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Exploring eGovernance of the network industries

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Abstract

Since the 1980s the network industries (post, telecom, electricity, air and rail transport, and water) worldwide are undergoing substantial transformations. These transformations have been triggered by institutional changes in both property regimes and coordination mechanisms (unbundling and subsequent competition in the liberalized segments of these industries). The paper argues that the governance of these liberalizing network industries has not really followed suit, leading to a significant institutional governance deficit of these industries with often serious consequences (safety, security of supply, etc.). The paper furthermore argues that the active use of the ICTs in the governance of these liberalizing network industries is still seriously undervalued, but that the ICTs hold significant potential for improving network industry governance. After making the case for such an e-governance of the network industries from a theoretical point of view, the paper will then illustrate current practices of e-governance of the network industries by means of mini case studies. It will finally outline the potential for a future systematic and in-depth usage of the ICT for purposes of governance of the network industries.

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INTRODUCTION

Change is a constant and this paper presents some of the key skills that managers and leaders must acquire in order to cope with them in the coming years. We will first stress the main dimension of the changes taking place in the world today and in particular the aspects of globalization, State transformation and development of ICTs as highly impacting our reality. We will then emphasize how e-Government has developed as one of the way public policy makers have attempted to propose if not solutions at least learning options and new forms of public service delivery. In a third part, we will examine the various challenges that this approach is facing and in a fourth section how e-Governance may constitute a new approach to overcome some of the current difficulties we are dealing with. We will continue by showing that this e-Governance rationale may help go beyond some simplistic expectations and lures of the current e-Government trend and finally we will indicate key domains and problems it will enable to treat collectively. We will finally position the wide area represented by the various network industries in our society will make a difference not only in terms of productivity but also as far as social empowerment and cohesion is concerned.

1. THE WORLD IS RAPIDLY CHANGING…

The development of e-Government and e-Governance takes place in a very specific environment and contextual pressure which we must understand and learn, in order to steer at best. This overall change can be identified as manifold, although producing a composed impact on our lifestyle, level of wealth and relationships, inter-regionally and inter-nationally speaking. Let us stress in particular:

- **Globalisation**, appears as an emerging and constantly re-inforcing process. Globalisation is more than just the "mundialisation" identified by previous researchers, from Braudel to Wallerstein, rooted in Middle Age discoveries and expressed through successive expansions, themselves supported by ever more efficient communication means, up to the complete coverage and information production upon, of the planet, as ultimate cognitive object. Globalization is the effect of this building process in the sense that its overall power relationships (let us think about conflicts or the inequalities of means and performance), but also local initiatives may impact instantly or gradually the rest of the world, thanks to highly interconnected processes and interests. Needless to say that Information and Communication Technologies (ICTs) re-force this process. Globalization can be perceived as a source of opportunities, as the scale for any activity tends to take place in a much broader arena than before, but also as a constant pressure, with positive and more negative consequences.

- **Economic competition,** as a result of the previous phenomenon**,** became pervasive and almost a safeguard free paradigm, with significant consequences in terms of energy and material output, nature transformation and technology mastering, but also social and knowledge divides as well as damages at various scales and severe environmental threats ahead; economic competition is believed to benefit the customer, encourage innovation at all levels, and as a consequence, generate a better society. It also generates local shifts, and undesired effects, with economic, social and cultural dimensions, to which remedies must be found. Public policy and more profoundly political elites and leaders in major OECD countries have set up a framework for developing competition at

even further steps, changing the rules of politico-economic regimes in a heavy trend program called liberalization.

- **State transformation:** in this context, reinforced local means to express needs, projects and alliances in separate terms grow in parallel with globalization pressure and transnational forms of economic competitiveness; it is therefore no surprise to see the State entering into a phase of redefinition. Sovereignty is often the core of the discussion, but more profoundly, what seems to be the essential of State prerogatives is most regions of the globe, is being reshuffled: public service delivery can often be delegated, with then a necessary re-enforcement of policy-making and regulation capabilities towards more efficiency, ethically consistent supervision of services. It is of course particularly the case of industries traditionally owned by the State in many countries (telecommunications, energy industries, transport, health, etc.), but also of more specific administrative services (let us think of geographic information systems for instance).

