STRATEGY OF HIGHER EDUCATION WITH SPECIAL ATTENTION ON R&D: FROM GOVERNMENT TO GOVERNANCE

A Look into the Future of Slovenian Higher Education and Research

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Summary

Slovenian Parliament has in 2011 adopted two strategic documents, *National program for Higher Education 2011 – 2020* and *Research and Innovation Strategy of Slovenia 2011 – 2020.* They have been created separately but are harmonized as the contents of both are related and intertwined. Whereas the cohort of 19 to 24 years old tertiary students is among highest in the world the graduation results are much less to be proud of. Reasons for such incongruity that lie in various areas – governance, culture, transition, recent economic crisis and more - need to be explored in depth and the result used to reverse the trend. As opposed to government which is about procedure, governance is about the content and results which is the important matter in the long run. Difference and also the importance of good governance for good results are explained. Statistics provides an insight into a combined picture of development of particular country and may also offer useful comparisons but hardly provides information on who or what are the stakeholders. Knowledge, educated population in towns, and human capital are the propelling factors of today.

Regarding her declarative importance of knowledge Slovenia is a rather ordinary EU member state. PhDs are mostly employed in universities which does not provide for an adequate knowledge transfer and much less for value added in national economy. The deliverable is papers instead of commodities, information instead of income. One still open issue is a conflicting tendency of a greater independence of universities on one hand and increasing public interest (including public funding) on the other. Mechanisms to reverse the trend, among which are important financing of research by government and private sector, novel governance in high education, digital literacy, and transparency of high education and research, will have to be found and implemented.

On Strategy[1]

The origin of the word is Greek word *stratos*[2] meaning army. There are more words with the same root such as *strategic, stratagem*, and in particular *strategus*[3]. The word is widely used and it is originally connected with the art of war. It has become popular in situations where an effective way of solving problems is needed. In a war the goal is victory and considering that warfare is probably one of the activities of the mankind with the longest tradition[4] it is very probably that most efficient approaches have been developed and used for that end.

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[1] Schlamberger, N. (2005)
[2] Arthur L. Hayward, John J. Sparks: The Concise English Dictionary; © Cassell Ltd.
[3] Especially one of the board of ten in Athens.
[4] Strange enough it does not appear in national or international classifications of activities.

We need not wonder why the word strategy is used in various contexts from warfare where it still has the meaning closest to the original one, to economy to business to politics and, indeed, to everyday life. Strategy is perceived as an effective and necessary device to achieve a goal. It is formulated in a form of directives about what is to be done to reach the goal, taking into account necessary resources in terms of material, finance, manpower, and time. In business, in politics, in economy – wherever a goal is to be reached that is not a solution to an immediate problem but rather an objective that lies in the future we speak of strategy.

When discussing strategy in general we must therefore understand that we are dealing with a hierarchical structure where the definition of a goal comes first. Considering circumstances, possibilities, resources, and time, a strategy is chosen, meaning that the way of how to reach the goal is specified in rather broad terms. Next, the most feasible team has to be chosen[5] to whom execution of the strategy will be entrusted and necessary resources assigned for the task. The team will carry out the necessary actions, hopefully to result in reaching the original objective in the required time. In best case the goal will be reached in the required time and all resources will be spent in the process. This is of course an ideal and simplified picture and examples are known where it took longer time and more resources and possibly a goal were reached that was more or less off the original mark. It is not an intention of this paragraph to discuss possible deviations in detail but rather to give a broad understanding of strategy, its role and how to go about it.

The Situation

In 2011 Slovenian Parliament has adopted two important documents: *National Program of Higher Education 2011 – 2010* and *Research and Innovation Strategy of Slovenia 2011 – 2010*. Although the documents have been produced in different National Councils the authors were aware of the fact that the contents are intertwined and they need to be harmonized. More than half of the work towards the final form of both was therefore carried out in collaboration. The documents have received a high degree of consensus with the Members of Parliament which does not come about often.

