# Digital public governance: trends and risks

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Our world is becoming critically dependant on the human capacity to maintain dynamic equilibrium between massive digitalization of our life and protection of individual identities and interests.

Many people adapt to new reality, though the reality may be virtual, shaping particular human kind, *homo globalus* (as defined by Dr. Ionut Iordache). Many people feel clueless facing all the things that are influencing our existence and behaviour, especially now, into a new digital paradigm.

Based on the idea of Y. Bar-Yam noted in 1997 that «the emergent complexity is that the behaviours of many simple parts interact in such a way that the behaviour of the whole is complex. Elements are those parts of a complex system that may be considered simple when describing the behavior of the whole»[1], we will stop at innovation and information technology as crucial factors of influence over the actual public management system. Nowadays the public governance needs a new architecture designed to facilitate the flow of knowledge inside, along and outside the system. The governance, all over the world, seems to be in search of its new identity.

This article aims to shape the perimeter of the picture associated with the convergence of information technology and public management in order to reveal the multivariate risks model of the digital (electronic) government. Today, public governance is ought to answer the following key question: How the government act could protect the *legitimate* interests of each participant of the country life in a digital standardization and unification based world.

## 1. *Theoretical research base*

The emergent signs of the new age have caught attention of many progressive thinkers. Almost a hundred years ago, Russian philosopher Nikolay Berdyaev (1874-1948) wrote: «The invention of the ma-

chine … creates a new form of dependency and slavery, much stronger than the one that was felt by the direct dependence of man from nature. Some mysterious force, alien to the very nature of man, enters into human life, some third element, not natural … receives the terrible power over a man and over the nature»[2].

Jean Baudrillard (1929-2007) in the late 80's warned that «we are living in a society whose results are growing with the disappearance of the causes that lead to clogging of the extraordinary systems destroyed by an excess of functionality»[3].

Of course we will not forget at least to mention consecrates statements of Bell, Lyotard, Derrida, Inglehart, Drucker, Toffler and others. But the size and profoundness of the consequences of consecutive and rapid shifts reached a new momentum when the governance act should find its way in information technologies sooner than the digital wave starts affecting public leaders and public governance systems worldwide.

The system of public management, on the one hand, acquires possibility to take decisions and imply solutions not just faster, but in real time. This is a big plus of the governance digitalization. Many processes (public procurement, reporting, decisions making) are becoming transparent for citizens. On the other hand, the modern world is atomised, and culturally divided. Individuality, personality is replaced by individualism. Standards, regulations, scalable systems are at the forefront and pose a threat to the interests of every human being.

## 2. *Research Methodology*

The main theoretical methods of the present study of the transformation of public governance based on digitalization are the identification and resolution of the contradiction related to the realization of individual legitimate interests of any citizen under conditions of standardization and unification of public services. We are targeting a broad discussion of the readiness of traditional governance models to efficiently deal with the challenges of the digital age.

As a prerequisite hypothesis we will consider a public administration at "normal as possible" status for governance. As the foundation of the state, the public administration determines the ability of providing public services for growth and competitiveness of the respective state. For states that member unions (such as European Union, or Euroasian Economic Union) the public administrations play an important role in crucial reforms for the standardization and unification of the state capacity to pursue a good administration, transparent and effective.

We will consider the current stage of development of public administration systems and its risks for citizens through the prism of technology for public governance, pitfalls of the digitalization of public governance, challenges for the public leadership to spur the reforms and to keep the initiative squarely for elaborating scenarios of the socio-economic development and evolutionary transformations of the governance system.

## 3. *Innovations change management models*

Peter Drucker observed once that the post capitalist society is on the verge of changes that do not fit into traditional frameworks and methodologies of many humanitarian sciences. The causes are multiple and complex.