- **Information and Communication Technologies** (ICTs) either as a tool or structural productivity lever, support both ordinary communication and innovation networking environments; they also, along the way, modify lifestyles, organizational boundaries and institutional adaptation capabilities. They help solve problems but also feed divides of various natures. They are supposed to define a new social paradigm, the Information Society, a world of promises, still to a large extent to be verified.

The e-world developed in this context, Internet was the tool that on topic of already existing computing instruments and applications changed it all. Private initiatives came first, pioneering sectors being the banks, tourism, aviation, the military, then as somehow an post Internet bubble remedy, but for sure in the continuation of messianic announcements by Al Gore and Martin Bangemann in the early nineties, State-supported efforts to develop converging efforts emerged, in OECD countries first, before expanding as standard program or at least expectation in all countries, regions, municipalities of the world. After a few hesitations on terms, digital Government, e-administration or other lead to a more consensual formulation to this underpinning effort, e-Government (the former concepts still coexist).

2. …AND THEN CAME E-GOVERNMENT…

The definitions of e-Governement are numerous. Let us propose here a middle-of-the-road concept. e-Government is the composite trend governments at all level, mainly through their operational arm, the administration, and subsidiarily through the access of citizens to public affairs, aims at promoting 1) a better and more efficient administration, 2) more effective inter-administration and administration-enterprise relationships and 3) user-empowering servicing and more transparent access of citizens to political decision-making. The model of development for this pervasive effort is the famous stage concept of Gartner (2000), which has been reformulated ever since with minor variations. It supposed stages of phases and complexity through which government, and in most cases it should be more accurate to say the administration, deploys means of providing information, and gradually more interaction-based service access to the users, online.

This development has started in some isolated cases somehow before the Internet (digital cities, like Amsterdam, for instance), but of course, the nineties were the period during which all this really took off. Measuring the deployment of e-Government became a considerable business, benchmarking

countries and regions in terms of initially, how much they could show as far as computer and Internet accesses were concerned, then various forms of "readiness" or administrative sophistication they could report upon. More recently, measurement started to become a more scientific endeavour, coping with complex and partially contradicting features to benchmark such as efficiency, effectiveness, openness, etc. This debate is now open as to emphasise real impact or track effectiveness with figures and verifiable models and all our indications show that we are only in the beginning of this process. Technological evolution may also soon prove to be a strong modifier of the initial e-Government development framework, wireless solutions, satellite coverage and access and even more, mobile phone expanding potential. Let us proceed now to a brief evaluation of the situation, globally speaking (for the inequalities of e-Readiness, major consulting firms' report are sufficient to understand the general pattern).

3. PENDING CHALLENGES

Some general challenges, as previously evoked are linked to the fact that e-Government., just like all e-activities, tends to modify organizational boundaries, statuses and even more, to generate new risks and opportunities that were not part of the pre-Internet landscape. Some of these changes concern the networking capabilities of the organizations, their internal or shared processes, the rationale of the value-chain and even some institutional adjustments. In fact, one could say that full-fledged digital transformation of services, with the possible supporting incorporation of several technological innovations, most certainly lead to institutional redesign, unless some new problems are immediately recreated (let us evoke for instance the risk inflation of back-office due to exaggeratedly accessible online services). However, this organizational and institutional dimension of ICT-induced changes modify in a considerable manner the issue of measuring and comparing achievements as they necessarily involve more complex changes than just efficiency or optimization effect due to the digitization of existing administrative services. A whole new domain of what to measure and how to do it is therefore open to exploration, much beyond the rather simple and always difficult to demonstrate reality of the "e-indexes".

Some other issues or challenges are more specific, but no less important to envisage a more holistic perspective, such as security and identity management, mobility of actors and organizations supported by enhanced technological means and accesses, territorial and data mining-rooted surveillance and private sphere reconsideration, productivity and benefit capturing, ICTs as a trigger for development, cultural diversity, etc.