Already today Slovenia is ranking among the countries with the highest share of the population cohort from 19 to 24 years that have entered tertiary education. Regrettably the effectiveness of study is not satisfactory as only about more than half of them graduate. Besides, the quality of study needs in any case be scrutinized and self-satisfaction is something to be avoided. The destruction of higher education that is very symptomatic in transition countries did not happen in Slovenia which fact is proved by a relatively steady share of GDP that the government allocates for the purpose. However, the overall direct investment by commercial companies' has been reduced and so has been also the money allotted for scholarship. All of that has been attempted to compensate for by the government. Result of the process is paradoxical in that the significance of the government in higher education is even greater that it has been in the old system. The red line in preparation of ten-year strategy was a critical response of universities and research institutes to government of the administration in those areas, and requirements for a greater autonomy or for a societal control (governance) of operation and development of scientific research and higher education. This is a complex question that has in Slovenia one additional dimension. The memory of self-management which is blamed for economic collapse of the former country by

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[5] In ancient Athens generals were often elected and appointed from among the respectable citizens; nevertheless they were punished, often most severely, if they have lost the war.

some and perceived as an origin of the post-modern society by others is still alive. To some it is perfectly normal that the government which pays for the education should decide also on the program of higher education and research activities while others advocate broader and long-term interest of the society, confronted by the attention of every particular government the perspective of which is limited by the duration of its mandate.

It Is about Governance and not about Government

For quite some time both of the above terms are here but in usage the differentiation between the both is vague and often one is used instead of the other. In Slovenian terminology the difference is hard to be formulated precisely and the proposal to translate (English) *government* as (Slovenian) *rule*, and (English) *governance* with (Slovenian) *master, control will* be surely disputed. Nevertheless it is clear that governance is not only an activity of the government. The concept needs to be explained or the confusion will extend also to e-government and e-governance.

E-government is about deployment of information technology in interaction of the government with citizens and businesses. The expected effects are higher transparency, stronger confidence and lower expense. It includes electronic services, electronic procedures, electronic voting and electronic effectiveness. E-governance is about deployment of information technology in transforming decision processes, successful leadership, efficient organisation, responsibility, and measuring of success. It includes electronic engagement, electronic consultation, electronic publicity of procedures and electronic supervision of authorities.

For both e-government and e-governance conditions must exist to be met, the most important being the following: degree of education, culture of interpersonal relations, level of income, trust, digital literacy of users, privacy and data protection, freedom of information, electronic business, protection of authorship, interoperability, universal access to communications. Government is organised in a bureaucratic manner and authority needs to be executed promptly. Governance on the other hand is about long-term processes that are carried out continuously and are related to wider societal aims whereby coordination of action is more important than executing of one or another political program. The important thing is benefit for the society and not government documents as such. E-government insists on the role of the government while e-governance concentrates on results of transformation into information society.

Thomas Riley (2003) has summarized the above differences in a form of a table:

Table 1: Government vs. governance

GOVERNMENT	GOVERNANCE
Structure	Functionality
Decisions	Processes
Rules	Aims
Role	Results
Outputs	Benefits
e-government	e-governance
e-services	e-consultation
e-procedures	e-publicity

e-voting	e-engagement
e-productivity	Social networking
Implementation	Coordination

Properties that Hans-Peter Repnik (1992) has attributed to good governance can be represented by the schema below.

Schema 1: Characteristics of good governance

Scenarios of governance of higher education and research activity

It cannot be surprising that governance and especially e-governance are presently much researched and written about and that all developed democratic countries are interested in insights in this field. Development of information technology is overtaking politicians who insist on various kinds of democracy of representatives while the people clearly see that they could directly take part in decision making.

A group of authors at the Institute for Prospective Technological Studies (a European Union institution located in Seville) has produced four scenarios of possible development of governance (Misuraca/Lusoli, 2010):

1. *Open governance:* personalized real time collaboration will be open to all participants; this will increase participation and quality of solving social problems.
2. *Leviathan governance:* information technology will be reserved to oligarchy which will intransparently accumulate and process information and provide services to population without asking for opinion as its is the role of passive recipients.
3. *Privatised governance:* corporations allow for only a low degree of openness to which dissident groups will resist with frequent break-ins which in turn will require expensive protection and produce conflict situations.
4. *Self-service governance:* broad openness and transparency plus closely knit communities for efficient problem solving which may increase problems of inclusion of "strangers".

