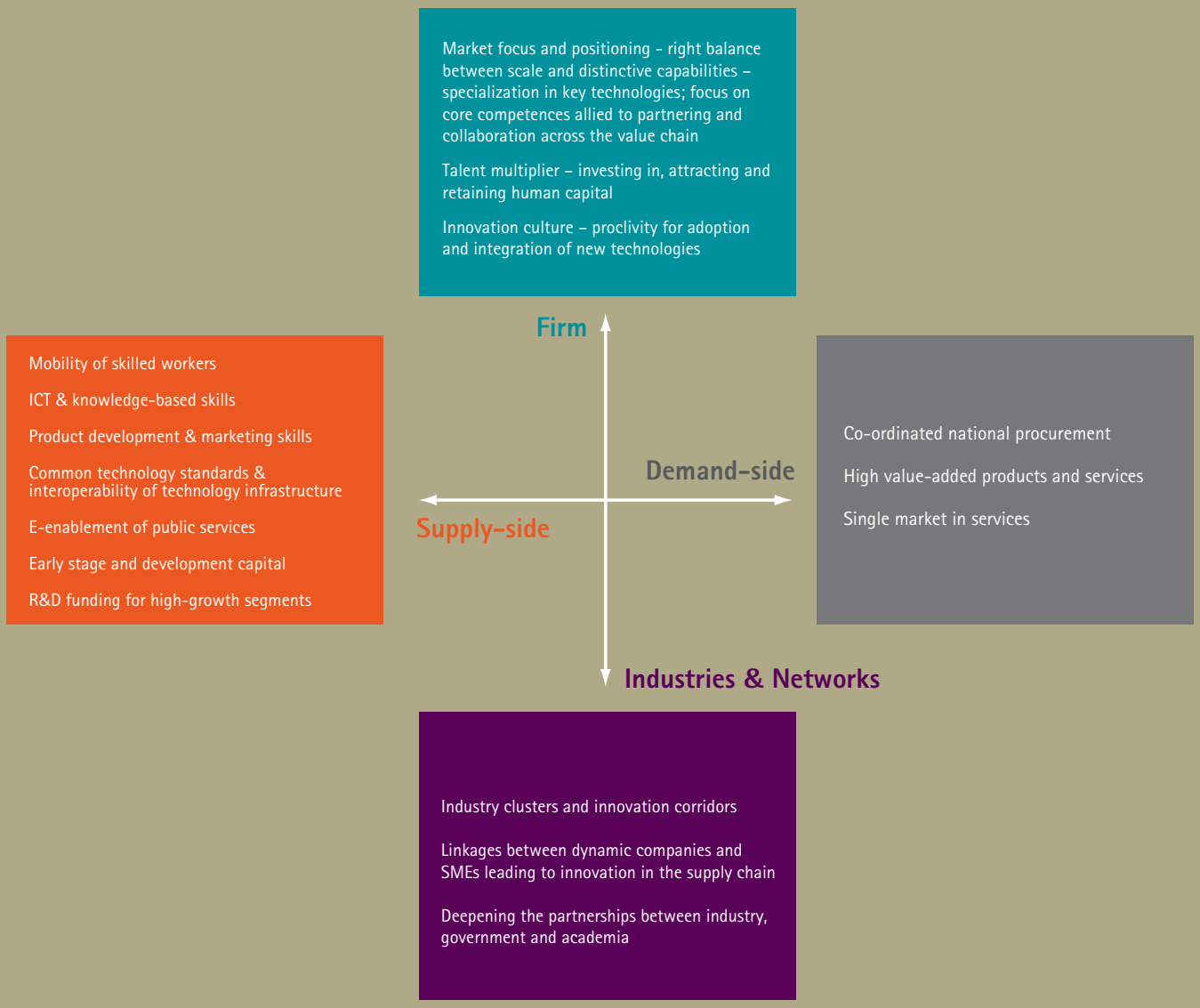
What can firms do?

Within the wider context of demand and supply conditions, it is high performance businesses and the interactions between them that ultimately drive growth. This has different implications for both smaller and large-scale industry.