In a more generic statement, we see e-Government as very heterogeneous and having quite many difficulties, almost everywhere, to evaluate, before, during and after projects undertaken, with effective and sustainable cost-benefit criteria and setting priorities for high impact solutions (vs. quick wins). In addition to this, while e-Government initiatives have so far reached in many cases spectacular inroads in terms of service delivery, especially by digitizing the front-office that in many cases are just "mirroring" existing and not always well-restructured back-office, ICTs are so far not being systematically (or at all) used with regard to the other functions of the State (namely, regulatory and policy-making). Thus, the potential of ICTs in linking the overall functions of the State and the different levels and actors involved in the governance process, is far from being realized (or in many cases even started). Combining the above-mentioned, general or more specific, challenges that e-

Government is confronted with, and the necessity to address these issues with a consistent toolbox and terms of multi-actor, multi-level and multi-sector involvement, we are obliged to ask whether e-Government is not forgetting some important "missing masses" in its linear, optimistic and mostly mono-factor type of deployment.

4. FROM E-GOVERNMENT TO E-GOVERNANCE

The numerous e-activities, e-products, and e-services which are currently being displayed in the public sector cannot be fully understood, appreciated, and assessed if they are not placed within the much broader framework of State transformation, as mentioned in the introduction. However, it is important to stress why. Indeed, the transformation of the State's status encompasses changes in three separate dimensions, namely:

- the growing emerging of non-state actors, basically transnational corporations (TNCs) and non-governmental organizations (NGOs). Increasingly, the State has to share its power with these non-state actors. Such power sharing is most pronounced at the supra- and at the infra-national levels.

- The growing emergence of levels of managing public affairs, other than the nation-state level. I am thinking here in particular of the emergence of supra-national levels (EU, global), as well as of infra-national levels (local, regions).

- The growing differentiation of the State's three main functions, namely the service delivery function, the rule-making function, and the (rapidly emerging) regulatory function. These three functions can increasingly be treated as being separate from each other and therefore being shifted to the different levels and the different actors.

These three movements are being combined with each other, which leads to the fact that public affairs become more and more fragmented (functions), diluted (levels), and outsourced (to non-state actors).

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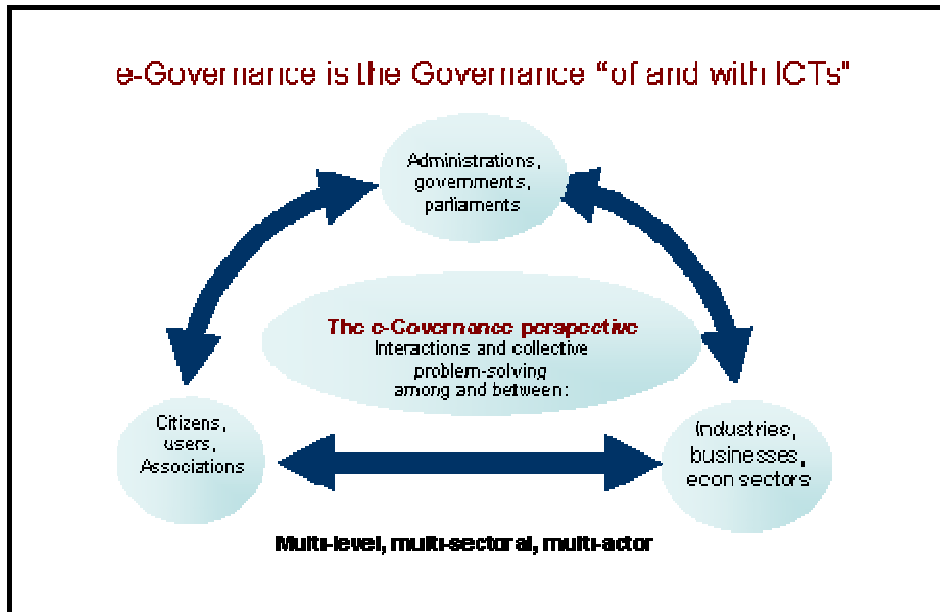
Source: EPFL-CDM-MIR-e-Gov

There is in particular a deficit of cross-functions, seamless operations in which non State-stakeholders can play a proactive role. At the same time, enterprise-based and private individuals' e-activities develop quite freely and growingly. There is therefore a place for a different type of steering that the one eGovernment promotes. We call it e-Governance.

It is quite clear that our concept is not shared worldwide. Quite it is the contrary. For many, e-Governance is just one more buzzword for e-Government. For others, who aim at specific identifications, e-Governance is merely an indication of the impact of e-Government outside of the administration outreach, in particular when private economy actors are active stakeholders.