Innovations led to revision of all classical management theories. The phenomenon of innovations has gained such strength and scale that many analysts consider that the world is entering into a new (the second) machine age[4]. The innovative trend is cross-cutting. For example, in the US, the second half of the XX$^{th}$ century is called the second agricultural revolution, which resulted in three folds increase in milk production per cow and the corn yield grew up almost four times. Productivity of the average American farmer in 2000 was 12 times higher than that in 1950[5]. By 2050, the total production growth in agriculture for 90% will be achieved through more efficient use of existing agricultural resources without introduction of new lands into production circuit[6]. The above data demonstrate how deeply innovative, technologically-advanced and robotised the farming has became on a global scale. Should be noted that this trend is typical for both advanced or developing economies.

On such a ground the new innovative information technology paradigm has already started to tickle the strength of traditional management frameworks. Based on modern software and hardware platforms, management communications become wavy, spreading over by new laws compared to traditional linear algorithms of communications within structures. Waviness of information dissemination has become the feature of the modern management approach. The information is not transmitted through the chain from one to another anymore. Today, the information gets into manageable groups, the masses at the same time, as a powerful wave. Such "tsunami" resulted in a number of "revolutions of roses" and social unrests influenced by the internet social networks in the recent history of the North Africa and the Middle East.

The principle of communication between waves and fields can not be placed in a strict and consistent framework of hierarchical organization. The hierarchy in wave-like propagation of information no longer works as an effective management model. Horizontal and start-up structures along with networks are more adequate management models for wave-like communication.

Clearly, the traditional model of public administration will be under pressure of innovations, related technologies and connected to the new principles of management communications. Innovations and digitization imply new requirements for professional profiles of public employees, for their competences and expertise.

## 4. *The core part*

### 4.1. *New technological basis for public governance*

The penetration of information technologies in our lives is a megatrend nowadays. This is the new way of life. Scale and pace of the phenomenon of "Internet of Things" (and soon "Internet of Everything") – sweeps everything away on its path. After

Table 1. *Evolution of the public administration system and information-technological dominants*

| *Phase* | *Evolution of the public administration system* | *Information-technological dominants* | *Period (estimated)* |
|---|---|---|---|
| I$^{st}$ phase | e-Government | Mainframes / dedicated servers, computing power of terminal computing devices (fixed computing) | 1990-s |
| II$^{nd}$ phase | Open Government | Mobile (cloud) computing, data centres, open data | early 2000-s |
| III$^{rd}$ phase | Smart Government | Self-learning neuro-computer systems, synergy of self-interaction of computer families, open (Internet of Things, data mining, big data) | Now |
| IV$^{th}$ phase | i-Government | Technological singularity, Internet of Everything | 2030-s |

*Compiled by the S.Kamolov*

fifteen years since the beginning of the century, the number of internet users has grown nearly 10 times: in 2000 there were 400 million users and in 2015 – 3.2 billion. In a couple of years we can predict that every Worlds' inhabitant will be somehow online or Wide Web connected.

Information technologies are pervasive, universal and applicable in many spheres of human life from household activities to residential construction, from bio-medicine to space technologies. We can easily see that observing the influence and a broad use of 3D-printers technologies. As Dave Evans, Cisco's chief futurist, aptly said «if today we download the information, then tomorrow we will upload things!».

Since 1960's the Soviet Union, or let's say communists block countries, struggled to provide living spaces to all their citizens. Construction institutes were in charge to develop standard solutions of prefabricated houses, landscape master-planning were offered to state construction companies etc. Despite enormous efforts, construction cycles and traditional technologies could not provide a close set up of the national will. There were never enough affordable houses or apartments for the majority of the people in need.

Today the use of the most advanced conventional civil construction technologies still requires several months to develop a traditional residential area. However using information technologies and new type of construction materials allows to build a house in couple of days: earthquake resistant, environmental friendly, phonic and thermo isolated, with an attractive design, less costly and time-consuming. These are quite different opportunities that technologies offer to the modern society for resolution of the backlog of social problems on a national scale. It's a simple example of the power of intersection between information, processes, things and public governance[7].

Coming decades we will see such changes, which today we cannot even imagine. The essence of modern development is in exponential growth of all key indicators of the global economy.