For smaller firms in Europe, the issue of scale seems to be particularly important. The European business landscape is characterized by a large proportion of small- to medium-sized enterprises (more than 19 million enterprises in 2003) but a smaller proportion of large businesses – just 40,000 large businesses or 0.2 percent of total enterprises.[56] While the share of enterprises accounted for by each class size is essentially the same between the United States and Europe, the United States has a much lower proportion of employment in small- to medium-sized enterprises (SMEs) and a much higher proportion in large industries compared to Europe (see Figure 8). Indeed, the average European business (across all sizes) employs seven people compared to 19 in the United States. There would therefore seem to be considerable potential within the SME sector for employment growth. As outlined earlier, if half of all SMEs were to increase their staff by just one, around 10 million jobs would be created. Of course, there are barriers to SMEs growing - not least increased regulation that comes with greater size, the perceived problems of entering new markets across country borders and poor access to capital. But these issues are not insurmountable. A more nuanced approach to regulation and a fully integrated single market should present a more permissive environment in which SMEs can grow.

For larger industries whose economies of scale have effectively been exhausted, specialization is

Figure 7: Elements of EU Competitive Advantage



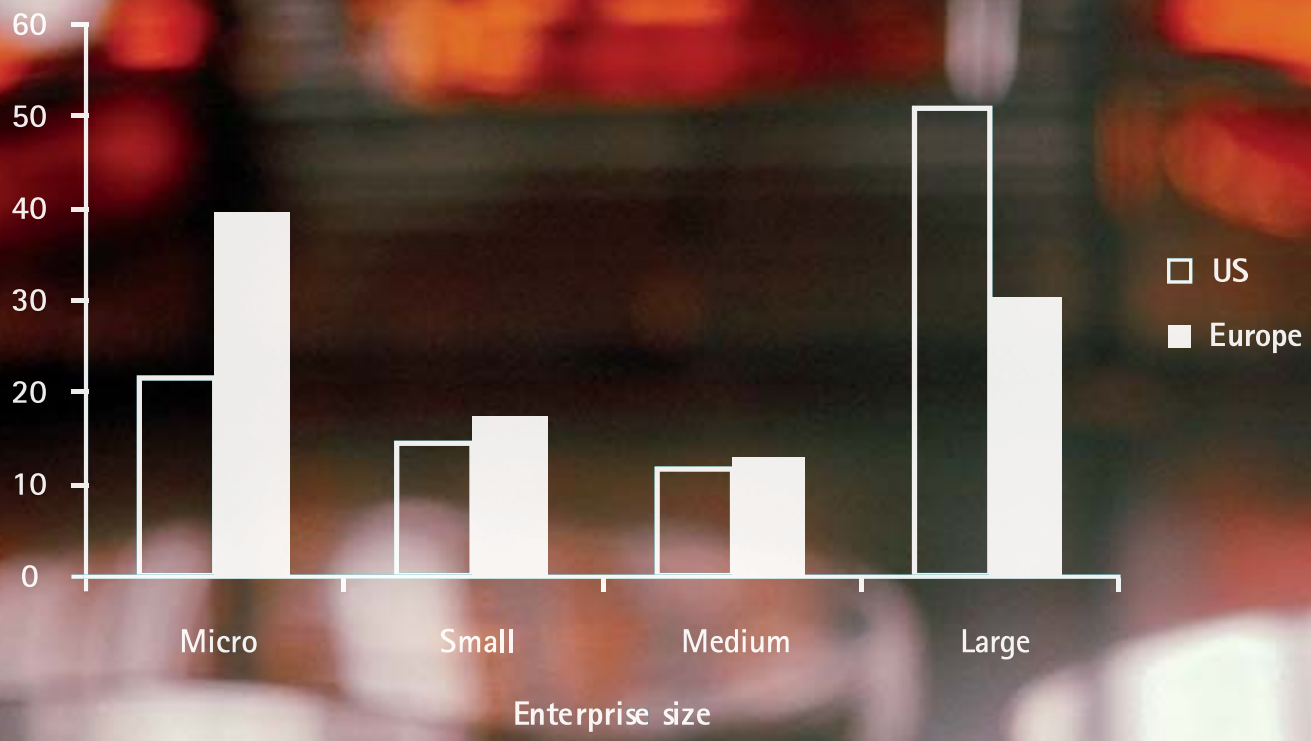
particularly important. To achieve high performance, large firms need to identify and develop distinctive capabilities that are hard to replicate (e.g., specialization or mastery of key technology), a culture of innovation and commercializing of ideas, and an internal 'talent multiplier', which enables companies to attract and retain the right human capital and diffuse knowledge and critical skills quickly across the organization.[57]

How can partnerships be strengthened?

