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ELECTRONIC GOVERNMENT
Experiences and Ideas from Europe

Introduction

This papers discusses some recent ideas and experiences of electronic government, eGovernment for short, in Europe, with a focus on Finland.

Manuel Castells and Pekka Himanen[1] have identified three basic types of the information society: the Nordic welfare model, the free market Silicon Valley model, and the authoritarian Singaporean model. Finland is a prime example of the Nordic welfare society with a large public sector, high taxes, extensive social, educational and cultural services that are both financed and administered by central and local governments. Simultaneously the penetration of information technology is high and the IT industry is a significant part of the economy, high technology being the largest export category[2]. Finland occupies the top position on several indicators, such as the World Economic Forum competitiveness ranking[3], the country with least corruption[4], and the highest mobile telephony penetration.

Electronic government – a definition

eGovernment can be seen as having three different parts: the administrative, the political, and the service production parts, as illustrated in **Figure 1.**

In a narrow sense eGovernment means that various administrative government functions, administrative services for citizens and businesses, are conducted with the help of networked IT. A main part of governments' tasks are collecting, processing, analysing, distributing and acting upon information in various forms. Much of the administrative products of government, such as decisions, statements, permissions,

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[1] Castells, Manuel and Pekka Himanen: The Finnish Model of the Information Society. SITRA & WSOY, Helsinki 2001. (www.sitra.fi)

[2] Paija, Laura (ed.): The Finnish ICT Cluster in the Digital Economy. ETLA – The Research Institute of the Finnish Economy, Reports B176, Helsinki 2001. (www.etla.fi)

[3] http://www.weforum.org/whatwedo.nsf/Documents/What+We+Do+-+Global+Competitiveness+Report+2001-2002#Overall%20Competitiveness%20Rankings or http://www.oup-usa.org/isbn/019521837X.html

[4] The Economist, 30.6.2001 based on a survey by Transparency International.

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licenses and certificates are rather easily converted into digital form. Such administrative aspects of government can be made increasingly efficient with the aid of office automation, databases, and networks.

The various relations between public administration (A), citizens or customers (C) and businesses (B) can be summarized as:

- A2A – inter-administrative transactions, exchange of data and information, such as calculations of GNP, census data collection, and various registers

- A2B – administration of businesses, such as regulations, permits, and VAT

- A2C – services to, and transactions with private citizens, such as personal documents, and building permits.

In a broader sense eGovernment refers to changes in political processes that become possible with networked IT. In its most radical form this would mean direct democracy, where citizens could cast their vote over Internet on various political issues and thereby take over some of the functions of elected bodies. This, however, has so far not been seriously implemented. A more realistic aspect is the possibility of increased transparency of various political processes. Policy debates, position papers, white papers, committee work, draft legislation, and the final decisions making process could be made available to citizens. Discussion forums can be established for public debate.

A third aspect is the question of public service production, including education, welfare, healthcare, safety, security and various infrastructure services. A service product, be it public or private, is different from an administrative product in that the subject and the benefactor are different actors. In service products, such as health care, the patient is simultaneously subject to a service intervention and its benefactor. In administrative products, such as the highway police catching a speeding motorist, the offender is subject to an administrative act, but the main benefactor is the public that benefits from safe road traffic.

Public Administrative Services

The Spring European Council in Stockholm, March 2001[5], discussed the impacts and priorities of eGovernment. Two indicators of eGovernment were established:

- percentage of basic public services available online
- use of online public services by the public.

To make these indicators operational, the EU member states have agreed on a common list of 20 basic public services, 12 for citizens, 8 for business. These are listed in **Table 1.** Progress in bringing these services online is measured with a four – step variable:

- posting of information online
- one-way interaction, for example the possibility to download various application forms

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[5] http://europa.eu.int/information_society/eeurope/action_plan/index_en.htm

- two-way interaction: for example submission and verification of application forms
- full online transactions including delivery and payment.

The right-hand column in Table 1 indicates the current implementation level of these indicators in Finland.

The Finnish government has actively promoted the building of web-IT –based administrative services[6]. The main milestones are:

- In 1995 the first strategy for information society was formulated by the government. It was an attempt to provide a new vision for the nation that was badly shocked by the severe recession 1991-93.

- 5.2.1998 a framework decision on public electronic transactions, development of services and reduction of data gathering.