We postulate, as for ourselves, that there is a need to consider a more radical paradigmatic shift, as a complement but inherently different than e-Government, e-Governance is the field of activity where coordination, negotiation, arbitration, networking and regulation (just to mention essential steering function), with ICTs but, also, of ICTs, involved all sorts of non-State actors, the State representatives being at best one of the stakeholders.

There are basically two converging processes that support the activities in the e-Governance arena. One which stems from insufficient coverage from the State, of problems that need to be solved but in which most solutions, experiments and expertise, from design to usage, are mainly motioned by non State actors, as innovative move or as survival need. The other one, emerging from technology or service users, as inhabitants or as specific customers of a given economic market, individuals, communities or local enterprises, expresses some form of bottom-up creativity in which the State may play a role but only after the interactions and processes tackled reach a certain consistency level. It is particularly true in the ICT area, where new services, habits, components or even technological ecosystems (let us think of Ipod, digital photography, smartphone applications or GPS-based services) emerge with barely any State presence of any kind. e-Governance is an intermediation arena in which negotiations, experiments and networking make important use of ICTs and in turn may also be dealing with some regulation of ICTs. After a while, in particular in the second case, the State tries to get a hold on it, sometimes with success (standardization in WIFI for instance), sometimes not (governance

of the Internet). In other cases, the issues is still open (pornography, intellectual property rights of ICT multimedia products, etc.).

5. BEYOND AN ILLUSION

Information is not knowledge neither competence. As a matter of fact, information access and sharing, expert data handling, much the contrary, necessitates a lot of knowledge. Information is not the first stage towards, neither the pre-condition of knowledge, it is quite the contrary. In the same perspective, the increase of participation in the usage of ICTs is no automatic and linear step towards a deep, effective, sustainable or democratic evidence. Just the opposite, one has to stress that to carry out a collective learning of some significance through ICTs, more horizontal processes, empowerment and trial and error linked with experience sharing must somehow take place "upstream" or at least considered quite early in an ICT-based project to constitute a democratic enhancement chance. The Internet, e-Government, e-learning, etc., do not lead in a straightforward manner to better chances and awareness among practitioners. e-Governance stresses the importance of the "how" things are done rather than what is done, the learning residing much more in the causality chain than the other way around. Altogether, in particular if mishandled, wrongly put into perspective, or simply shortsightedly tied with short-term, low impact efficiency goals of substituting actual processes with digital equivalent without any further reflection of the organization, ICTs may not be always necessarily profitable, nor e-Government in all cases, lead to betterment of administration performance or servicing to the citizen. Recent studies have found vast differences among countries in the maturity of their e-Government efforts. One of the key finding, is that even the most mature countries have tapped less than 20% of the potential. Furthermore, only very few governments have opted to use e-Government applications for transactional services or networking; and even fewer governments use it to support the genuine participation of citizens in politics. Those who do, in most cases, apply it at a very rudimentary level.

The pitfall suggested here, that involves a mere digital translation of existing services, with all the technological solutions outsourced and no particular change induced in the value chain, we call it "Change I type". The e-Governance type of interactions and collective-problem solving negotiation, which may involved State agencies and condition some redesign to fit the new assignments, experiments or opportunities of alliances and partnerships, we call it "Change II type". Change I is ICT driven, Change II is basically the art of reconfiguring processes, tasks, roles and if necessary, institutions in order to make better use of ICTs. Change I is mainly a substitution operation, Change II a new deal to enhance each stakeholder's chances. Change I is mostly an administration-focused preoccupation, rhetorically concerned with servicing customers or users better, Change II is often multi-actors, multi-levels and multi-sectors. e-Government, namely the exercise of administratively governing a territory through the intensive use of ICTs, can be considered as an industry which must be steered or managed. We are rather short of all the political claims of the e-Government concepts, in particular on the one hand the promotion of facilitated inter-relationships between the administration and the private economy and on the other hand, the empowerment of the citizen (no necessarily equal to his ICT-supported participation in public activities, as said before). To give an example, in November 2005, all four e-Government Good practice awards distributed to innovative e-Government projects by the European Commission were Change I type of operations.

