WILL THE ORGANISATION DISAPPEAR? THE CHALLENGES OF THE NEW ECONOMY AND FUTURE PERSPECTIVES

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Information is the fuel of the new economy and should be understood in its broadest sense, as knowledge, ideas, and brainpower. Intangible goods such as content and software represent an ever-growing share of the economy. The most successful organisations, not only commercial enterprises but also public administrations, are those, which operate on the basis of collective intelligence. This means co-operating efficiently, sharing information, generating new ideas, and developing the capacity to exploit them. Co-operative competition amongst individuals is at the core, providing a major driver for innovation and creativity.

This article looks at how the traditional concept of organisation is dissolving, one of the distinctive characteristics in the economic landscape of the future. The challenges involved are complex and inter-related and should not be addressed by technological means alone. To sustain the creative potential of the new economy, the social and socio-economic perspectives, legal and regulatory frameworks and organisational development issues must be adequately addressed.

1. INTRODUCTION

The new “digital” economy, arising as a result of advances in network technologies, necessitates a new set of rules and values, which determine the behaviour of its actors. These actors can be distinguished as commercial, and non-profit organisations as well as other dynamic market players, i.e. individual and corporate consumers. The digital marketplace offers new and unlimited opportunities for those operating through it. Realising these new opportunities brings new challenges. Players in the digital market realise that to leverage the benefits to be derived, traditional attitudes and perspectives to doing business need to be redefined. As a

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result, the traditional business concepts are abandoned and the concept of organisation is dissolving to be replaced by new entities, which reflect the challenges inherent in this new economic era.

During the industrial revolution, enterprises changed dramatically from close-knit rural communities to a core of structured and independent urban organisations. In the 1980's and 90's these became more global and collaborative, a transition encouraged by fiercer competition, the introduction of information and communication technologies (ICTs) and the rapid emergence of the electronic business paradigm. The enterprise in the digital age is internetworked, i.e. inter-linked on various levels, on the information infrastructure level, (i.e. via intranets), on the organisational level (e.g. by having abandoned the steep hierarchical structures of the past and replaced them by networked cross-functional teams, and on the competencies level (e.g. knowledge networking).

The disappearance of the traditional concept of organisation will be one of the distinctive hallmarks of the future economic landscape. Since organisations are and will increasingly become dependent on technology (section 3), and as technology moves towards invisibility by becoming user-intuitive and ubiquitous, is the organisation then deemed to follow?

In the new economy, the foundation for value creation is no longer primarily focused on tangible, measurable assets. For unlike traditional organisations, the machines of the industrial age where value creation was largely derived from investment in tangibles such as plant and machinery, digital age organisations, or "smart organisations" (Filos & Banahan, 2000), leverage the power of "smart resources" such as information/knowledge, relationships, brands, and innovative and collaborative intelligence, to identify and exploit new opportunities (section 4).

The trend towards virtual collaborative scenarios gives rise to a blurring of organisational boundaries. For many business organisations, strategic partnerships have become central to competitive success in fast changing global environments. Since many of the skills and resources essential to an organisation's capabilities lie outside its boundaries, and as such, outside management's direct control, collaborations are no longer considered an option, but a necessity. Organisations, profit and non-profit alike, will rely on an increased ability to conceive, shape and sustain a wide variety of virtual collaborations (section 4).

Furthermore, the uncertain and fast-changing environments of the new economy require new organisational abilities and competencies. Competitive advantage is derived from organisational adaptability, rather than organisational efficiency. The impact on organisational behaviour and management patterns is far reaching (section 5).

2. TECHNOLOGIES FOR NEW ECONOMY ORGANISATIONS

The technologies that helped shape the Information Society, namely the information, communication and content technologies, have created a single "digital space" characterised by the following distinct features: connectivity and the emergence of networked environments, inter-operability and organisational "boundarylessness", and higher speed and quality of communication and information flow. Technologies

and standards for inter-operability are key to electronic business. Business requirements in the digital economy are diverse and complex and the technological capabilities are still emerging,