- 14.4.1998 the Government passed a framework decision on general guidelines of "High-quality services, good governance and responsible civil society"[7]

- 1.12.1999 The Identity Card Act

- 1.1.2000 Act on Electronic Service in the Administration

- 15.4.1999 Government programme: government information society projects

- 20.6.2001- 31.12.2001 Action Plan for e-government, known as the JUNA -project[8]

A few examples on practical progress are the following. On point A1 in Table 1, "Income tax declaration" the current status is that most Finnish citizens do not have to declare for taxation. The tax administration compiles a tax-proposal out of data it gets electronically from employers (wages and benefits), insurance companies (pensions, unemployment benefits), banks (loans, interests, share transactions), social security (sickness payments, pensions, student grants), and other national databases (real estate and vehicle ownership). The taxpayer receives a proposal and accepts it by doing nothing. Should the proposal not be acceptable, the taxpayer can file a complaint and submit additional information.

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[6] The Information Society Advisory Board has produced a report of Finland as an Information Society. The report gives a picture on status of IS developments, projects, legislation and makes a number of proposals. The report is available in PDF format (550 k) and HTML at http://www.vn.fi/vm/english/public_management/

[7] http://www.vn.fi/vm/english/public_management/index.html

[8] http://www.intermin.fi/suom/juna/english/index.html

The benefits of this initiative for citizens are obvious. It reduces considerably the costs in time and effort to declare income taxes. Possible errors due to copying mistakes, lost documents or missed deadlines are eliminated. The tax statements are comprehensive but compact and in a standard format. For the tax authorities the benefits are also several. The tax declaration for most ordinary wage earners is rather standard and can be automated, saving substantial costs. Thereby more attention can be paid to non-standard cases requiring judgement.

Registration of a new company, point B4, used to take up to two months. As a result of new legislation in force since April 2001, the process can be completed in one to two weeks. A new company database system means that the new entrepreneur needs to supply the registration information only once as the information is automatically distributed to tax authorities and company registry.

Transparent government

Transparent government can be divided into two parts. First is the transparency of administration. The traditional Nordic transparency principles state that "official records shall be in the public domain". The act on openness of government activities[9] requires authorities to publish their information proactively. There is a shift from "supplied when asked" to active information policy.

Several joint information services are available for citizens. There is a general Citizen's Guide (www.opas.vn.fi) that organized public information by phases of life – children, young people, working age, and elderly. The site includes links to over 60 government agencies and over 200 municipalities. A general directory of all public bodies and their employees has also been made available (www.julha.fi).

The second point in transparent government is the openness of policy processes from ideas to completed legislation. Preparatory work in ministries can be viewed in a project database (www.hare.vn.fi). All ministries publish their reports and proposals on their websites. Government proposals to Parliament can be read at the Council of State web-site (www.vn.fi). Discussions and decisions in parliament are available at www.eduskunta.fi, and published laws can be viewed at www.edilex.fi.

The benefits of transparent government are difficult to assess on a short- or medium term. The line of thinking is based on the Nordic tradition of representative democracy and active citizenry in the political process. Thus cost-benefit – calculations are not relevant in this area.

Public service production

While administrative services and transparent government have been swiftly adapted to the information society, public service production is a significantly more difficult task. There are several reasons. First, in welfare society the sheer volume of services produced and the subsequent size and complexity of the producing organizations is overwhelming. Second, the service production system is fragmented hierarchically,

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[9] www.OM.fi/3470.htm

regionally and functionally. Much of the primary services are produced by municipalities, of which there, at the beginning of year 2000, were 452 covering a population of about five million people. The largest municipality is the capital city, Helsinki, with more than a half million people, while the smallest municipalities in the northern and eastern regions of the country have only a few thousand people. Municipalities form regional alliances to conduct some scale –intensive tasks, such as specialist health care and infrastructure maintenance.

Public services are divided into several specialized sectors, such as healthcare, welfare services, education, fire- and rescue services, and business support. Each sector has its government ministry or agency and - as usual with professional organizations – interagency rivalry is intense. Therefore the actual production units, municipalities, resemble complex matrix organizations. The local unit has a line organization with an elected council, which appoints a municipal government and a mayor, who acts as a CEO. Each service sector has a politically appointed board and a sectoral general manager, who heads the actual production organization. Every professional and official in this system has thereby two reporting relations and sources of loyalty: the local line organization and the national professional sectoral organization headed by a central government ministry or agency. A municipality thus resembles a loosely organized conglomerate where it is not always clear, whether the whole is more or less than the sum of its parts.