The other frequently overlooked aspect of competitive advantage concerns the interactions between firms in an industry and the wider networks – of governments, research institutes, universities etc. – within which they are embedded. Its significance is three-fold.

First, it is about expanding the wider networks between these stakeholders to increase the commercialization of research – for example, the Science and Technology Council in Finland brings together the public and private sectors to formulate national science, technology and innovation policies and has systematically promoted new technologies, research and development, and new business creation over the past couple of decades (see case study - "Innovation in Finland: the interaction between business and policy").

Figure 8: Employment distribution in non-primary private enterprise (percentage of total employment)[58]



Case Study

Innovation in Finland: the interaction between business and public policy

In recent years, Finland has placed a premium on the development of policies supportive of business and in particular innovation. The Science and Technology Policy Council exists to formulate and implement national science, technology and innovation policies by bringing together members from the public and private sectors, under the chairmanship of the Finnish Prime Minister. The Council reasons that public funding must be increased faster than the estimated growth in GDP. Alongside increases in funding, research and funding organizations must constantly develop their own decision-making mechanisms and prioritize important and promising fields.

This interaction between business and policy has proven very successful in fostering innovation. If we take the number of patents a company or country can lay claim to as a measure of relative innovation, Finland files around 2,000 patent applications per annum, of which about 70 per cent result in patents, with mobile phone producer Nokia producing the most patents per company. Per capita, this places Finland within the top four leading patent countries in the world.

More widely, the success of the interaction between business and policy is evidenced by the fact that in recent years Finland has regularly featured among the most competitive countries in the world.[59]

Second, it is about creating denser networks between firms, industries and the wider economy. For example, Nokia employs about 23,000 employees directly, but its wider employment impact is much larger with about 18,000 indirect jobs among sub-contractors and partner companies in 2003, and important innovation and employment impact in related sectors such as transportation and retail.

Third, it is about recognizing that such industry networks are often regionally concentrated (see case study – "Business clusters and the role of competitive regions") and that there is considerable potential for growth by promoting those clusters as regional hubs of knowledge creation and utilization.

While all clusters vary to some degree, the following conditions seem particularly important to the emergence of successful clusters:

- Strong branding of the cluster or region in question.
- Smooth supply of venture capital for different stages of the innovation process, from basic research to product development to market launch.
- Accumulation of skills and a knowledge-based workforce in the cluster.
- Strong IT infrastructure and networks to aid the spread of ideas, support collaborative working between firms and link up the different stakeholders in innovative activity (e.g., companies, research institutions, universities).
- Specialization in particular products or services.

Case Study
Business clusters and the role of competitive regions

Clusters enable companies to be more productive and innovative than they would be in isolation and are now present in many European countries. While there are many different ways of defining clusters, the basic elements, as enumerated in a European Commission study, are proximity, networking, and specialization. The combination of these factors facilitate access to skilled labor, more efficient access to capital, established infrastructure, spillover effects in terms of know how and marketing opportunities.[60] Existing studies of clusters in Europe point to the following characteristics:[61]

- They are predominantly small (35 percent of the clusters surveyed for one study contained fewer than 50 firms, and 41 percent had between 50 and 100 firms).
- Most clusters are dominated by small-to medium-sized enterprises, a dominance that is increasing over time.
- Most clusters serve global rather than purely European markets.
- Research and development and advanced services are available within the cluster with standard production services outsourced to other locations i.e. clusters are primarily innovation centers.
- Firms within clusters tend to be young, growing and among the national leaders in their field.
- Firms based in the most advanced clusters often seed or enhance clusters in other locations in order to reduce the risks associated with a single site, access lower cost inputs, or better serve regional markets.

Examples of such clusters include ceramic tiles in Catalonia (Spain), pharmaceuticals in the Oresund-Region (Sweden / Denmark), automotive in Styria (Austria) and Hamburg (Germany), video games in Scotland (United Kingdom) and textiles in Emilia-Romagna (Italy).