- TCP/IP will be established as the ubiquitous network protocol for open Internet transactions, with HTTP as the protocol for web-related transactions. For mobile terminals, the Wireless Access Protocol (WAP) will play a similarly significant role;
- Distributed object-oriented platforms and middleware services will become more stable, offering better performance, scalability and distribution, the most dominant platforms being the Java and CORBA frameworks;
- The rapid acceptance of *Enterprise Java Beans* in the business world raises expectations that this technology will play a decisive role in providing the basis for distributed business applications under a single administrative domain;
- In the area of workflow systems, the concepts, framework, architecture and interfaces proposed by the *Workflow Management Coalition* are the most stable, well-accepted and concrete;
- *Mobile intelligent agents* have significantly changed the way distributed systems are working. All mature agent platforms are based on Java and take advantage of the Java framework, which seems to be the most appropriate one for mobile agent applications and systems. The intelligence of agents will be part of their internal architecture. The role of XML in defining ontologies, i.e. the beliefs, knowledge and expectations for agents will be significant, as well as standard ACLs.
- Due to the advent of XML, messaging middleware systems have gained much attention recently. The *Java Messaging System (JMS)* seems to be the most favourable among those in existence because it is integrated into the Java framework, and harmonisation activities with CORBA 3 will raise their deployment probability. XML also plays a significant role in specifying open Internet value-added protocols for e-business applications;
- Although in the past, standardisation efforts under *STEP* tried to solve inter-operability problems on an applications level, key developments like standardised product models and application protocols, as well as *the modelling language EXPRESS*, have triggered virtual product development applications for product life cycle management.

2.1 R&D Aspects: The Contribution of EU Research Programmes

The European R&D Programmes have played a substantial role in supporting the development of key technologies and applications relevant to the Information Society. Most notable are, R&D efforts in electronic commerce and electronic business on the basis of virtual organisation concepts, concurrent engineering (Fan & Filos, 1999), computer-supported collaborative work (CSCW) and product and process data modelling. The ACTS (ACTS, 1998) and Telematics (Telematics,

1998) Programmes were successful in setting up strong CSCW pilots. These and other activities provided the first steps towards remote working (including telework) and distributed collaborative engineering. Virtual enterprise concepts were, until 1998, strongly coupled to the Esprit Programme (Esprit, 1997).

Facilitating electronic commerce, and in particular the emergence of new electronic business paradigms based on distributed enterprise concepts, have been a priority within the European Commission's R&D Programmes over the past five years (Filos & Banahan, 2000). Until 1999 R&D support was concentrated mainly in the Esprit programme and its international co-operation branches INCO and IMS - Intelligent Manufacturing Systems (IMS, 2000). More than fifty industry-led projects, receiving more than 80 million Euro of support (shared cost funding, 50% industrial contribution) were set up under the Fourth Framework Programme, 1994 - 1998 (Filos & Ouzounis, 2000). Within Esprit, and in addition to regular consultations with industry, a number of user group reference projects were established which brought together major industrial users of IT and the vendor community. The common aim of these projects was to set long-term targets for, and give direction to the research efforts of the IT industry, in order to meet well formulated industrial needs. The user group reference projects dealt with the automotive and aerospace industries (AIT, 2000), the process industries (PRIMA), and the construction or large-scale engineering industries, (ELSEWISE; Mitrovic et al., 1999). Of similar impact for the furniture industry was project FUNSTEP (Jardim-Gonçalves et al., 1999). The AIT initiative was successful in setting up twenty-two collaborative R&D projects funded under the Esprit and Brite-Euram Programmes and had major impact on the development of standards, (e.g. CORBA, STEP, PDM Enablers, WfMC) (Camarinha-Matos, Afsarmanesh, 1999). These projects were, (some of them are still ongoing) operating concurrently within a harmonisation framework. Of particular relevance to the distributed enterprise is the work performed under project AIT-IP (Ducroux, 1999), which set up an open integration platform, based on standards like STEP, CORBA 2 and MMS.

In the IST Programme (IST, 2000), which emerged as an integrated programme from the previous Esprit, ACTS and Telematics programmes, the perspective widened from "virtual enterprises" to include all types of virtual organisations, profit and non-profit alike. In the programme's Key Action II ("New Methods of Work and Electronic Commerce") the focus is now on "virtual organisations". Twelve projects, directly related to the VO concept, were launched as a result of a first call for proposals in 1999. The R&D Programme on "Competitive and Sustainable Growth", in its workprogramme for 2000 (GROWTH, 2000) dedicates Targeted Research Action 1.7 to the extended manufacturing enterprise.