The financial status of many municipalities is rather precarious. Taxes are already high and further increases may run into the law of diminishing returns. Demand for services, however, shows no signs of saturation; rather the opposite is to be expected with the rapidly ageing society. Thus many municipalities are structurally depressed and in dire need of reform.

The penetration of IT in central and local government is very high. Thus it may be assumed, that the simple and straightforward benefits from administrative automation have already been exploited.

By and large, the population is satisfied with public services and there are no immediate signs of tax revolts or plans for large-scale privatisations. In health and welfare services, a general perception is that the actual services are of high quality, however, the coordination and administration of other than the most simple tasks is a problem. This is especially so in complex cases where two or more sectors, such as school, health, and welfare professionals are involved. Inefficiencies due to poor coordination, unclear priorities lead to misalignment, long waiting times and vaste of effort. Unofficial estimates, publicly expressed by high-ranking Ministry of Trade and Industry officials, claim that there would be an overall cost improvement potential of around 20% with maintained or improved quality levels achievable by better management and coordination. To achieve this potential requires more than installation and use of standard IT –solutions.

IT-impact model

While the volume of IT –initiatives in Europe is impressive, in a long term the question is what is the impact on society, democracy, freedom, economy and public finances.

The impact of IT on business processes has been studied extensively. The Productivity Paradox –debate has been going on for more than a decade now without an apparent solution. It is also known as the Solov –paradox, referring to the famous statement by Nobel –laureate Robert Solov that "computers can be seen everywhere except in the productivity statistics". Extensive studies comparing IT –investment levels with productivity growth have failed to demonstrate a concise relationship.

Several explanations have been offered[10]. First, the statistics used is highly aggregated and therefore does not elicit the relationships accurately. Much of the benefits of IT are qualitative improvements, which are notoriously difficult to measure. Second, despite the rapid growth of IT, the IT capital stock is still rather small, partly because of rapid replacement cycles, and therefore it can't have a macro-level productivity impact. Third, productivity improvement requires extensive adaptation of business and administrative processes. Therefore it will take a long time for the institutions, habits and other soft factors to adapt, perhaps a generation change. Fourth, the productivity impact is there, but only is some narrow sectors of the economy, primarily the IT –industry itself. Fifth, IT does not have a significant productivity improvement potential, at least nothing comparable to internal combustion engines, electric power, or interchangeable parts in mass production.

Without going into the details of the ongoing Productivity paradox debate, a few conclusions for eGovernment can be drawn. First, there is little evidence to support any notions of technology determinism. Beyond simple and straightforward factory- and office automation IT is not doing anything by itself. Efficiency improvements, such as replacing mechanical typewriters with word processors or going from snailmail to email are easily exploited. A part of these improvements are eaten away by increased administrative clutter and the fragmentation of tasks. A more fundamental improvement requires rethinking of various activity processes. This leads to a major conclusion: IT is not a causal agent but an enabling force. IT makes it possible to do things differently and invent new things to do, but all changes are subject to various constraints, incentives and decisions taken under bounded rationality, as well as political considerations.

The impact of IT can be analysed by the Enabler-Effect Model (EEM), as illustrated in Figure 2[11].

The unit of analysis is an activity process, such as an order-to-delivery process in custom manufacturing, or a public administrative process such as new car registration. The process is essentially a structure of tasks and resources. The process employs some kind of IT application - be it manual or electronic - including hardware, system software, application software, and network that operates the control system of the process. It utilizes an infrastructure, including skills, capabilities, and networks. The

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[10] For the debate, see for example: Lucas, Henry C. Jr.: Information Technology and the Productivity Paradox. Assessing the Value of Investing in IT. Oxford University Press, New York 1999. Willcocks, Leslie P. and Stephanie Lester (eds.): Beyond the IT Productivity Paradox. John Wiley & Sons, New York 1999. Landauer, Thomas: The Trouble with Computers - Usefulness, Usability, and Productivity. The MIT Press, Cambridge, 1995. Remenyi, Dan, Arthur Money, and Michael Sherwood-Smith: The Effective Measurement and Management of IT Costs and Benefits. Butterworth-Heineman, Oxford, 2000.