Public policy can be a powerful catalyst for the expansion of clusters by underpinning each of these conditions. For example, it can promote the external image of a cluster or region through stronger branding, it can address gaps in the private supply of venture capital through research and development funding and taxation incentives, it can assist in skills accumulation through vocational training initiatives and better planning, and it can create incentives and mechanisms for enhanced university-industry collaboration. A good example of a strategy embodying some of these principles is the Action Plan for Innovation set out by the Welsh Government Assembly for the period 2003 – 2006 (see case study).

Case Study

Developing clusters of innovation: The Welsh Assembly Government's Action Plan for Innovation[62]

Innovation is at the heart of the Welsh Assembly Government's plan for transforming Wales into a knowledge-based economy. Developed in collaboration with a number of organizations including businesses, the Welsh Development Agency and educational institutions, the plan for 2003-2006 sets out five main action areas:

- Communicating what can be achieved through more innovation - including innovation partnerships in the four Welsh Development Agency regions and an innovation communications campaign to raise awareness of innovation among businesses.

- Developing more high-growth potential businesses – including a network of innovation centers strengthening links between business and academia, hosting mixed public and private personnel, and providing incubators for companies with strong growth potential.

- Better equipping people to innovate – including initiatives to promote the sharing of information on new developments and best practice within sectors, a stronger focus on entrepreneurship in schools and measures to boost the supply of science and technology skills.

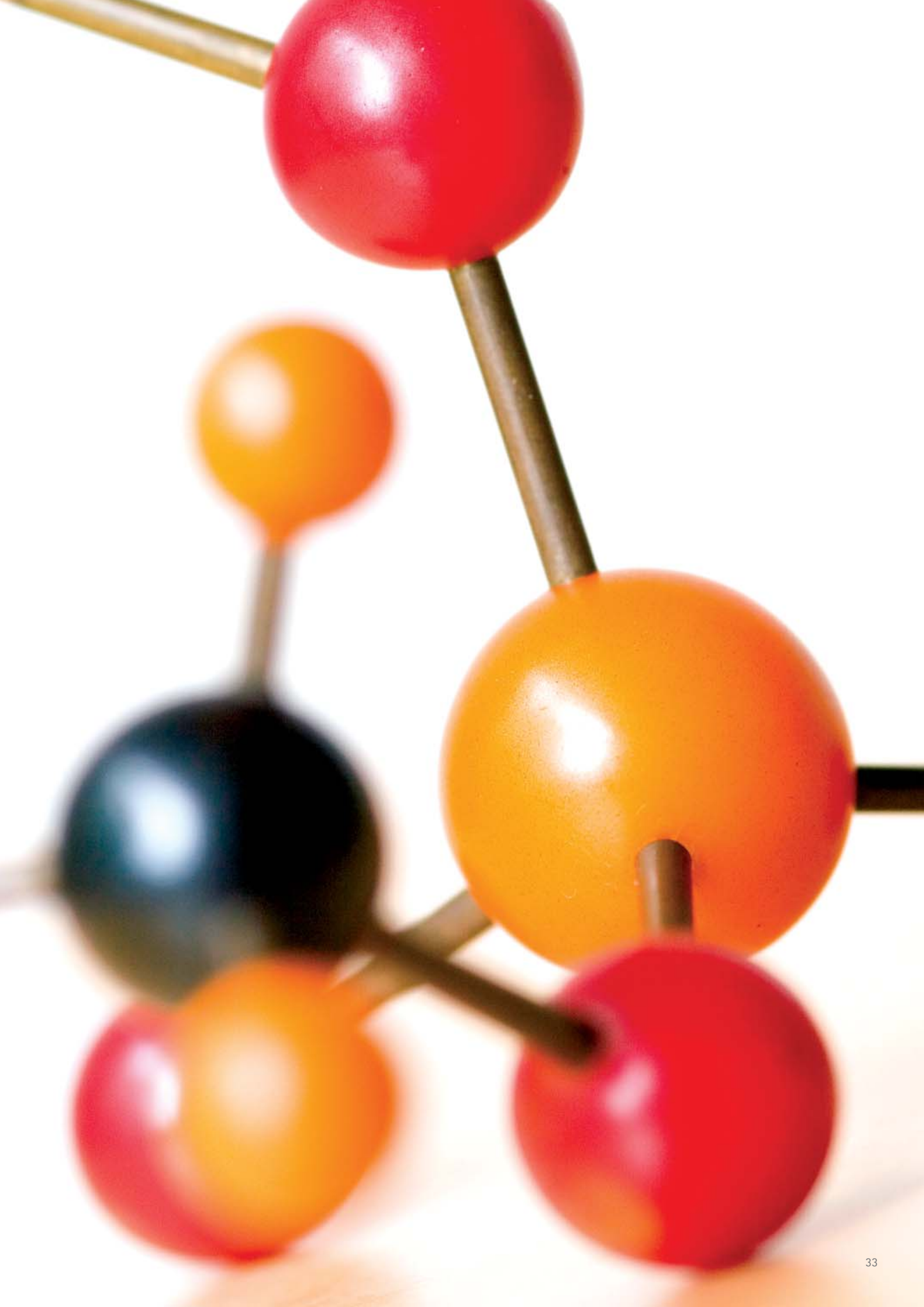
- Simpler, more accessible, business innovation support – including more proactive specialist innovation support services and a streamlined and more accessible innovation / research and development (R&D) grant scheme.