2.2 Socio-economic Aspects

The European Commission has, through its R&D Programmes, actively supported the technological developments and standardisation efforts mentioned above, and accompanied these with relevant policies, legislative measures and socio-economic analyses.

The emergence of e-business, virtual organisational forms, and the digital economy at large, as key constituents of the Information Society, need to be explored in their entirety by involving organisation science, economics, law, the

social sciences as well as by developing an appropriate policy framework. However, due to their unique characteristics, a range of issues other than technological, are beginning to emerge that threaten to inhibit their implementation. The transition towards a global information society requires a regulatory framework involving co-ordinated legislative initiatives, self-regulation, and international agreements.

Socio-economic research relevant to the above issues is currently ongoing in various contexts, (JCMC, 2000; SERIST, 2000; VO-NET, 2000). The 1999 workprogramme of IST contained an action line, II.1.1 - "New Perspectives for Work and Business", which focused on socio-economic research related to networked organisational structures, such as virtual enterprises, based on benchmarking, econometric models, new statistical indicators, technology foresight, legal issues such as liability and intellectual property rights (IPR) protection. Nine projects were retained for contract negotiation as a result of this call for proposals. The IST work programme for the year 2000 bundles major socio-economic research activities under cross-programme action 7 - "Socio-economic Analysis for the Information Society" and aims at studying the interplay between a broad range of technological, human, social, economic, environmental and policy issues that critically impact effective use and adoption of new IST solutions as well as developing novel approaches aimed at identifying and quantifying the many new facets and trends of the Information Society and the emerging digital economy (IST, 2000).

To illustrate, Esprit project PRODNET-II, as part of its work programme, considered virtual enterprises with respect to their sociological and socio-organisational implications and produced a set of recommendations for an anthropocentric application of related technologies in novel organisational contexts (Moniz and Urze, 1999). Esprit project ELSEWISE focused on the use of virtual enterprise technologies in the construction sector and investigated relevant socio-economic effects on society (Damoradan et al., 1999). Esprit project CASTOR, developed a two-level assessment methodology, protocol and tools to determine the socio-economic impact of ICT on European SMEs. Results show that whilst management expectations focused on improving competitiveness through increasing operational efficiency, added value has derived from enabling SMEs to build new virtual, collaborative relationships with their customers and suppliers. As a result, many of the SMEs studied cited direct access to the global market as a major benefit.

2.3 Legal and Policy Issues

Legal and policy-related activities so far have focused on issues such as security, privacy, IPR protection and electronic trade (Julia-Barcelo, 1998), (Meinköhn, 1998). However, issues related to new and flexible organisational forms, e.g. virtual organisations, are now gaining more attention. The point of departure in identifying the legal challenges involved, is in considering the fundamental characteristics of virtual organisations (VOs). To begin with, the VO is a co-operative alliance, often between entities with individually distinct legal identities, which come together to exploit a particular business opportunity. The VO provides participants with a framework whereby they can share the risks and returns of bringing new products and services to market. The key actor in the development of a VO is the "business

integrator” whose role is to identify new market opportunities, draw together skills and expertise necessary to exploit them, identify appropriate partners and establish a common communication infrastructure to facilitate VO operations.

Issues regarding the internal operation of a VO, the relationships between the different partners, and those regarding the way in which the VO deals with the external business environment are not well distinguished and may even be inter-related. The legal challenges stem from the fact the VO appears to be a single entity but may not have a legal identity. Therefore, questions arise as to the definition of liability with respect to third parties. This underlines the necessity for a consumer protection framework as well as appropriate contractual arrangements between the VO and potential suppliers. Conditions regarding termination of contract by the customer and liability for goods produced are needed. Given the fact that the virtual organisation is both dynamic and temporary, questions arise as to the extent and duration of liability, and where conflict on IPR issues may arise, what recourse partners may have in law and what procedures would have to be followed, given the diversity amongst national legal frameworks. Furthermore, with VO partners dispersed geographically and operating under diverse national legal frameworks, the question of differing taxation regimes and accounting practices needs to be considered, as does compliance with employment and health and safety requirements.

At a workshop on the legal issues concerning virtual organisations held in Brussels in October 1999 (Banahan & Banti, 1999), it was recognised that an essential difficulty with regard to the current legal framework is that the development of the digital marketplace is moving much faster than the abilities of regulatory bodies to respond. To facilitate convergence between them, it was suggested to encourage inter-disciplinary approaches like techno-legal research towards technical solutions and practices, like on-line dispute resolution (ODR), or appropriate digital ways of contract preparation and set-up in order to encourage collaboration.