The following prevailing trends of changes in governance are very probable:
- users will require inclusion in decision making processes ever more rigorously;
- various processes and technologies of control will be ever more bonded and knit together which will increase their efficiency;
- digitalisation will reach all aspects of life and old methods of police making will become anachronistic;
- governments will willy-nilly need to adopt their operation to network society.

One more particular moment can be noticed in higher education and research, namely a massive presence of European Union and international community in general. One aspect of their influence is co-financing which is highly appreciated, especially in transition countries, and is embraced without a second thought together with all accompanying conditions and goals. Another aspect is a supra-national regulation which is ever more extensive and reduces the role of both national governments and autonomy of the activity itself. It exposes universities and institutes to international competition – i.e. to internalisation – which is appreciated by Slovenian national strategy but a question must be asked, namely: Is the international framework indeed neutral or does it contain interests of the most powerful countries? Regarding higher education it is advisable to have a look at Bologna process (Pivec, 2911). There can be no doubt any more that the age of knowledge society starts with "knowledge wars" in a similar manner as the industrial society has started with wars for raw materials (Kincheloe, 2008).

Statistics show rates of development of countries but the development stakeholders there are closer environments in disposal of above-average social capital and within this, especially of human capital. Motors of innovation in the world of today are places with more than one half of employees having above-secondary education, using Internet, and who are in command of more than one language. The degree of participation is high, therefore also mutual trust is firm and deciding on common issues efficient. There come ever more intelligent people that count on support for their ideas and indeed such people are also followed by the capital all of which brings about more-than-average competiveness. Sheer government (or rule) in such environments demotivates as people are ready to collaborate in the governance of systems and processes. For a participative society of such kind information technology is essential not merely as e-government but rather as e-governance.

Research of e-Governance

Investment in research in information technology in Europe is largely lagging behind both relatively as a part of overall investment in R&D (US 29%, EU 17%) as well as absolutely in total investment (in 2007 e.g. US 88 invested billion euro, EU 37 billion euro). The so called old member states (EU-15) provide for 98% of all information technology R&D money (EU, 2010, 2011). This is worrying as Europe significantly lags behind its competitors USA and Japan (ever more obviously also behind China) in the following areas:
- fragmented digital market,
- lack of interoperability,
- increased cybercriminal and low trust in computer networks,
- insufficient research and innovation,
- low degree of digital literacy,

- unreadiness to cope with key development challenges, to quote but a few: climate changes, ageing of population, health care, digitalisation of cultural heritage.

European Union has emphasized these issues in development document Europe 2020 whereby it has decreed member states to include them in their research agendas (EU, 2010a, 7).

In researching e-governance the basic finding to be taken into account is that modern society has become extremely connected, flexible, fast developing and unpredictable while the tendency is to control it using routine, linearity, ignorance, hierarchy and simplification. The global crisis is demonstrating incapacity of such way of dealing with the issues and that cannot be any longer hidden from the public which is equally concerned with the gravity of problems as with the fact that solving the problems lies in the same hand that has caused them. Albert Einstein has long ago found out: "The problems that we have created cannot be solved at the level of thinking that created them.". Uniting and synergy of research approaches in informatics that have been so far separate is crucial:
- Web technologies on the hard side need to be linked to societal informatics on the soft side or else there will be no progress in digital participation, translation systems and social networks.
- Technologies of systems and services need to link to the development of management tools or we will face lagging behind in knowledge management, management of regulatory structures, business intelligence and data mining.
- All four approaches can provide progress only in mutual inclusion into e-governance a greater number of people, a better availability of relevant data and in preparation of more precise analytical and simulation tools.

If so far the attention has been targeted to research things the right way it is now necessary to redirect the attention to research the right things. It is a fact that the presence of new EU member states and the so called transition countries in this research and looking after modes of how to effectively deploy information technology in social development is altogether too low. This can be linked together with an experience that they are characteristically uninterested in dealing with social aspects of computer technology in IFIP[6]. It is obvious why the East Block has boycotted establishing of IFIP Technical Committee 9 which is active in the field since 1971: Information technology was there used as an instrument of centralised (secret) politics but after twenty years a kind of boycott of disclosing socially problematic features of the new technology still continues. This is not comprehensible any more (not that it has been any more so in the past) and needs to be changed as, for one thing, the further development of democracy depends on digital support.

