

# PRESENTATION BY BERNARD CHARLÈS TO THE FRENCH ACADEMY OF SCIENCES

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## *The economy is changing and software is playing a key role*

### Economic transformation is picking up pace

**Bernard Charlès** : What I find the most striking about the global economy is not so much the pace of change but the type of challenges we face.

Fundamentally, the digital world is the virtual world – and at the heart of this lies intellectual property. The economy is steadily being transformed, driven by these virtual worlds which bring stakeholders closer together, simplify trade and transactions, enable us to get things right first time, and above all allow us to better anticipate the impact of our decisions across the entire lifecycle of the products and services we make and use.

The need for sustainable innovation has arisen as a result of this emerging situation. The possibilities of the virtual world have no limits – the only barriers are the ones we set in our imagination. As Jean-Jacques Rousseau said, “the world of reality has its limits; the world of imagination is boundless”.

Sustainable innovation takes into consideration the entire ecosystem rather than just individual economic requirements.

### Economic change is especially fast paced in high-growth countries

**BC** : I’d like to share a few thoughts inspired by my many trips to Asia, and in particular India. I am amazed how countries, which only a short time ago were considered “emerging” economies and are today experiencing strong growth, embrace the most advanced technologies in order to implement major projects.

This is especially true in the area of infrastructure. There is a sharp contrast between the level of economic and industrial maturity of these countries and their clear determination to tap immediately into the latest technology.

This is a lesson for us Europeans – and a powerful incentive to throw caution to the wind. These countries have not only got demography on their side as well as labor costs that still bear no comparison with those in Europe, but what’s more they are in the process of investing in the best infrastructure with state-of-the-art technologies that were developed here in Europe! Ineluctably, the curves will cross sooner or later. More than ever before, innovation and the ability to imagine the future will become key growth drivers in our developed world.

### The digital economy is critical to this change

**BC** : As players in the digital economy, you hardly need telling that innovation and competitiveness are crucial aspects of this economy. However, I believe very strongly that the software industry must also know how to adapt and cloud computing is emblematic of this change as it offers an entirely new platform for our software solutions.

### The digital economy is critical to this change

To fulfill this role, we must ensure that the fusion between the software industry and web-based services is achieved harmoniously. And cloud computing and open source software represent the most powerful catalysts of this fusion.

### *The ecosystem is a central aspect of this change*

### Collaboration is becoming structural: software / Web fusion

**BC** : The worlds of software and the Internet will ineluctably converge. Everything points to this happening since software is needed in order to offer services on the Web and elsewhere. It’s all about software and it’s all one industry. It also creates value. The digital economy will leverage the best of both of these worlds through this fusion, which includes native Web collaboration.

### Business is contributing to social innovation

**BC** : Collaboration is poised to become part and parcel of everyday life at organizations of all sizes. Open interfaces, interoperable systems and shared, natively connected infrastructure will translate into new types of partnerships, capable of swiftly responding to needs and opportunities and ultimately driving innovation.

Among the challenges of this more open world is the need to retain responsibilities and quality of service. For example, someone who is responsible for the quality and consistency of information can only make it accessible under conditions that allow him or her to fulfill their promise. A ‘reasonable’ open approach is key to retaining traceability and accountability.

Data and access security is an essential prerequisite to business collaboration. Whether public or private, the cloud demands explicit security guidelines to allow users to connect and share data within a trust-based environment.

### User communities

**BC** : The user will be at the heart of the process. Users will be able to select the subset of services they require, configuring and adapting them to meet their specific requirements. This holistic vision provides a unique, integrated services environment that users can tap into for both professional and personal purposes, enabling them to leverage the different facets of their areas of activity and interest.

Companies that provide online services engage more closely with end-users. A company providing Software as a Service (SaaS) can more closely monitor how its solutions are used as well as engage with users to jointly work on continuous improvements and directly offer users new functionalities as they are released.