6. SOME KEY DOMAINS OF CONCERN FOR E-GOVERNANCE

Any complex issue will bring quite quickly issues to deal with, which may well be e-Governance problems rather than e-Government ones. Let us mention a few areas in which we are involved and for which new concepts, experiments, designs and expertise need to be fostered:

- Public security development and regulation

- Identity management

- Risk management, not only technological, but also economic, political and social ones

- Keeping up the motivation for innovation beyond the best or good practice trend (which aims at not always reinventing the wheel, a goal quite noble in itself)

- Developing new mobility schemes for individuals and organizations, with the kind of knowledge and environments which will enable them

- Cross-border applications and projects

- Cross-function learning beyond the boundaries of the various network industries in which e-activities are deployed (telecom, post, transport, energy, health, education, etc.)

- Territorial management for development

- The various types of digital divides to be taken care of.

For all these problems, and of course many more to be identified and documented, which most of the time do not occur separately but in conjunction (the above listing is in reality in matrix of issues), there is a need for new competence, leadership and combined efforts and learning patterns, first in projects, experiments, knowledge sharing and benchmarking as until now, but also in knowledge management and neo-institutional skills. We have worked in that direction and will pursue research and advisory services to support these claims. In this regard, the Chair MIR (Management of Network Industries) at the College of Management of Technology of the Ecole Polytechnique de Lausanne (EPFL), had crafted a one-year part-time high-level Executive Master in e-Governance, in partnership with renowned Universities and research centers worldwide, in order to undertake a continuous "learning journey" around the Governance "with and of" ICTs. (http://egov.epfl.ch/)
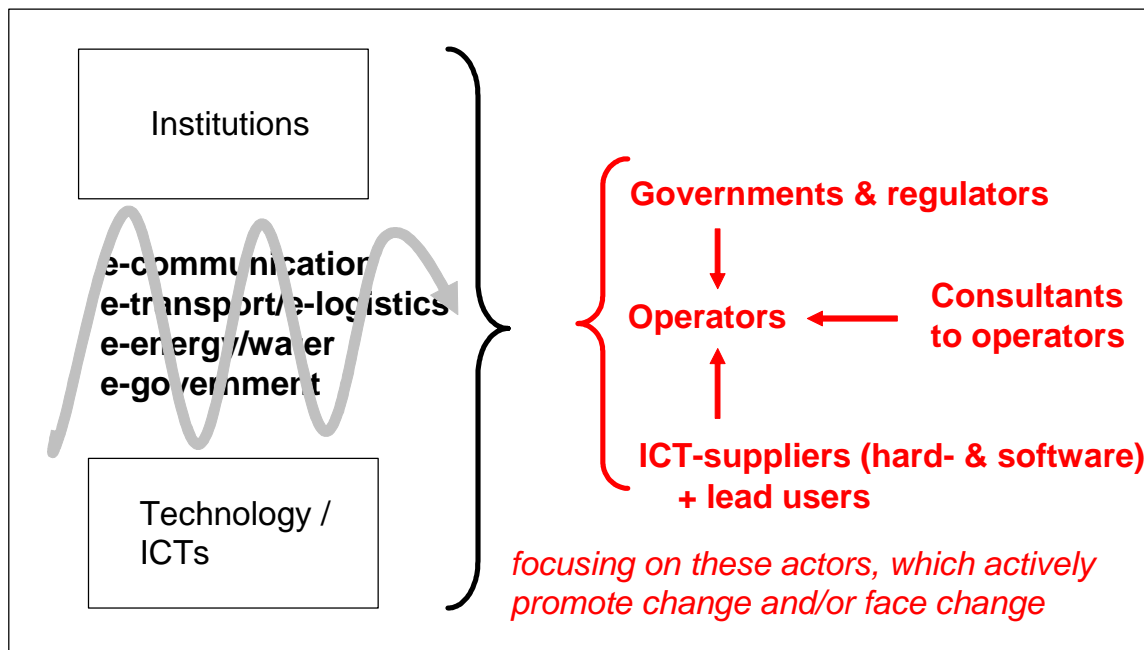
e-Governance is an open area for innovation and solution pooling, which at this moment seems only to be in its infancy. A lot remains to be done to really harness ICTs as tools, as they should be, instead of being steered by them, as it unfortunately happens to often.