A group at London School of Economics that has recently completed a research on economic influences of information technology (Van Reenen, 2010) is very careful about forecasting its help in search of the way out of the severe financial and development crisis in which Europe has found itself. According to the optimistic scenario of the mentioned Group will European Union catch up with the rate of growth of the past decade by 2020. The pessimistic scenario is that just in 2020 the growth will reach the historical bottom. Taking into account the Rand projection of technological trends (Rand, 2009) the following processes will continue nevertheless:
- convergence of infrastructure will lead towards integrated platforms of deployment of information technology;

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[6] International Federation for Information Processing

- convergence of human-to-machine relation that will tie together human and computer knowledge in a cybernetic organism or into digital environment outside offices;
- service oriented cloud-based or web-based computing beyond present workstations;
- intelligent web as Web 3.0 with intense interactivity.

This will also be reflected in advance of e-governance. Based on that and with help of studies carried out by European Union Centre IPTS in Seville the following emphasis can be predicted for future research in this field:

- Management of information, its retrieval and analysis in real time, behaviour of real and virtual entities (persons, things, information, data).
- Improvement of situation-oriented solutions for on-line tracking, modelling of policies, and visualization in real time.
- Decision-making analysis with help of information technology.
- Platforms for mass collaboration and visualization of public opinion in real time.
- Available data based on information technology, processes of data optimisation and control.
- Systems for complex dynamic social modelling.

If the global movement *October 15* will be established in a form of a political continuity we will witness extreme demands for openness, transparency and participation all of which is a big challenge to e-governance and a clear commission of further research in this domain. It can come out that the crisis will accelerate development of information technology as it will be recognised as a part of the solution rather than a part of the problem. Nearly beyond doubt is that those that today demonstrate do not share "Ludistic" views on information technology and demand the Internet as their fundamental liberty; rather more doubtful is whether such views will be welcomed by structures in power. Which side will take the informatics profession?

**What is In for the Higher Education and Research Institutes?**

Diagram 1 is represents situation in 2009; it shows that with regard to human resources Slovenia is a rather average member of European Union which is below ambitions of a country that declares knowledge as its vital development potential (Kolar, 2011).
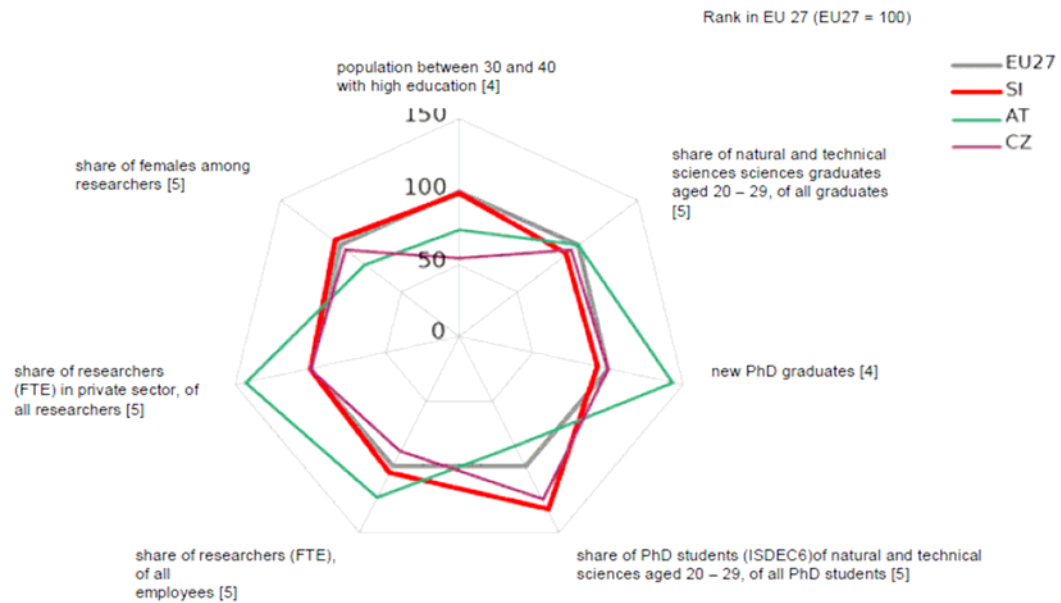
Diagram 1: Comparison of human resources

