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CONTRADICTIONARY SIDES OF INFORMATION TECHNOLOGY FOR DEVELOPMENT

Abstract: For 50 years, Albania was ruled by a totalitarian regime. Further, there came a long “transitory” period with the state as one of main actors for the deployment of IT. During the totalitarian period the IT and applied mathematics were used for engineering and statistical problems, where government recognized the IT, but applications in economy remained in paper. With the crash of totalitarianism in the early nineties, economic difficulties forced the old infrastructure collapsed or became useless, and were abandoned. Former Institute of Informatics and Applied Mathematics (INIMA) was under pressure to find ways to survive in those difficult years.

Key words: *ICT impact, ICT politics, ICT in Albania*

INTRODUCTION

A debate between IT professionals of the discussion group “Information Communication and Technology in Albania” in <http://www.linkedin.com> about “Estonian President Explains His Country’s Tech Boom And Why America Is Falling Behind” [1] served as a push to retake old arguments related with the role of IT in developing World and consider new arguments and phenomena that we are living each day. In practical terms, the question is how research and development in ICT may help developing countries to build a new society, and what kind of society it will be. This is an old topic in Albania and its roots go back to the early seventies with the first computers in country. Today we use ICT daily, have new habits and look towards a new society “shaped” by the fast development of technologies.

A question naturally comes up about the character of the impact of ICT in developing countries. We get technologies from some developed country far away, and usage examples from some other far away, let say from US (main inventor) or Estonia (well known user). What is more convenient and more efficient for us to apply? Are

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we modern “slaves” of some “inevitable luxury”? Are technologies solutions for our problems and transitions? How is the political will shaping technology-driven developing processes? The answer is too complex ... but it is a precondition to understand the transition to a new society and the kind or the model of the society?

Albania can be considered as part of those countries where politics played a very important role at least from the end of the Second World War. For 50 years, it was under a totalitarian regime that tried to develop the economy of the country but not for people, and later on there came a long never-ending “transitory” period with the state again as one important component of a formally free and privatized economy. IT was for 40 years present in the country that conditioned and was conditioned by this development. This phenomenon was analyzed in several contributions of authors [2–9] where numerous references to the literature are detailed. Recent developments in the last decade lead to the conviction that old conclusions are still valid.

1. WHEN POLITICS DOMINATED THE TECHNOLOGY

From 1971 in Albania a small team of mathematicians and engineers began to use the first computers of second generation, built with transistors and used with perforated tapes in the small Center of Mathematical Calculus. Gradually computers and applied mathematics were used intensively but focused on specific engineering and statistics tasks necessary for the economy of that period. All this opened the road of informatics in Albania “crowned” with the creation of first Chair of Informatics in Faculty of Natural Sciences of University of Tirana in 1984, the transformation of the small Center into the Institute of Informatics and Applied Mathematics (INIMA) and the construction of the first metropolitan network in 1985. This year marked also the beginning of NORDUnet, when Albania had its first government and academic network. But today Albania is without any NREN (National Research and Education Network).

The Center of Mathematical Calculus was created as an initiative of the Chair of Mathematics of Specialty at the University of Tirana and later it passed under the Academy of Sciences of Albania. It gradually started close collaboration with engineering teams from sectors such as geology, energy, construction, which represented the technical core of the economy of the country. Applications of mathematical methods increased in years and most of them became standard working procedures. Similar centers of calculus were created for the purpose to serve fields like accounting and oil prospecting. Their impact was visible and it pushed the government to decide on a new project funded by UNDP and managed by UNESCO for the creation of the first metropolitan network in Tirana.

The old Center was transformed in Institute of Informatics and Applied Mathematics (INIMA) and the new infrastructure was operational in 1985. Together with old applications that were migrated into new mainframes, the project predicted applications for accounting, project management, and databases. But except engineering and statistical problems, government did nothing for application of methods

related with economic problems – a clear sign that despite the formal interest those methods were considered too risky to be applied in the hot domain of an economy controlled by the ideology – the latter was of absolute importance before the science.

This political climate shaped the research, and the focus was only in applications of technical solutions developed worldwide that had potential local impact factor instead of trying to achieve some minor global impact factor. This policy most probably is well justified for a small country lacking resources, despite today's global mentality that requires from science to achieve global impact factor. But the other side of the medal was the lack of independence from the couple ideology~economy, which later in the early 1990 s broke down with grave consequences.