A number of EU directives are in force or will soon come into force, which seek to address some of the issues, in particular, those pertaining to protection and privacy of data, electronic signatures and electronic commerce. A range of other issues is currently under consideration (EC, 2000).

2.4 Smart Organisations

The technological developments described above have turned business upside down. The new economy is "digital" and organisations that participate in it have replaced "bytes for bricks".

As more and more organisations prepare to "go digital", only few of them really seem to recognise what implications this transition will have on their business processes and on the organisation as a whole. The transformation involves much more than setting up a digital infrastructure and requires even more than the ability to enter into a virtual collaboration with other partners. Virtual organisational forms are thus only one element of what is required from organisations in the digital economy.

Figure 1 - Collaborating smart organisations (includes virtual organisations) in an economic web.

The implications of the above trends for organisations have led to a proliferation in terminology applied primarily to enterprises, terms such as, agile enterprise, networked organisation, virtual company, extended enterprise, ascendant organisation, knowledge enterprise, learning organisation and smart organisation. Each definition has its nuance, depending on what particular characteristic, or combination of traits, is given emphasis. The term "smart organisation" for instance, is used for organisations that are knowledge-driven, *internetworked*, dynamically adaptive to new organisational forms and practices, learning as well as agile in their ability to create and exploit the opportunities offered by the new economy. Ultimately, however, they all point to the need to respond to the changing landscape of the digital economy in dynamic and innovative ways (fig. 1). However, the constantly changing customer and market opportunities in the digital economy ensure that there can be no single universal formula for describing the *smart organisation*. Nevertheless, Steven Goldman et al. (Goldman et al., 1995), have described four strategic dimensions of agile behaviour that are crucial to smart organisations. These are: customer focus, commitment to intra- and inter-organisational collaboration, organising to master change and uncertainty, and leveraging the impact of people (entrepreneurial culture) and knowledge (intellectual capital).

3. VALUE CREATION IN THE NEW ECONOMY

The emergence of the Internet and related technologies has led to new ways of interacting and inter-linking between individuals as well as between organisations. Some characteristics (Kelly, 1998), include:

A networked structure and self-reinforcing mechanisms. Nodes and connections are the basic ingredients of networks, and they increase in complexity exponentially with the growing number of nodes. Adding intelligence to the nodes

enables a network to reach levels of unforeseeable “smartness”. The number of possible interactions and options grows exponentially. In a networked environment, small efforts can lead to large effects. Mathematically, the sum value of a network increases as the square of the number of members, which means that adding a few members can dramatically increase the value of the network for all members, which in turn acts as a generator for growth.

The law of abundance. Value is created through the opportunities inherent in the potential for relationships in a network. The network economy rewards the plenitude open systems offer, more than the scarcity of closed systems, and therefore, the larger a user community becomes, the more value a relationships-enabling product has. The incentive for some commercial vendors to give technology away happens only because they realise that there is more to gain from adhering to an open standard than from maintaining a unique competitive advantage. If goods and services become more valuable as they become more plentiful, and if they become cheaper as they become valuable, consequently, **the most valuable things of all become those that are ubiquitous and free.**

Relationships. In a network environment “spaces” aren't bound by proximity. The advantage of spaces is rooted less in (non-geographical) virtuality and more in their unlimited ability to accommodate connections and relationships. Networks do not eliminate intermediaries, they are a “cradle” for intermediaries, since by definition, each node in a network is a node between others. The more connections there are between members in a net, the more intermediary nodes there can be. Everything in a network is inter-mediating something else. Since a relationship involves at least two members investing in it, its value increases exponentially as fast as one's investment. For this reason, such relationships, once established, are costly to dissolve. The network is the structure that thrives on relationships. Therefore with the development of the networked economy, the key source of value creation has shifted emphasis from productivity to relationships. The new economy relies on the synergies inherent in the multi-faceted interactive relationships of its players. Time changes in a network from sequential to random, enabling a skimming between nodes. Web time isn't just seven times faster than normal time. It's also a thousand times more random (Levine et al., 2000)

In a digital economy, the foundation for value creation is no longer primarily dependent on tangible assets. Whereas industrial age organisations derived value from investment in tangibles such as plant and machinery, smart organisations leverage the power of “smart” resources to identify and develop new opportunities. They can be leveraged to generate innovation. Some of the value creating, core competencies of smart organisations are given below.