- Maximizing the economic development impact of universities and colleges – including actions to promote access to academic expertise for business, especially small- and medium-sized enterprises, support for networking and collaboration activities, and measures to identify potential spin-out companies from higher education institutions.

The results of the strategy seem to be paying off. In 2004-05, the following successes were recorded:[63]

- 1,708 businesses entered into a collaboration with an academic or research institution.

- 3,504 new products and processes were introduced by businesses following both advice on and support for new IT applications as well as investment in R&D.



5

Making it Happen

Identifying what needs to be done to foster high-growth industries and sectors is one thing – how to make this happen is another. All too often, worthwhile reforms have failed at member state level due to a lack of ownership and implementation. A fundamental re-think is needed about how to implement transformational change within and across the European Union.

Some useful parallels can be drawn with the principles of transformational change within organizations. In thinking about change within the European Union, the four key elements are context-setting, leadership, ownership and enablement, as illustrated in Figure 9.

Knowing the context

The first step is to assess the important trends shaping the global context in which European economies operate, understand the future configuration of opportunities for growth and efficiency that these create, and work out how Europe's core capabilities – with suitable adaptation and improvement – can best match these opportunities. The output of this stage should be a series of sectoral change strategies or route maps for growth.

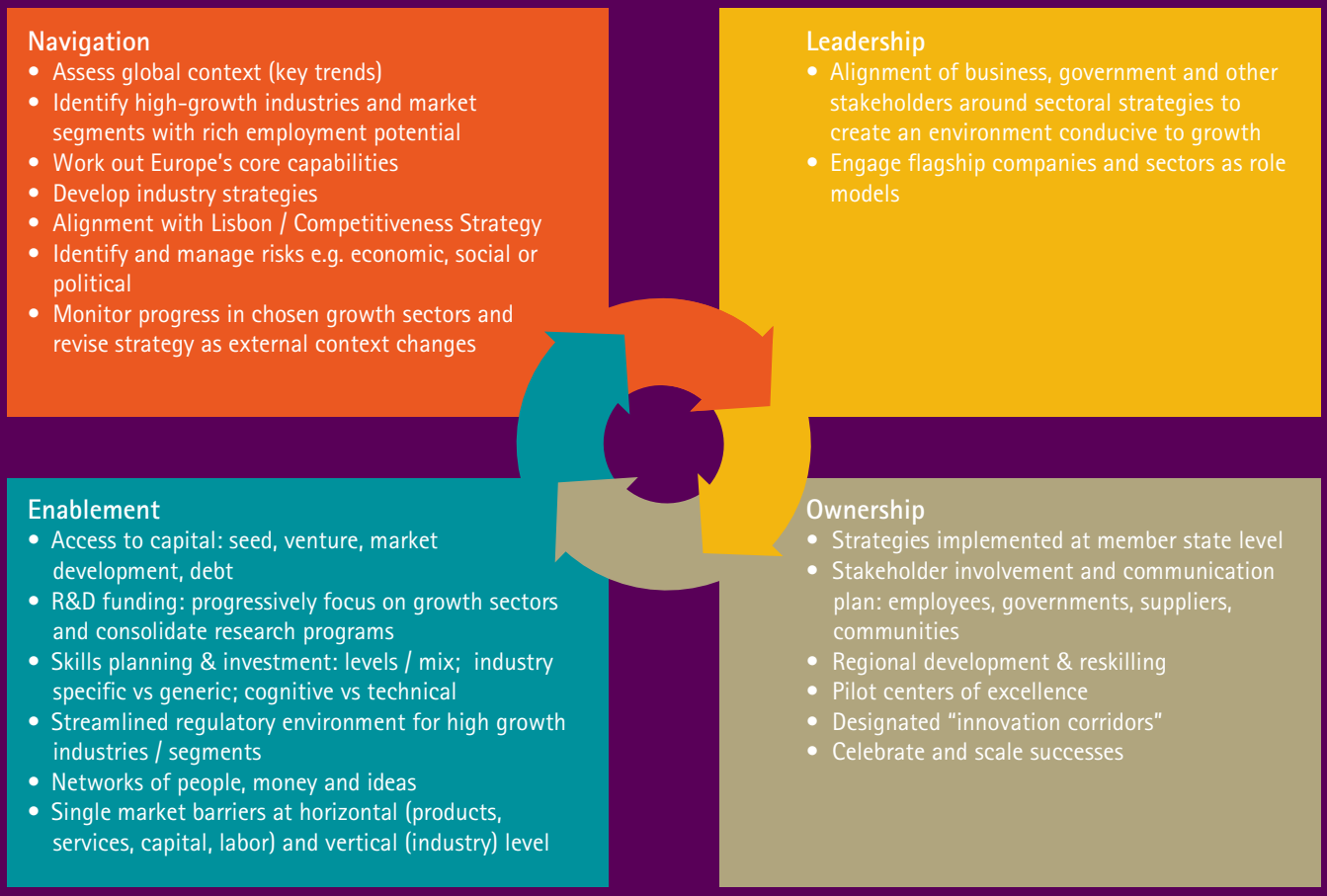
Unifying leadership

Such strategies need policymakers and business leaders to be aligned around their objectives and working in tandem with academia and the wider web of committees and groups concerned with employment or competitiveness, such as the Competitiveness Council.

Spreading ownership

The critical hurdle will be building ownership of the sectoral strategies at grassroots level. Previous reform strategies have often foundered because of a failure to convince the wider European Union population of the case for change. A new kind of dialogue with stakeholders at all levels (businesses large and small, employees, local communities, suppliers, local and regional governments) will therefore be critical in building support for

Figure 9: Implementing transformational change in the EU[64]