The most drastic changes will occur in the process of digitalization of society, particularly at the junction of human and robotic activities. Ray Kurzweil, the famous American futurist and forecaster, has been studying for decades the issues of future technological scenarios[8]. In 1990 he predicted that a computer would win over a man in chess until 1998. And in 1996 the IBM's supercomputer Deep Blue won against world chess champion Garry Kasparov[9]. Kurzweil predictions have showed the historical accuracy over 85%.

Kurzweil pictures the world evolution as follows:

- by 2020 robots will be physically more sophisticated than people;
- by 2032 robots will reach intellectual superiority compared to men; they will massively start to repair themselves;
- from 2035 in certain occupations (eg, secretaries, credit analysts, drivers of public transport) robots will completely replace the humans;
- in 2045 the world will come to technological singularity (all people, machines and gadgets will be on-line, powered up by an artificial intellect;
- by 2099 robots will be granted with the rights equal to humans.

Notably over the past 30 years the basic model of public governance has been actively evolving benefiting from revolutionary development of technologies, passing two stages and entered to the third one:

I-st phase: Electronic government (e-government)

II-nd phase: Open Government

III-rd phase: Smart Government

The logic of evolutionary development of format and content of interaction between the state and citizens is universal for any country. When building up two historical lines of evolution of technology and model of public management, we see that their dynamics match in phases and show substantial correlation as shown in Table 1.

Is the smart digital government era at the final stage of its development? No. We anticipate that self-learning neuro-computer systems will be extensively applied in public (governmental) information systems in order to better predict and respond to individual needs of consumers of public services. After achieving the goal «transparent standard public services for everyone», the public authorities will be able to move the next stage «personalised public services for everyone». Mobile e-solutions will allow any citizen to receive public services regardless of geographical position, authorization and authentication will be done based on most advanced technologies of anthropological data.

New technological dimensions of public administration demand on the one hand rethinking of the traditional governance model: based on hierarchy, off-lined mostly, paper legal documents flow, lacking knowledge transfer. On the other, we have to make sure that entering into new digital age, human being will not become rare analogue (off-line) species and our individual interests are protected.

Let us explore the types of "pitfalls" related to digitalization of the public administration.

### 4.2. *Risks and challenges of the digitalization of public administration*

#### 4.2.1. *When means seek to substitute the goals*

If someone would buy a car in France back in 2000-s, this person would not spent any single minute for its registration. There was rule in place that the seller should notify the appropriate authorities of the change of the owner. The main reason why the state (regional authorities) has been registering a car is fiscal collection purposes. Therefore, the seller has always been motivated to change the registration accordingly to avoid paying taxes further on after the car sale. When you'd decided to sell the car, it would have took you some 10-15 minutes to do the necessary changes in the register. Again this action is not tied up with law-enforcement institutions; it is a matter of fiscal authorities of the region that collects the related taxes.

We believe – at that time it was not the result of "electronic government" put in place. But it was surely the result of high degree of comprehension of the subject, purpose and format of interaction between the state and the citizen.

This is the key question. It comes before the digitalization of the public administration. Every official must ask him – or herself and clearly understand the answer to the question: why we should implement information technologies? As aptly noted Jean Baudrillard: «When things, signs, actions are exempt from their ideas, we can embark on the path of the infinite self-reproduction»[10]. That's how begins the computerization for the sake of computerization, when the process becomes more important than the result. Then passed the stage when reporting become a higher priority in comparison with the real resolution of the citizens' issues. After that virtual reality, triumphantly enters into the relations between state and citizen, when the picture on the official website, accountability, mastered budgets – all indicate a tremendous volume of work but real degree of the citizens satisfaction is not confirmed by official statistics. Any digitalization should take place only on the basis of better service to the citizens needs.

Thus we are loosing the citizen as the primer beneficiary of the information-technology based public governance. This is the first digital trap.

#### 4.2.2. *Standardization suppresses individual needs*

The methodological base of the automation and digitalization could be focused on typology of governance processes, particularly of the public services. Digitalization requires elaboration and adoption of a large number of standards and regulated procedures. Standardization should play a significant role for a mathematical development of government systems and infrastructure.