With the fall of the dictatorship research and development institutions, at least part of them, lost their working areas. Institutes working for Environmental and Albanological sciences had their working areas linked with the local reality, but they also suffered from the lack of resources. Degradation of the whole system and traumatic transition in nineties fueled the brain drain – the new Millennium found half of key INIMA's staff emigrated to Canada. One question emerges related with this degradation – was it simply result of transformation of national resources or the lack of political will?

A politicized government recognized the progress of IT in the world and in the country not only for engineering but also for economical problems through a project funded by UNDP, and contributed to the increase in the IT infrastructure. But, applications in economy remained in paper because their results risked jeopardizing the false color of the whole system. With the crash of totalitarianism in the early nineties, engineering work was decentralized and privatized, leaving the existing IT infrastructure without work. Economic difficulties forced the old infrastructure collapsed or became useless and were abandoned. Former Institute of Informatics and Applied Mathematics (INIMA) was forced to find ways to survive in those difficult years.

One of main goals of INIMA in nineties was the promotion of the Internet. Apparently certain state segments were more interested to gain profits from the introduction of Internet in the country instead of opening an important gateway to the development of the country. Proposals for the restarting of the government network based on new technologies proposed by INIMA in mid-nineties with the support from UNDP were neglected and similar projects began to be implemented only ten years later, only after those segments of politics were able to take its implementation under control.

2. WHEN POLITICS DOMINATES THE TECHNOLOGY

We cannot say that politics lacked interest in implementation of IT in the country, but this interest has been with strong oscillations depending on personal opinions of key politicians rather than a consolidated policy, despite the contribution of both international and local scientific community for shaping a strategy for development. Ideas, strategies and agendas for development were blindly imported by both

the importing and the importer, without considering local conditions and resources. Postulates related with the potential impact of IT were modified and shaped to serve simple political goals without considering the real impact in the society and the related costs. For example, implementation of IT in schools all over the country was forced as an immediate country-wide political action without considering that most of sites were not prepared to maintain and use it effectively.

New developments may be grouped in three categories:

- a) There are new policies including some formal promotion of research and ICT
- b) There is new openness towards the world with importing of new ideas and technologies
- c) There are new economic phenomena as lack of funding for research while on the other hand, a lot of money was used for ICT in public administration, outsourcing of ICT work of public administration in private companies, which are well paid while nobody cares for low-paid in-house ICT staff

Development of private telecommunications services and the interest shown by young people helped fast increase of IT and Internet market. But this fast evolution only creates part of conditions for economical growth, while other conditions are missing – the ability to be competitive in an open market for example – the intense use of ICT by common people can be compared with the Brownian motion of water molecules that increases while the temperature goes up, but it does not create any directed flow. What is worse, most excited elements – that is able and full of ideas people tend to fly away – the ill named “brain drain” phenomenon. Generally, it is the attraction of the national economy that should contribute to or initiate the creation of a flow in excited water, while such contribution is missing because of the low level of economy is low, we remain in simple “Brownian motion”.

The other contributor for creation of a “directed flow for development” is the political decision, which forced the introduction of IT in the public administration, pushing people to find ways, despite their computer literacy, to use Internet based services to access key government services. This is a positive aspect of recent development of the country, but at the same time, it is related with serious risks. Implementation of important IT infrastructure for e-government is presented as solution of problems, in a time when based on the Kramers Law for the technology the IT should be considered as a tool for solutions, but not the solution itself. The other negative aspect is implementation of the technology without compatible local resources for sustainable development. Trying to implement solutions in hurry mainly by outsourcing has created a fragile governmental information system, fragmented between many local and foreign companies involved in its development and running. The question is “who is actually controlling what?”

The other negative aspect was the copying of solutions from abroad, sometime as attractive tools, sometimes imported or even forced by abroad, without careful match with local realities. Creation of some organizations was promoted by the formal good will to serve the community as effectively as possible following examples from other big countries; after their creation it was seen that the volume of the daily work was too low and new duplicate obligations were invented to fill in the work

load. Partial and not flexible solutions in some cases, created absurd conflicts between agencies and their clients because of the inability of the system to deal with problematic cases that would be manually solved quite easily.