3.1 Collaborative and Networking Competencies

For most business organisations, large and small, collaborative partnerships have become central to competitive success in fast changing global markets. As many of the skills and resources essential to an organisation's competence lie outside its boundaries, and outside management's direct control, partnerships are not an option any more but a necessity. Smart organisations today have the ability to conceive, shape and sustain a wide variety of collaborative partnerships. Hence the challenge:

the "capacity to collaborate" needs to become a core competence of the organisation (Doz & Hamel, 1998).

Organisations involved in partnerships are held together because of the added value that such partnerships offer them. There are a variety of *strategic goals* that organisations may pursue by entering into co-operation with others, goals such as,

Resource optimisation. Sharing investment with regard to infrastructure, R&D, market knowledge, etc. and the sharing of risks, while maintaining the focus on one's own core competencies;

Synergy creation by linking complementary competencies (i.e. to offer customers a solution rather than a mere product or service);

Achieve critical mass in terms of capital investment, shared markets and customers;

Increase benefits. Achieve shorter time-to-market, higher quality, with less investment.

Networking on the ICT level enables organisations to move into extended or virtual organisational forms. This may not be enough, though, if the organisational structure and the management culture need to move beyond steep hierarchies and related business processes towards flat hierarchies paired with networked cross-functional teams. The next step would be to involve the knowledge dimension into the networking, to empower the individuals in those teams to dynamically link up with each other and to share information and knowledge (Savage, 1996). Figure 2 illustrates how smart organisations have a networked structure involving all three dimensions, thus leveraging the offers of ICTs, demonstrating their collaborative capabilities while focusing on their business core, and also exploiting their knowledge potential.

Most organisations are not designed, they evolve. Biological analogies provide an appropriate means to describe organisation phenomena. But not all organisations adapt equally well to the environment within which they evolve. Many, like dinosaurs of great size but with little brain, remain unchanged in a changing world. In the new economy the law of survival of the fittest will evidence its relevance to organisations as it does in the biological domain.

Figure 2 - Smart organisations are networked in three dimensions

Charles Handy (Handy, 1999), remarks that the old understanding of alliances with suppliers, consultants, retailers and agents is changing into new types, i.e.

stakeholder alliances with suppliers, customers and employees, as well as alliances with competitors. As no organisation today can afford to remain an "island entire unto itself", **every organisation is a network of other organisations**. No discussion of structure can therefore rest content with the inside of the organisation.

Newly proposed organisational metaphors include terms like *adhocracy*ⁱ (Mintzberg, 1980), *cluster organisation*ⁱⁱ (Mills, 1991), *network organisation* (Imai & Itami, 1984, Foy, 1980), and *organisational marketplace*, (Williamson, 1975). All these new concepts share certain common characteristics, like flatter hierarchies, dynamic structures, empowerment of individuals, high esteem of individuals' capabilities, intellect and knowledge. Although they gain importance in the network economy, they cannot be considered a panacea to cure all management ills.

Despite the proposed new models, the basic duality between bureaucracy/hierarchy and network/task force structures remains. Nonaka and Takeuchi argue that while for most of the 20th century, organisational structure has oscillated between these two basic types, what is necessary for knowledge-driven organisations today is a smart combination of both. They propose the concept of the *hyperlinked organisation*ⁱⁱⁱ, which is able to maximise corporate-level (hierarchical) efficiency as well as local flexibility (networking) as it grows in scale and complexity while maintaining its basic capability to create value.

3.2 Managing Knowledge

Managing knowledge is a core competence of smart organisations. Thomas Stewart uses the term "intellectual capital" to denote the collective brainpower that comes in the form of knowledge, information, intellectual property, experience. In the digital economy knowledge becomes the primary raw material and result of economic activity (Stewart, 1998).

The initial challenge in moving towards the smart organisation is that, to leverage the power of **knowledge**, one must know where to find it and once found, know what to do with it. Knowledge can be either explicit or tacit (Polanyi, 1966). In the case of the former, knowledge is formal and systematic and thus easy to capture, store and communicate. Tacit knowledge on the other hand is personal, a combination of experience and intuition, and as such, the organisation's ability to capture and communicate it is heavily dependent on the individual owner's commitment to the organisation and to its need to generate value from it. In this sense, a great deal of trust and loyalty between the individual and the organisation is necessary to leverage organisational knowledge, including its tacit dimension.