In the introduction we have mentioned a Slovenian speciality, namely that deficit of immediate corporate investment into R&D is attempted to be compensated for by using public finance. Diagram 2 shows a substantial negative variance from the European Union average where research in universities is particularly impaired. Of the entire public finance they participate in only 13% whereas the average in European Union is 22%. The situation is all the more problematic considering an extraordinary concentration of research personnel at the universities where even 60% post-graduates (PhD) are employed. The consequence of such undernourishment of research is a modest implementation and low number of patents of research results of universities. The effort mostly ends with papers where Slovenia is ranking very high with 1.637 papers (European Union average is 1.037 papers), and above-average public investment into corporate research projects also does not yield satisfactory economic effects.
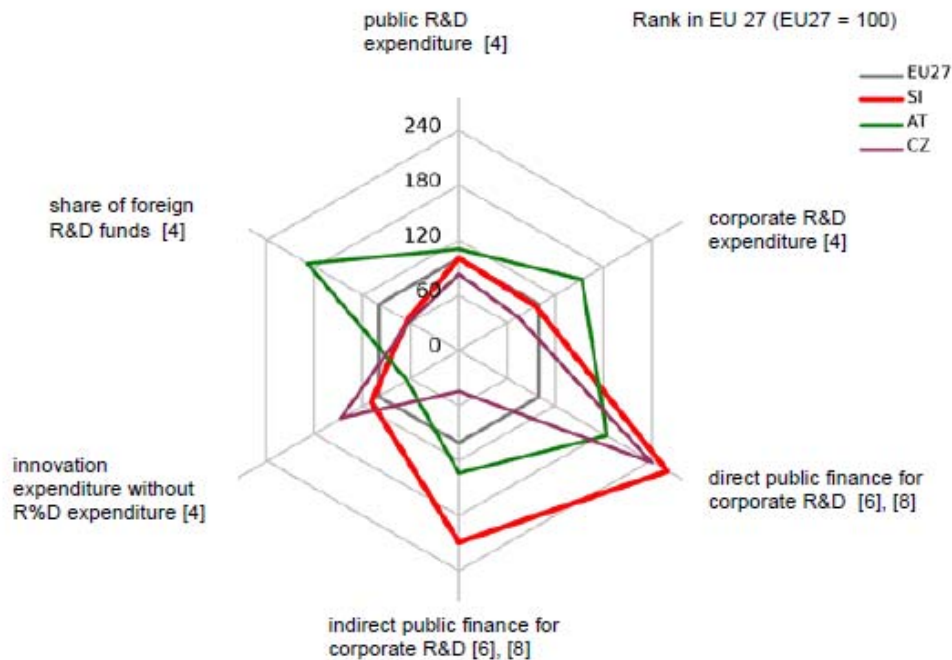
Diagram 2: Financial support of research

Higher education bails out the deficit of research money on behalf of extracting the funds from education process which has been in the past two decades extending very fast, by increasing the number of registered students and by introducing new study programs. In 2011 has Slovenia already fallen into demographic pothole. According to the Eurostat/Europop projection of 2008 will the population cohort 20 to 28 years gradually diminish from the current 140.000 to hardly little more than 80.000 in 2060. Slovenian higher education too has in the past deployed payable "extraordinary study" which however has also come to a halt due to recession and unemployment. The battle for ever more scarce students is becoming increasingly ruthless with public universities demanding a privileged position or even ban on private higher education which is obviously in contradiction with ratified international conventions.

Slovenia will need to solve the problem of a more adequate financing of research in higher education as research feats are the most deciding in rating of universities on world quality scoreboards which in turn is decisive for an increase of registration of students. All universities count on influx of foreign students but without a scientific reputation this equation will not be solved.