For almost two decades of transition, the research remained in deep shadow without any direct attention from politics, and in 2007 a reorganization was done formally motivated by the needs to revise the formal status of the Academy and to improve research in universities but not counting real causes why research in universities was considered as ineffective. The real role of institutes of the Academy (monitoring of natural and social environment – hydro-meteorology, seismology, biology, history, language etc.) was not taken into account and institutes were mixed up with universities (natural and technical sciences) or put under the ministry (social sciences). In this reform, a history of computing in Albania from 1971, materialized at INIMA, was put to an end and two weeks later replaced by a new state agency AKSHI (National Agency for Information Society).

Today we witness a total failure of the reform of research system. Strategies for research are developed at political levels as examples of nice templates obtained from abroad but avoiding two big real problems:

- a) Variability of disciplines (example: ICT ~ biology) complicates the application of the same strategy (in biology one may discover a new local species of flower or insect, others cannot discover because it is local, in ICT it means to rediscover the computer using processors produced in US)
- b) Staff is overloaded with teaching, and research is totally underestimated in the labor market – there is no time for serious laboratory work.

Moreover strategies focus only on the tip of “iceberg” – the excellence in science, but do not care for the whole research system similar with the mass of the iceberg undersea, that keeps the excellence shining over the surface.

There is lot of funding and work for the development of e-government network and e-services. Some of them clearly useful, but ... do we really need all that? Development is dominated by the political will neglecting real conditions and requirements: people need work places more than the removal of some bureaucratic difficulties originating from lack of consolidation of the state apparatus. Politics likes implementing technologies in public administration, and this leads to the question – “is technology a tool or a solution?” The answer is already given by the Krasberg Law that postulates “The technology is neither good nor bad, neither is it neutral ...”

We implement technology instead of solutions, we establish institutions to deal with the technology, and we invent work procedures to justify institutions, as in the case of the National Center of Registration – businesses forced to present balance sheets twice to the Directorate of Taxes and to this new Center. Today there is a shift of focus from tools to challenges (alias solutions) in the global politics (for example the policy of European Commission in FP 7 was focused on technologies, but in Horizon 2020 it has shifted towards challenges).

The world is dominated by globalization, and in such conditions, the question is how easy it is for us to reinvent the local economy during the transition. We see a tremendous technological revolution and the question is what is forcing this fast

development – the need to find solutions of challenges or simply the competition between some big companies? If the balance of factors shapes a technological revolution forced by competition, all this new gadgets filling the market, are really necessary or simply an inevitable luxury? ICT may facilitate many processes allowing the economy to grow, but it is not the only precondition for development, it may help some individuals to make money but what about the mass of people looking for work? Is politics creating right conditions for widespread growth or offering simply some individual cases of “excellence”? In a few words whether Bimber’s idea “ICT simply accelerates processes ...” remains true.

CONCLUSIONS

The conclusion is that in a developing context, the political will remains a key factor for introduction of new technologies for the development. At the same time, it is the political will that leads the implementation of new technologies in dangerous ways characterized by duplication, lack of control, overspending, unrealistic imported solutions, lack of balance between scientific and professional education, spending more for support instead of key infrastructure, spending easily for hardware instead of specialized human resources etc. The difference of rationales, discussed widely in the research community, as well as the phenomenon of not learning the lesson from errors, seems to be a characteristic of the development.

Strategies need to focus on the whole research “iceberg” – not the tip only. Strategies need to orient the research on real actual local needs – what is more important for us as developing countries– to have good impact factor, studying the other side of the Moon of dealing with concrete minor, but important for us, local problems, that others may little care for? Is our research in ICT going to reinvent the computer while ICT deployment even in public administration is done by private or foreign companies? The other big problem – globalization: flows go from high potential towards low potential while people dream increasing their own potential ... how we may become attractive to big businesses? If it is for low salaries the Far East is much cheaper...

We need to use research to keep ICT “under control” to avoid the bad side of the technology, breaking the Kransberg Law, We need to use ICT for real improvement of life, not simply accelerating or virtualizing the life, breaking the Bimber thesis. We need to abandon blindly imported solutions and focus on regional collaboration, to exploit the local particularities and habits as much as possible. All this is not easy – politics should become wise enough to build a balance between contradictory constraints of today’s World and think integrally for the present and the future.

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