Nonaka and Takeuchi see as a basic precondition for organisational knowledge the creation of a **hyper-linked organisation**, which is made up by three interconnected layers or contexts, such as the business system, the project teams and the (corporate) knowledge base. Its key characteristic is the capability to shift contexts. The bureaucratic structure efficiently implements, exploits, and accumulates new knowledge through internalisation and combination. The project teams generate (via externalisation) conceptual and (via socialisation) sympathised knowledge. The efficiency and stability of the bureaucracy is combined in this model with the effectiveness and dynamism of the task force or project team. Moreover, they add another context, the knowledge base, which serves as a "clearinghouse" for the new knowledge generated in the business system and the

project team contexts. In addition to that, the hyper linked organisation has the organisational capability to convert knowledge from outside the organisation by being an open system that features also continuous and dynamic knowledge interaction with partners outside the organisation (Nonaka & Takeuchi, 1995).

3.3 Managing Relationships

In the digital age, a key factor for success is the ability to innovate and innovation results from the clash of ideas. Networks, provide a natural environment to encourage this clash of ideas. In the networked economy, where everything and everyone is, or can be, connected, relationships are undoubtedly a very powerful source of value creation. In the industrial economy, relationships were limited in scope and important only in so far as they contributed to increased productivity. With ubiquitous network technologies there is little limitation to the nature and scope of relationships.

Connectivity breeds relationships. In a networked economy, the connections are "hyperlinks". It's not just documents that are hyperlinked over the Internet. People are. Organisations are. Real business is the set of connections among people (Levine et al., 2000). Increased productivity was the "raison d'être" of organisations in the industrial age, in the digital age however, where information is in abundance, building relationships, and networks to facilitate and maintain them, is a key factor for success. One important element of relationships is emotion. The information and emotional engagement make up a growing proportion of the value that is being exchanged in a network.

When relationships are fostered via networks, roles become blurred: The seller also becomes a buyer of valuable feedback on his product. As Alvin Toffler illustrates (Toffler, 1981), the distinction between producer and consumer diminishes as consumers begin to play an important role, e.g. in the development or further improvement of a product. Mass customisation enables smart organisations to see customers, suppliers, regulators, and even competitors as stakeholders who make meaningful and positive contribution.

Brands are a source of value, not unlike capital and knowledge. For the owner organisation they represent accumulated surplus value turned into client loyalty, which translates into lower marketing costs, higher prices, or larger market share (Davis & Meyer, 1998). In digital markets brands are an invaluable source of trust and orientation to consumers who are looking for quality and security. Many organisations invest heavily in building a reputation that is conveyed by an associated brand image. Some of them even have outsourced almost all other activities and keep a focus on managing the brand as their core competence.

In a digital economy the problem is not information access but information overload. As Herbert Simon said, "the wealth of information creates a poverty of attention" (Shapiro & Varian 1999), it will be important that relationships management focuses on techniques that help win the attention of people.\

4. NEW ECONOMY ECOSYSTEMS

Sustainable innovation is the result of persistent dis-equilibrium between chaos and order. A network economy resembles an ecology of organisms, inter-linked and co-evolving, constantly in flux, deeply tangled, ever expanding at its edges.

4.1 Unpredictability

How can organisations cope with uncertainty and unpredictability?

Firstly, organisations, like complex organisms, have a "nervous system" which enables them to thrive on chaos and to guide them through turbulent times. Organisational nervous systems provide the functions sensing and learning, communications - internal and external, co-ordination, and memory. In fast moving unpredictable digital environments, "nervous system" functions are essential to provide the organisation with anticipatory, filtering, empathic, learning and adaptive capabilities in real time (Robinson, 2000).

Secondly, openness to the environment. Economic activity is fractal. It shows the same structure and obeys the same rules for creating value at the level of the economy, the organisation and the individual. Organisations adaptive to the economic environment are open, i.e. with permeable boundaries, operating at the edge of chaos (Davis & Meyer, 1998).