[11] For details, see Holopainen, Sami, Paul Lillrank and Teemu Paavola: Linking IT to Business. Studentlitteratur, Lund, 2001.

process consumes resources and thereby accrues costs. Predetermined outputs, such as sellable products or administrative decisions, can be evaluated with a set of quality characteristics. A process thus includes both cost drivers and value drivers.

The output of a process can be evaluated in two ways: first, the value of the output as perceived by customers, users or other benefactors; second, the costs that are accrued.

An IT –investment can have an impact on the process in several ways. It can change only the IT –application without touching the process or the infrastructure. It may also have an impact on the process configuration and/or the infrastructure. These changes can be classified into three generic types

- Automation substitutes manual tasks with electronic or mechanical devises.

- Databases and other repositories of information and knowledge are made available with easy collection, classification and retrieval thereby having an impact on decision making.

- The quality of control information, that is, the information that initiates and guides actions can be improved in terms of accuracy, reliability, timelines, readability, detail, availability, or relevance.

Through these mechanisms an IT investment can have a first-order impact on value drivers or cost drivers of a process. Thereby the perceived quality of an output may improve, and costs may be reduced. An IT-investment, such as an eGovernment initiative to improve administrative services, can have a direct impact on customer or citizen satisfaction in terms of speed, timeliness, reduction of hassle, lack of errors, or clearer communication. It may also reduce costs by automating and streamlining processes. These may be called first-order impacts, since they tend to materialize to the extent the IT –investments are conducted and implemented prudently.

This, however, is not all. There may be second-order impacts, qualitative changes in tasks and outcomes that appear like unintended consequences or results of evolutionary processes. While first-order impacts are restricted to improving the quality and cost of existing services, second-order impacts make possible to do things that have not been possible before. An example from healthcare is given in Appendix 1.

The long-term question of eGovernment is, what will the long-term second-order impact be on the role of government in society, democracy, growth, freedom and control. These impacts cannot yet be estimated, however, close attention should be paid to their emergence.

Discussion

It is apparent that currently the progress of eGovernment in Finland is most advanced when it comes to applications of networked IT in public administration. A broad range of services and transactions are available to citizens over the net and their actual usage becomes increasingly common. Various policy processes are already rather transparent. Citizens have access to data, reports and position papers at all steps from idea to law. This, however, appears still to be a one-way process of keeping the citizenry informed; the impact on participation and involvement are still unclear.

Progress in these two areas can be expected, since it does not involve extensive change of the underlying processes. The administrative and political processes are well established already in pre-IT forms. Process configurations and decision criteria are determined by legislation and thereby not easily changeable. In the world of administration and politics, both inputs and outputs are information, which is rather easily translatable into digital form.

In public service production the situation is much more difficult. The first-order impacts are easily exploited, but that apparently is not enough to transform the fundamental service production processes and the economic and political infrastructure. Therefore the question of IT in public service is inevitably linked to questions of governance, competition, incentives, regional policies and other very fundamental issues.

Another discussion point is the relation between the welfare and the information societies.

Is IT used to strengthen the grip of government on citizens and a way of maintaining the legitimacy of power over civil society and high taxation, or an emancipatory tool to increase peoples' control of their own lives? In a speech in November 1999, the President of Finland, Mr. Martti Ahtisaari said the following. "Information moves regardless of hierarchical power relations. The information society leads to the downsizing of hierarchical structures. Public administration should really get involved in managing this process. This period of change carries enormous opportunities. The creativity of citizens and the public servants close to their needs can be mobilize to serve a common good.[12]" This statement can be interpreted in many ways. It is based on an a-political assumption that citizens and government have a common interest. Thereby it might be possible to jointly improve services and the democratic process. On the other hand, a more sinister message can also be extracted. The information society may be a threat to the power of government over citizens. Since the information revolution cannot be stopped, the administration should work proactively to maintain its control over society by employing rapidly all the possibilities provided by new technology. Indeed, from an Anglo-Saxon liberal point of view, many aspects of the Finnish eGovernment activism, particularly the use of indentification numbers and cards, can be seen as an attempt by Big Government to maintain its control over the civil society.