The development of data centers has made it much easier to spontaneously create communities. Just like with social

networks, service users who share the same areas of interest can easily come together within a community dedicated to a specific skill or field.

The cloud is also critical to sharing content within communities. Making content available in the cloud, whether it's for sharing, co-creating or validating, greatly facilitates creation and innovation.

## Data centers are the backbone to collaboration

**BC** : With regard to digital infrastructure and the pooling of resources, the revolution of the cloud isn't really a computing issue; it's more a matter of national and international infrastructure. Value will be created through the new uses and applications that are developed. Think about it: if we hadn't had the necessary power and transport infrastructure available in our countries, industry would never have been able to develop as it has. It is a matter of infrastructure, rather than pipes and cables.

Unfortunately, many of our leaders continue to think that it's a question of pipes and cables... This isn't the case. True, pipes and cables are involved but it is the level of services and infrastructure that will really determine how well startups and established companies can deliver competitive services to the widest customer base, allowing them to generate revenue and expand globally.

## Collaboration is growing between researchers and business

### Differentiation through scientific added value

**BC** : While entire sectors of industry are relocating to regions with lower labor costs, the overall value of businesses – especially in our countries but ultimately everywhere – lies in their ability to develop innovative uses. Real value added tends to be spurred by major scientific breakthroughs. Increasingly today, users and research are making key contributions to value creation (Web 2.0, wiki, voice of the consumer, etc.).

### Fostering collaboration between researchers and business

**BC** : New forms of innovation are emerging, such as social innovation, crowd sourcing, open sources, etc., and it is important to nurture the collaborative ecosystem for business, research and startups. Here are some examples of Dassault Systèmes' efforts in this area:

1) AFDEL (Association Française des Editeurs de Logiciels - French Association of Software Professionals), which we helped to set up, brings together 250 software companies, mostly small and mid-sized businesses. Its role is to jointly represent the industry's interests and promote best practice, provide decision-support tools, and promote the ability of softwarehouses of all sizes to create value and drive growth.

2) The Dassault Systèmes ecosystem, which lies at the heart of our growth strategy, brings together over a thousand

small and mid-size business partners, including software houses, high-tech startups, service providers, retail companies as well as education providers. This ecosystem pools our capabilities for developing high value-added solutions and services for customers in all areas of industry.

3) The Bio-intelligence project, which brings together major pharmaceutical research laboratories and numerous small high-tech innovators to develop a next-generation collaborative platform to better understand and broaden access to new life sciences. The platform is intended to reduce complexity by developing models that raise the level of abstraction and by proposing representations that are accessible to many of the disciplines that have spurred collaborative innovation.

## The economy is changing and software is playing a key role

### Economic transformation is picking up pace

**BC** : Facilitate mutual understanding and communication between business and scientific research, and enable businesses to influence research in advance in order to ensure the successful transfer of intellectual property.

### Build the infrastructure required for digital uses

### Empower businesses to be competitive on all fronts

**BC** : Legally: protecting intellectual property is essential for innovation in France and Europe.

Financially: maintaining a stable shareholding structure is critical to preventing successful companies from being swallowed up by multinationals. Regarding the development of small businesses, it is highly regrettable that the European Small Business Act remains a poor imitation of its American counterpart. It sets out the principles for developing small businesses but does not allow for a powerful growth driver as is the case in the US, where a percentage of public procurement contracts is set aside for small and medium size business through the Small Business Act.

On a taxation level: we must also be more proactive when it comes to taxation in Europe. The discrepancies across European tax systems often force decision makers to have to choose between countries, which can reduce the competitive advantage of domestic companies (including here in France). I hope that I have convinced you how vitally important it is to encourage collaboration between business and research institutes.

Dassault Systèmes is engaged at two levels. As an innovation leader, our company actively pursues collaboration and at the same time our solutions facilitate such collaboration. I very keen to learn what you think is needed for this vision to become and remain a reality.