Thirdly, the fittest survive. Organisations become fit through variety, the diversity of thought, old and new ideas, that breed innovation. Cross-functional, multidisciplinary teams capable of creativity are an essential element to this. Combined with openness, through ideas from the market and inter-organisational exchanges, organisational fitness grows.

Fourthly, being big and small at the same time. The essence of ecosystems is the balance between big and small organisms dependent on one another. Likewise, organisations must be big to be capable of large-scale investments and they must be small, nimble, unified around a purpose, capable of paying attention to the details of important relationships (e.g. via economic webs, figure 1).

4.2 Fuzzy Management

Relationships between more than two people can be structured either as hierarchies or as networks. In the absence of plentiful information, (e.g. on the battlefield), the most intelligent way to construct and manage a complex organisation is via a hierarchy. However, when information is plentiful, rank is replaced by peer competence. Organisations looking to the future are coming to recognise the synergies inherent in multi-faceted relationships with customers and collaborators.

To understand an organisation's character and provide insight into why it behaves as it does, it may be appropriate to use metaphors to underline the key issues. Such metaphors are widely used in the field of Organisational Development, a field defined by French and Bell as, "...a top-management supported, long range effort to improve an organisation's problem solving and renewal processes, particularly through a more effective and collaborative diagnosis and management of organisational culture..." (French & Bell, 1990). Organisational Development practitioners have viewed organisations of the industrial age as highly mechanistic

systems. These machines evolved to cope with an environment that was, generally speaking, stable and predictable.

The organisation as machine exhibited the following characteristics, (Burns & Stalker, 1961),

- A degree of task differentiation and specialisation - a prerequisite to improving efficiency and thereby increasing productivity. However, whilst leading to greater understanding of processes and process improvement in the short term, in an organisational context, differentiation inevitably leads to a degree of demarcation, which in turn leads to conflict and an imbalance between organisational imperative and individual interests;
- Reliance on hierarchy to co-ordinate tasks – in an environment where the free-flow of information is inhibited, hierarchy is the only way to structure relationships between those within the organisation. Hierarchy has a tendency to place individual interest over mutual benefit and as such can stifle creativity and innovation;
- The tendency for top management to regulate and control the flow of information through the organisation – organisational boundaries must be preserved to retain the power necessary to preserve position and status;
- An emphasis on vertical interactions – where decisions are taken at the top and filtered down through the organisation for implementation. As such, the further down the hierarchy, the less sense of ownership there is for the achievement of organisational goals and objectives;
- Insistence on loyalty to the organisation and top management – a core value in an environment where people sell time rather than competency;
- High value placed on internal, (local), knowledge, experience and skill – where geographical constraints are crucial in determining the environment in which the organisation is located;
- One-to-one leadership style – where leadership and management were not clearly distinguishable, and the economic environment was somewhat stable, emphasis was placed on the need to organise and control rather than to motivate and mobilise for change.

Figure 3 - Management in a mechanistic system

The metaphor of “organisation as machine” clearly has limited relevance to organisations in the digital age, where the economic environment is constantly shifting. Perhaps a more appropriate metaphor would be to view organisations as

organic systems, constantly evolving to cope with the demands of the environment. In contrast to the traditional model (figure 3), the *organisation as organism* is characterised by the following,

- A continuous reassessment of tasks and assignments through interaction with others – organisational performance is improved through an iterative process whereby the organisation moves up the learning curve, e.g. through “learning by doing”;
- A network of authority, control and communication based on expertise and commitment to the overall task rather than on hierarchical roles – since the task must be constantly open to revision;
- Tendency for communications to be much more extensive and open – a characteristic inevitable in an environment where the free flow of information throughout the organisation is uninhibited;
- Communication style and pattern that is both lateral and diagonal as well as vertical – the organisation becomes a network both internally and externally;
- Greater emphasis on commitment to the organisation’s tasks, progress and growth than on obedience and loyalty – as decision making power is placed in the hands of individuals who are best positioned to rise to the challenges facing the organisation, a greater sense of community and ownership is generated. The individual realises that he/she is a stakeholder in the organisation;
- High value placed on expertise relevant to the technological and commercial milieu of the organisation – as a result of the need to focus organisational resources and competencies on core activities;
- Leadership style with emphasis on consultation, interpersonal and group processes – in an environment subject to constant change, emphasis is placed on establishing direction, aligning, motivating and inspiring people.