7. THE TECHNOLOGICAL ISSUE: A MAIN CONCERN FOR NETWORK INDUSTRIES

There is a paradox in the sense that technology seems to be at the same time a solution, the general way to provide enhanced services, increased organizational efficiency and effective channels to the possible empowering of the user, if not always systematically the citizen, in the Information Age, and a series of developments emerging in a quite uncertain manner and that have in all cases to be managed and regulated. We have seen how the first claim is not so obvious and that further transformations of the roles, statuses and boundaries in the organization and across organizations

(value chain redesign) need to be addressed to full make use of the new tools. But it is also true that all components of the technological landscape of e-Government efforts are changing quite rapidly and towards increasing levels of complexity as far as know how, possible divides and social cohesion are concerned. As a matter of fact, in a quite constructivist perspective, we postulate that technological innovation generates recurring needs for institutional adjustments. This co-evolution of technologies and institutions involve some tensions and cultural crises, of course. Change I is easier and the quick wins it conveys are easier to sustain in the short term. However, new forms of business models and knowledge access are right ahead of us with semantic web applications, combined security schemes, Galileo generation of geo-location supported services or RIFID and smart dust pervasive monitored environments (the Internet of things and Ambient Intelligent contexts). Quite certainly, this interactive move between innovation and institutional adequacy will require new forms of interdisciplinary expertise, ad hoc experiments and knowledge sharing world wide, level of mastery we are committed to contribute to.

Network industries encompass a large array of situations, from quite static, technologically speaking, in the transport industry or in the electricity sector, to fast changing as in the case of telecom and the health sector. In all these situations, however, the weaving of technological assets, innovative options, opportunities and risks linked with them, and institutional settings that allow the various stakeholders and organizations involved to project themselves in open, effective and value-driven developments is a critical challenge. A good example of that is provided by the deficit of safety consistency appearing, after the first stages of liberalization, in the transport sector in various countries for instance. In a quite general manner, as a lot of the productivity and competitiveness associated with the development of ICTs is metabolized through these network industries, we can only insist on how much efficiency, success and economic growth is conditioned by a lot high transactional skills, collective learning capacities and overall dedication to explore, transform, update and evaluate the various dimensions (see for that our new State missions and multi-level, multi-actor indications before) of this area of constant positive adjustment we call eGovernance.

Co-evolution of institutions and technologies

Diagram content:
- Institutions
- e-communication
- e-transport/e-logistics
- e-energy/water
- e-government
- Technology / ICTs

Governments & regulators
↓
Operators ← **Consultants to operators**
↑
ICT-suppliers (hard- & software) + lead users

focusing on these actors, which actively promote change and/or face change

Source: EPFL-CDM-MIR-e-Gov

Network industries, which combine technological infrastructures and services, have been undergoing important changes over the past fifteen years. On the one hand, requirements coming from the political and economic world forced them to transform both their modus operandi and their institutional regime, which in turn led to re-regulation operations. On the other hand, new information and communication technologies (ICTs) have boosted these network industries to new levels of performance, yet at the same time producing significant modifications in their internal and external organization, as well as in their know-how. Until recently, these ICTs have been used mainly for process optimization and traceability. More and more, however, new usages and forms of ICTs and new opportunities emerge, creating realities which are quasi independent of the former physical network realities. This in turn leads to challenging the historical network industries in the way they operate and their governance schemes.

We are carrying out research in many of the network industries' sectors (e.g., water distribution and sanitation, electricity production and distribution, rail, road and air transport, telecommunications and postal services). Increasingly, we are now focusing on the evolution of these industries, triggered as they are by a combination of deregulation, competition and the usage of the ICTs. These technologies generate in fact new needs in terms of competencies and training, innovative modes of production and consumption, as well as relatively unexplored forms of (network industry) regulation. In addition, there are also new risks to be taken care of. Some of them are dealt with by regulation scheme, others trigger new innovation processes. This continuously changing perspective creates gaps and tensions that have to be fixed by institutional updates, collectively speaking. eGovernance is therefore in the eye of a multi-dimensional change process across functions, levels and industrial sectors, in which Government is but one of the stakeholders. The Copernician shift on how problems can be dealt with and how solutions can be fostered through involves a new form of expertise, balancing specialized competences and generic intermediation capabilities. The network industries, having departed from their traditional monopolistic vocations, are the laboratory of this emerging transformation.

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