Obviously, to avoid a paradoxical effect - reducing the flexibility of the control systems when implementing the e-Government tools, it is important to include in the terms of reference for the development of software and hardware systems a considerable scope for customization (adaptation, individualization) of virtual spaces joining the government and the citizens, especially

within the framework of the public services platforms.

Standardisation and unification of public services contradict to the natural need of a person to be individually treated and considered. Public administration should foresee such requirements and adopt its management information systems accordingly.

#### 4.2.3. *Virtual presence and existential detachment*

Paradoxically, but the implementation of information and communication technologies in public administration can create a breach between an official/public manager and a citizens. This risk arises when the virtual receptionists and receptions, twitter accounts, digital social media, PR-managers become major intermediaries, means of communication with the citizens, especially at the municipal level. It creates a wide layer of digital bureaucracy (!), impersonal and cold as the monitor light. How citizens are reaching the authorities or could be heard in such cases?

Virtual receptions hardly provide for the public authorities to be closer to the citizens. The goal is to create such computerized systems of control that would prevent the "falling out" of a citizen from the *online* mode to the *offline* mode when dealing with the public administration. A good example of this methodological gap is the mechanism of pre-trial (extrajudicial) treatment of complaints in the process of obtaining public services. For example in Russia the framework is provided by Article 5 of the Federal Law № 210-FZ dated on 27.07.2010 referring *On the organization of public and municipal services*[11]. When services are available online, the resolution of complaints is carried out in offline mode. Citizens have to be physically present to solve issues raised in virtual space. It slows down and "hides" the procedures of solving the citizens' requests. Moreover the process is reducing the control over the system bureaucracy.

#### 4.2.4. *Cyber threats to the governance systems*

Obviously the large-scale use of information technologies in public administration requires the development and maintenance of redundant working conditions, an offline mode, software and hardware management platforms and backup systems. Implementation of such decisions mean tangible spending in terms of time and financial resources. It might be so expensive this process that it can significantly reduce the positive overall effects from the introduction of such information technologies. At the same time, the state is obliged to create independent and secure control systems. That adds up more budget requirements. However, the information stored in the governmental information systems is so critical that one can hardly dispute the necessity to create such protection against hybrid offensive information and hacking campaigns.

There is another aspect of the digital age – the need for legal regulation of the events, attitudes and actions arising in the virtual space. Specialists in the cyber law will be highly demanded in the near future. In the mean time the importance of the cyber law

for the business community is already well recognised. Yet it seems that some public administrations still underestimate the forthcoming importance of the cyber law.

Another challenge for the cyber law comes from the forthcoming massive household use of 3D-printers. People will be able to transform their needs into tangible objects, footwear, devices and even food. It improves quality of life. However wider opportunities to download things will become available also for those who pursue criminal and anti-social values. We can anticipate attempts to use cyber channels for trade downloadable 3D-printed weapons, dangerous chemicals. Law enforcement role of government in the future is both critical and extremely knowledge-intense.

### 4.3. *The new labour market structure*

As a normal consequence of digitalization and robotization some professions will disappear and other professions will be born. We believe that one of the ways to understand which professions are disappearing is to assess the degree of its standardization, its *standardability*. More you can rigidly standardize and regulate a profession, easier and faster it is to replace the human by a robot. Among disappearing professionals could be loan officers, taxi drivers, secretaries, administrators, retail sellers etc.

We can certainly presume that some public administration functions will be also robotized. For instance road surveillance officers will be replaced by flying drones, traffic accidents will be settled automatically by robotized patrols, citizens' vehicles equipped with high intelligent systems will immediately "confess" accurate GPS-coordinates, trajectory followed before the accident, humans identification tags, accurate panoramic pictures and so on.

## 5. *The outlook of the future public governance*

### 5.1. *New dimensions of the fight against corruption*

Standardization bashes the subjectivity of the decision-making process. It localizes the genesis of the corruption, because it limits subjectivity in every day public decision-making to zero. Furthermore, the robotic systems are impossible to corrupt in a traditional sense of the matter. From this perspective, digitization of the public administration is an absolute social good. Of course the corruption in this case will shift to those structures where access control and monitoring is taking place. But that is exactly what we call localization of corruption.