Slovenian higher education has one more serious problem, namely low efficiency of study measured by number of registered students and number of years they need to graduate. Diagram 3 is a self-explanatory illustration of the situation. Even Bologna reform has not contributed anything to change the situation and it is obvious that severe measures will need to be taken in the realm of quality of teaching. The OECD project *Assessment of Higher*

Education Learning Outcomes (AHELO) has discovered that awareness in universities that university monopoly in higher education is no more is too slow and that they are just one of many players in the production of knowledge (Hénard, 2010).
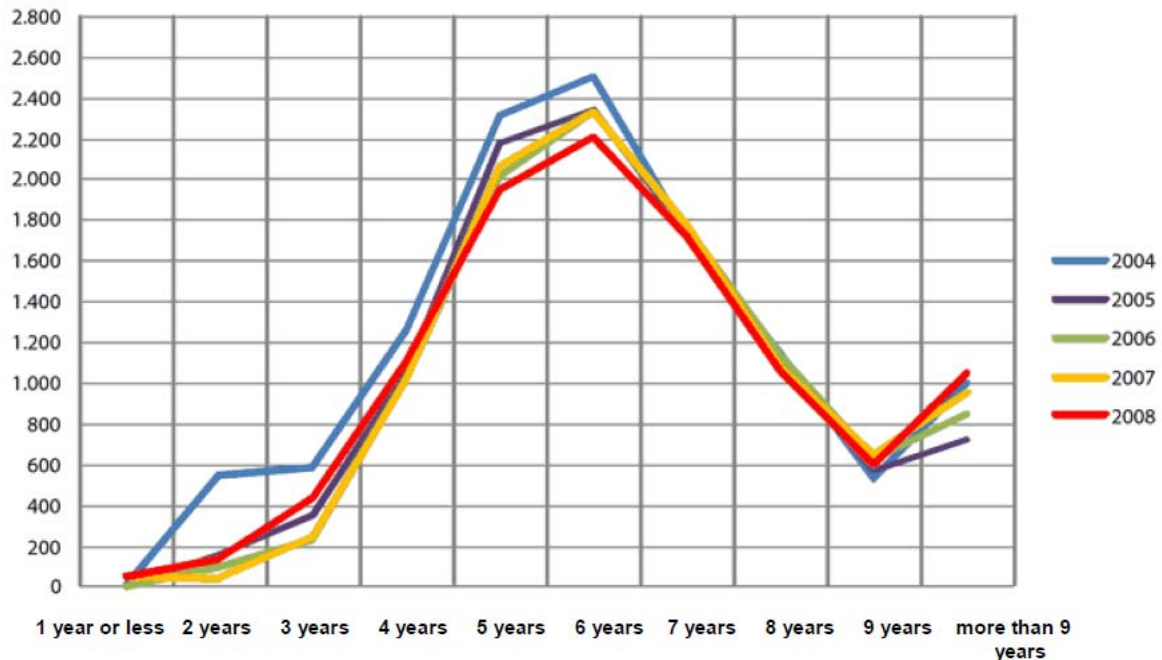
Diagram 3: Graduates in higher education vs. duration of study from registration to diploma, in years 2004 to 2008. (Source: Komljenovič: Ibid.)

Governance and Quality of Higher Education and Research Activity

The problem of quality is closely related to the problem of governance of higher education. The requirement of taxpayers "value for money" sounds rude but it inevitably leads towards transparency and public accountability of higher education and research institutions. The conflict between an increasing public interest for these activities and their tendency for a greater autonomy must be bridged. The solution is better governance in higher education and research activity.

Centralised regime of government of these activities, intermingled as they now are, is provably ineffective even more as principles of "new public management" (NPM) which is explicitly taking distance from detailed regulation are generally put into force in public realm. It is being replaced by evaluation of the results of the activity and related responsibility of users of public funds (Goedegebuure, 2007). Slovenia is reluctant to refuse "normativism" and equally reluctant in acknowledging control of quality.

Governance in higher education has been defined by OECD as follows: "Governance embraces structures, relations and processes through which higher education is being implemented and validated both nationally and institutionally. It represents a complex network that contains legal framework, characteristics of institutions and their relations in the

system, allocation of funds across institutions and their responsibility for spending the funds as well as other less formalised structures and relations that direct and influence their behaviour." (OECD, 2008).