the changes (whether industrial restructuring, adaptation of social models or re-skilling) necessary to compete in industries of the future. Ownership of reform can also be reinforced by practical initiatives such as showcasing centers of excellence in particular regions, celebrating examples of industrial success and promoting the involvement of organizations such as regional development agencies.

Enabling growth

The last stage is about the European Union and member states having the right capabilities in place – for example, funding or skills – and removing obstacles that may impede the emergence of high-growth industries.

This approach by its nature involves a degree of trial and error – monitoring the different sectors and adapting and refining the strategies in the light of what is shown to work. It does not mean that the high-growth sectors in three years' time will necessarily be the same as those seen in five years, rather it provides a continuous and sustainable structure for looking at job creation.

What are the implications of change?

Implementing this new approach presents a number of wider issues that impact upon traditional notions of the European social, economic and political environment. Of these, the most significant are probably as follows:

- The balance between European Union and member state responsibility – in implementing change, a 'one size fits all' approach will not work. Too often EU level

reforms have foundered because of a lack of real buy-in from member states, who are sometimes resistant to the enforcement of EU-mandated actions. In many cases, it may be more appropriate and more effective for responsibility for implementation to be delegated to member states, which can then drive reform at the regional or local level.

- Differences in national comparative advantage – we need to recognize that the European Union is a coalition of individual member states, all of whom have different strengths. Any reforms need to recognise these nuances and exploit them to maximum advantage. For example, countries such as Denmark and Sweden have a track record of high investment in research and development and a high level of skills within a knowledge-based economy. In contrast, many countries in Eastern Europe may be more attractive on account of their more entrepreneurial business culture and cheap and flexible labor force (see Figure 10).

- The future of European social models – any move towards a more competitive Europe brings with it implications for the traditional notions of social protectionism. Increasingly, member states will need to gravitate towards a model that emphasizes investment in human capital, re-skilling and lifelong learning, rather than focusing on employment regulations and social security.