Figure 4 - Management in an organic system

Whilst this view of organisations as living organisms does seem more appropriate, it fails to illustrate the fact that in a networked economy, the roles of “superior” and “subordinate” are becoming somewhat blurred and management becomes fuzzy, i.e. laid-back, trust-based, less controlling. Organisations are

communities, not properties (Handy, 1997), communities of partners, colleagues, or associates, who share a vested interest and common purpose. A community is a set of relationships, a shared asset, created through the investment of its members (Dyson, 1998). They depend on human interaction, individuals sharing information and experience, something that is only possible where there is a high level of trust. **Trust** is indeed a key issue in determining the success of relationships in the digital economy. The value of the partner's contribution is recognised and used for the good of the community.

Organisations in the network age, unlike those of the industrial age, will not seek to control their environments but recognise that any such attempt would at best, fail, and at worst, stifle the creativity and imagination necessary to support innovation. In the digital economy, all markets are global and participants are free to focus and re-focus their commitment as they see fit. With this in mind, management style is evolving from one, which placed emphasis on planning, organising and controlling, to one, which emphasises providing vision, motivating and inspiring.

5. WILL THE ORGANISATION DISAPPEAR?

The new economy challenges the organisation in many ways. Firstly, virtual technologies and globalisation are leading to a blurring of organisational boundaries. Secondly, value creation becomes more and more dependent on intangibles, such as knowledge, relationships, brands required for mass-customisation. Thirdly, uncertain and fast-changing environments require new organisational abilities such as flexibility, speed, and adaptability.

As already mentioned, organisations are increasingly dependent on technology and as technology moves towards invisibility, the organisation is likely to follow, under certain conditions.

A similar rule to the Heisenberg uncertainty principle is assumed to apply to organisations. The variables here are "organisational competence" vs. "organisational locality". The latter term, organisational locality, implies organisational stability/structural rigidity (as opposed to boundarylessness and fuzziness at the organisation's borderline). The principle says,

$$\Delta(\text{org. competence}) \cdot \Delta(\text{org. locality}) \geq \text{org. performance constant}$$

In other words, a great uncertainty (indicated by a large delta, " Δ ") in the organisation's competence is related to a relatively tight management, i.e. a very small delta in organisational locality. The tighter the organisational structures, and the more the organisation is closed towards ideas and knowledge, the less competent it is, or better, the less aware it is regarding its competence. On the other hand, the larger the organisational fuzziness and non-locality, the more ideas and knowledge can be leveraged. Organisational competence becomes certain.

The disappearing organisation is spread with regard to organisational locality, but its competence is without doubt. Ultimately, competence relies on the collective knowledge of empowered individuals outside organisational confinements.

6. CONCLUSIONS

In this paper we tried to highlight some of the most important challenges facing the organisation in the digital age. The unprecedented opportunities offered by the Information Society will change the ways organisations relate both to each other and to the individuals who provide their core competencies. In an environment, where organisations are *internetworked*, the boundaries between organisations become blurred. This is particularly evident in the way in which private and public organisations are evolving. If viewed as opposite ends of a spectrum, with the public sector at one end and the private at the other, both sides are moving towards convergence. ICTs allow a greater degree of transparency and with transparency comes the need for accountability. In the case of public organisations, the shareholder, (taxpayer), demands a higher return on investment. The public sector is thus compelled to downsize in an effort to eliminate waste. For the private sector, the situation is much the same. Stakeholders, i.e. customers, employees and shareholders, demand higher added value, better quality and responsiveness to demand. In the new economy, the private and public organisations are faced with similar challenges, as they converge to meet their social obligations.

In the new economy where greater emphasis is placed on leadership rather than management, the issue of organisational direction and commitment to it, is of crucial importance. In the future, organisations as communities will evolve more towards becoming vehicles to facilitate the release of human potential. As such, organisations will develop as centres for learning and excellence that focus on the individual and his well-being and assume a moral obligation to play a proactive role in the development of society.

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ⁱ Alvin Toffler's word, built on theoretically by H. Mintzberg (Mintzberg, 1980), to being a challenging array of projects, task groups, committees and experts

ⁱⁱ D. Quinn Mills (Mills, 1991) sees the effective organisation being made up of large number of self-contained "clusters" which may be called projects, business units, task forces etc., co-ordinated by a central cluster which administers the business as a whole

ⁱⁱⁱ They call it in fact the "hypertext organisation"