Pavel Zgaga (2006) advises that governance of higher education be observed on three levels although they are interrelated:
- internal or institutional level: governance of higher education institutions;
- external or systems level: governance of higher education system;
- international or global level: governance of higher education systems in an international (global) perspective.

Good governance can be understood as a structure that preserves integrity of academic value system and at the same time positions high education and research organisations into a complex relation to a wider environment and makes them responsive to messages, requirements and expectations from outside (Fried, 2006).


Final Remarks

According to some estimates[7] Slovenia has since its independence in 1991 produced more than forty national strategies for various economic activities and government domains. At first glance the number may seem soaring if not outright inflationary but given some thought it is not altogether irrational. Just as an example, a national strategy for mining cannot do very much good for health or education because of its focus, although both health and education may appear there. The trouble is not inappropriate strategies or lack of them but their longevity. A general observation based on experience of those that live in the country is that all strategies that have been adopted by now share a common deficiency: They have not been appointed a keeper to look over them, to enforce them and to adapt them to changed circumstances if needed. The result is that any strategy is not a long-term pledge as it should be, but mostly survives the time until next general election or not even that. We will not criticize the strategy discussed here from this point of view. Let us just remark that given the importance of education and research for the long-term future and, indeed, even continuation of the nation it would be of utmost importance to appoint a keeper at least to this strategy. The authority and responsibility of the keeper would be to see that it remains in force until accomplished or, if necessary, to propose needed amendments in the case that circumstances become prohibitive to carry it out in its original form.

Another consideration needs to be devoted to digital literacy which appears as an important prerequisite of both e-government and e-governance. Consequently, it necessarily influences the success or failure of the adopted strategies. It is taken for granted that younger generations, i.e. those aged 25 and less, the so-called digital natives, are proficient users of information technology. They have been, so to speak, born into the digital world, have grown with it and are therefore skilled in practical aspects of information technology. Nothing could be farther from the truth. Just consider an analogue situation with cars. The same generation could be also called automotive natives: Practically from birth on they have been sitting in the car, were transported to the nursery homes, to schools, to the holidays and elsewhere, and nevertheless they need to qualify for a driving licensed if they want to drive a car in the public traffic. Digital literacy is an area that should be paid much more attention by the governments

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[7] Tomaž Banovec (former director general of Slovenian national statistics office), oral communication.

as it is the situation now. *Digital Agenda for Europe* is a proof of such conviction. Were it not the case it would not have been adopted in the first place. ECDL Foundation has understood practical aspects and detrimental effects of poor digital literacy to economy and society in general and has also provided programs to make up for the missing competences.
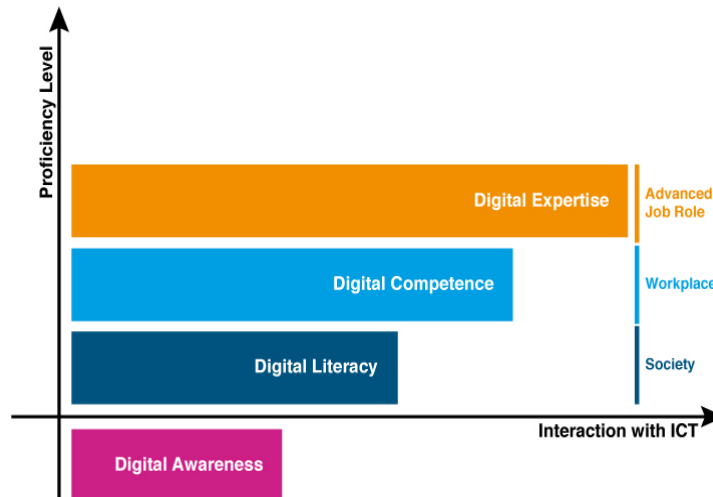
Diagram 4: Overview of digital competences (Source: ECDL Foundation)

Diagram 4 represents levels of digital proficiency for non-professionals in information technology. The elementary one is digital awareness which we believe is already understood at least in European Union and in developed parts of the world. Digital literacy is an elementary capability, the next step that is necessary for the population at large to be socially included and competitive on the labour market. Digital competence is the third level of digital proficiency that is to be required of all that enter the education process as teachers or students, and even more of those that leave it in the capacity of researchers. Digital expertise is left to interest and ambitions of those that need or want to refine their digital skills. Governments have a responsibility, a duty and, most importantly, the necessary means to increase digital skills. While it is admittedly important for the population at large it is critical in education and for successful research.