### 5.2. *Ensuring the continuity of knowledge*

Normally a reform has been delayed by political realities which did not kept a pace with administrative development. The mission of any state relies on the interaction between cultural, ethnic and economic forces. The potential of accelerated development is based on cohesion, stability, national agreement on goals and objectives in political sphere, decentralization or disperse of public functions. At the level

of public administration information technologies or better said digitalization should help to avoid the disruption in continuity of accumulated knowledge and experience to govern properly. Moreover it allows public officers to access to historical data and carry on the long-term tasks without interruption. It provides consistency.

For example, the implementation of solution to create a new generation of aircrafts on the national level may require a decade or even more. It is obvious that within that period many governmental teams of public managers may change. However the national goal must be achieved steadily, in accordance with a specific timetable. Digital databases and knowledge are the instruments which could facilitate the transfer of experience between different generations of public managers.

### 5.3. *New technologies as a public good*

A new era of machines will completely overturn our understanding of labour productivity, but not only. It will feed the opportunity to produce enough foods and goods for all mankind. Robotization allows any human being to satisfy, at least, all the basic needs. Everybody should understand that this digital era represents an opportunity to create socially secured countries, and in fact to build societies of the future without signs of poverty.

Meanwhile, information technologies are education oriented. Many people could have access to the quality education. Again, this is an opportunity to create an enlightened society.

## 6. *Results of the study*

Reviewing the perimeter of the topics covered by the present paper, we can say that the phase of smart (digital) Government is not at the final stage of the public administration system development. The states and their governmental acts will continue to float on the wave of information technology progress. We have seen that the next, fourth phase will occur within 10-15 years and will be by nature a driver to satisfaction of individual needs of every citizen. We may call it "personal Government" or "I-Government".

## *Conclusion*

The pace of changes, performance and efficiency of the new public administration system will be determined by the ability of the current generation of public leaders and executives to look beyond their own experience. We believe that this issue should be the most important quality of any modern public servant.

The governments will be forced to prepare themselves for this new reality. Our general observation is that the countries around the globe have already different level of readiness to digitally govern. Very simple but illustrative example – search query of the word "future" on the website of the Ministry of Labour and Social Protection of the Russian Federation shows 232 connection links, when in the meantime US Department of Labour official webpage, at the same query released 640 references. It might give an idea for respective public

administrations to think of the future more often.

But no matter how fast things might seem to be, life of the humans and the world development remain the centuries-long marathon of nations, cultures and countries. Those one which have chosen extra-long strategies and horizons beyond hundreds years will remain as main characters of the world history. And the most important consideration is that the basic value for any governmental act shall remain the citizen, the common habitant of the world village.

[1] Y. Bar-Yam, *Dynamics of Complex Systems*, Reading, Addison-Wesley, 1997, p. 5.

[2] N. Berdyaev, *The Meaning of History. New Middle Age*, Moscow, Kanon+, 2002, p. 148.

[3] J. Baudrillard, *The Transparency of Evil*, Moscow, Dobrosvet, 2014, p. 260.

[4] E. Brynjolfsson, A. McAfee, *The Second Machine Age. Work, Progress, and Prosperity in a Time of Brilliant Technologies*, New York, Norton&Company, 2014.

[5] Cfr. at <http://lib.sale/ekonomicheskaya-istoriya-uchebnik/vtoraya-agrarnaya-revolyutsiya.html>.

[6] The UN Food and Agriculture Organization's projections, at <http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf>.

[7] Even if the reader feels that an analysis from political-economic perspective of the bridge between physical and digital worlds is more than justifiable due to the above statements, this subject will be referred to in the next forthcoming research of the authors.

[8] Cfr. at <http://www.kurzweilai.net>.

[9] Kasparov declared in an essay for «Time» that he «could smell-a new kind of intelligence across the table». In fact Deep Blue won the first game because of a bug.

[10] Baudrillard, *Transparency of the Evil*, cit.

[11] Access: <http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=201538&fld=134&dst=1000000001,0&rnd=0.8215553514253713#0>.