Figure 10: Regional comparative advantage

Region	Social model[65]	Comparative advantage	Potential growth sectors?
Denmark, Sweden, Finland	Nordic (high tax and redistribution, high participation, social protectionism)	• Innovation and knowledge-based productivity via lifelong learning, investment in research and development, and application of technology in workplace • Labor market flexibility facilitated by robust social protection systems • Entrepreneurship encouraged via low company taxation • Small size and homogeneity make social consensus easier to achieve	• IT • Telecommunications • Pharmaceuticals, especially bio-tech • Eco-industries • Health care, especially e-health • Social and community e.g. distance and e-learning
UK and Ireland	Liberal (lower tax, low level of employment protection)	• Flexible labor force • More focus on generic rather than industry-specific skills • First-rate academic institutions • Lower taxation levels reduce costs for business • Free markets and less regulation • Highly fluid capital markets but short-term focus	• Audio-visual • IT • Telecommunications • Pharmaceuticals • Social and community
Austria, Belgium, France, Germany, Netherlands	Conservative (medium / high tax, high level of employment protection)	• Strong industry-specific skills / vocational training resulting in high productivity and high quality products • Board structures and focus on debt finance (rather than equity) encourage long-term capital financing • Strong business associations and inter-company networks	• Aerospace and aviation • Defence and space • Pharmaceuticals, especially bio-tech • Social and community e.g. elderly care
Italy, Spain, Portugal and Greece	Southern European / Mediterranean (medium / high tax, social protectionism within occupational lines)	• Fledgling innovation corridors (e.g. Northern Spain)	• Social and community • Private-sector health care • IT • Travel and tourism
Central and Eastern Europe / new member states	As yet undefined	• Culture of entrepreneurialism • Low-cost, flexible labor force • Untapped markets • Technological leapfrogging	• Travel and tourism • Telecommunications and IT – global enterprise voice and data communications • Banking and insurance • Retail markets generally

6

Imperatives for Growth

While this report highlights a number of actions that could be undertaken to stimulate growth in European industries, there are some that we have deemed to be critical for policymakers and business.

What policymakers could do:

1. Introduce a tiered regulatory environment for high-growth companies that differentiates between stages of a firm's development – small- to medium-sized enterprises (SMEs), and not just large-scale industry, are integral to Europe's quest for sustained growth. Any deregulatory process needs to recognize their differing needs.

2. Implement sectoral strategies endorsed by business leaders and owned at a local level – in this respect there is an important role to be played in instituting change by the regional development agencies operating in different member states. The European Commission is already making steps in this direction with strategies for several industries, including, for example, pharmaceuticals, biotech and ICT.

3. Improve the provision of relevant training and education to address the shortage of relevant skills – knowledge-based as well as more generalist – that threatens future growth in many industries across Europe. Also, ensure that Europe has the academic institutions, commercialization capacity and immigration policy to enable it to compete more effectively for talent and attract and retain high caliber employees.

4. Channel support and frame favorable incentives for a smaller number of emerging innovational clusters across Europe to maximize their size and impact on the wider economy – regional centres of innovation are increasingly a key driver behind growth in the European economy and the positive externalities associated with them can have a fundamental impact on the wider economy.

5. Strengthen the wider networks between business, government and academia to create incentives for increased collaboration to take place and increase the commercialization of research.

What business could do:

1. Focus on identifying and exploiting distinctive capabilities (e.g. specialization or mastery of key technologies) to drive growth and create employment. To achieve high performance, businesses need to examine where they can exploit their comparative advantage to maximum effect. With that specialization, however, often comes the need for structural re-organization and flexibility around that new focal point.

2. Develop 'talent multiplier systems' (i.e. systems that identify, develop and retain talent) so that companies can attract the right human capital and deploy knowledge and critical skills quickly across the organization.

3. Develop a culture of innovation and commercialization that motivates employees and acts as a catalyst to growth.

4. Align around sectoral strategies along with the wider network of stakeholders and promote the benefits of reform so that European Union citizens can identify with and buy into the reform agenda more readily.

5. Increase density of industrial linkages with innovative companies generating extensive spillover effects into the wider economy (e.g., via demand, technology transfer and skills).

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