Let us at the end once more emphasise that transparency of higher education and research activity is of crucial importance as without it participants of governance do not have necessary information and the whole concept remains dangling in mid-air. At this point enter e-governance for which all technical requirements are met everywhere but big differences among countries can be still seen in its implementations. Same as USA has done European Union should also require from its member states "sunshine laws" that would oblige higher education and research institutions to allow public a comprehensive insight into their operation. Slovenia at present has such a regulation to which higher education institutions strongly oppose.

SOURCES AND REFERENCES

EU (2010) Europe's Digital Competitiveness Report. Vol.1. Brussels: European Commission.

EU (2010a) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Digital Agenda for the Europe. Brussels: European Commission.

Fried, J. (2006) Higher education governance in Europe: Autonomy, ownership and accountability. V: J. Kohler and J. Huber (eds.) Higher education governance between democratic culture, academic aspirations and market forces. Strasbourg: Council of Europe, str. 79-133.

Goedegebuure, L. and M. Hayden (2007) Overview: Governance in higher education – concepts and issues. *Higher Education Research and Development, 26 (1), 1-11.*

Hénard, Fabrice and Alexander Mitterle (2009) Governance and quality guidelines in higher education. Paris: OECD.

Hénard, Fabrice (2010) Learning our lesson: Review of quality teaching in higher education. Paris: OECD Publishing.

Kolar, Jana (2011) Posnetek stanja raziskovalnega in inovacijskega sistema v Republiki Sloveniji. V: Drzna Slovenija. Dodatek. Ljubljana: Ministrstvo za visoko šolstvo, znanost in tehnologijo.

Komljenovič, Janja (2011) Posnetek stanja visokošolskega sistema v Republiki Sloveniji. V. Drzna Slovenija. Dodatek. Ljubljana: Ministrstvo za visoko šolstvo, znanost in tehnologijo.

Kincheloe, J.L. (2008) Critical pedagogy and the knowledge wars of the Twenty-first Century. *International Journal of Critical Pedagogy 1 (1) Spring.*

Misuraca, Gianluca and Wainer Lusoli eds. (2010) Envisioning Digital Europe 2030: Scenarios for ICT in Future Governance and Policy Modelling. Seville: IPTS and Luxembourg: JRC European Union.

MVZT (2011) /Ministry of high education, science and technology/ Drzna Slovenija: Nacionalni program visokega šolstva 2011-2020 in Raziskovalna in inovacijska strategija Slovenije 2011-2020. Ljubljana: Ministrstvo za visoko šolstvo, znanost in tehnologijo.

OECD (2008) Tertiary education for knowledge society, Vol. 1. Paris: OECD.

Osimo, David and Szkuta, Katarzyna (2011) CROSSROAD, A Participative Roadmap for ICT Research in Electronic Governance and Policy Modelling. Final Policy Recommendations. Brussels: EU Seventh Framework Programme.

Pivec, Franci (2011) Premisleki ob Nacionalnem programu visokega šolstva 2011-2020. *Šolsko polje, XXII, 1-2, pp. 227-256.*

RAND (2009) Trends in Connectivity Technologies and their Socio-Economic Impacts. Brussels: Draft report of the EU Commission.

Repnik, H.P., Mohs, R.M. (1992) Good Governance, Democracy and Development Paradigm. V: Intereconomics, Band 27, Nr.1.

Riley, Thomas (2003) E-Governance vs. E-Government. i4d, Nov.-Dec. 2003.

Schlamberger, Niko (2005) On strategy of IFIP. A personal view (IFIP, internal communication).

Van Reenen, John, eds. (2010) The Economic Impact of ICT. London: Enterprise LSE.

Zgaga, Pavel (2006) Reconsidering higher education governance. V: J. Kohler and J. Huber (eds.) Higher education governance between democratic culture, academic aspiration and market forces. Strasbourg: Council of Europe, pp. 35-50.