In both penetration and usage of IT, Finland is one of the most advanced nations in the world. Using this country as a benchmark or model should, however, consider some some peculiar conditions that may not allow direct copying of the model.

First, Finland is a small country with a population of five millions, of which the majority is concentrated in a few large urban areas. The country is culturally rather homogenous. A civil was and a desperate struggle for national sovereignty during WW II is still within living memory contributing to a general hardship mentality and a general belief in the importance and legitimacy of a strong government.

Second, Finland is situated at the border between eastern and western Europe and the corresponding Latin and Byzantine cultural spheres. This is apparent in the

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[12] Kohti tietoyhteiskuntaa. Sisäasiainministeriön julkaisusarja 1/2000.

administrative culture. On one hand, Finland is influenced by the western bottom-up democratic tradition, where free farmers gathered to choose themselves a king, and the ensuing Anglo-Saxon liberal tradition. On another hand, Finland is influenced by the bureaucratic principles of Tsarist Russia and oriental despotism, where the ruler is sovereign and accountable only to God, and administration is a top-down tool to serve the interests of the ruler. Consequently the current administrative culture in Finland is a strange mixture of California –style laid-back informality and no-nonsense ruthlessness, colloquially known as "Management by Perkele [13]". A consequence of this is that Finnish officials and business leaders are less than their Swedish counterparts prone to engage in lengthy discussions with the aim of reaching, if not consensus, at least consent. Simultaneously contacts between different layers and sectors of society are informal and frequent. For example, Finnish universities enjoy close and cordial relationships with business firms and research projects involving academia, business and government are common.

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[13] "Perkele" means the devil and is a commonly used swearword.

Appendix 1: An example of second-order IT-benefits from in health care[14]

The focus of the example is on cross-functional processes with two different actors at two different locations: a health center (HC) general practitioner (GP) referring a patient to a specialist (SP) located at a regional hospital (RH). The ensuing process consists of complicated movements of information, people, and money. Focus is on analyzing the factors behind the change that took place when paper referrals were replaced with electronic referrals. The process changed as a second-order effect emerged.

The example is based on a study that took place from February through November 1998 focusing on two healthcare units in southern Finland with comparable sizes, resources and demographic bases. Both units, A and B, consist of a hospital and several HCs serving populations of about 150 000 people. Both A and B use similar internal administrative processes, however, A has an intranet system connecting the hospital with health centers while the information process between the parties in unit B is done traditionally with paper documents. All internal medicine cases that were referred from health centers to the hospitals during the time of the study were included. To compare the logic between various medical disciplines, orthopedic surgery cases were also included.

The evolution of the referring process

In the studied units, the health care business process proceeds as follows. A patient approaches a HC and is examined by a GP. In roughly 95% of visits, the HC can handle the whole case. The remaining five percent of cases requires specialists' resources for diagnosis, tests, treatment or all of these. In such cases a referral is sent to a SP and classified by the sender into one of three categories of urgency. Class I requires treatment within a week, II within four weeks, while class III may wait up to three months. After examining an incoming referral, the SP confirms its level of urgency, again in one out of the three categories. Within the given time period the patient will be invited to the hospital for consulting. The other option would be to send the referral back to the GP if the SP decides the case does not warrant specialist care.

In practice, however, almost all referrals lead to a hospital visit. The SPs working with traditional paper documents estimated that one out of five cases could have been treated at a HC with the help of some consultation. However, they felt that inviting a patient in for consulting, normally 20 minutes, was less troublesome and took less time than writing and mailing instructions back to the GP. Further, there were no economic incentives to take this trouble, since the local governments paid hospitals by the number of patients actually called in. In sum, the process had neither procedures nor incentives for optimal resource allocation.

The hospital A in our study was built in the early 90's. The HCs in the corresponding health care unit A were linked to the new hospital with a tailor-made Intranet –type-system. Initially it was assumed that the system would simply replace paper forms and mail, and allow electronic filing. Thus the effects were assumed to be speedier traffic of information, better security on patient record keeping, and some

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[14] Lillrank, Paul, Holopainen, Sami, & Paavola, Teemu: Analyzing Productivity with the Enabler-Effect Map. International Journal of Production Economics (forthcoming).

teleconsultation. For a few years the system was utilized as such, a speedway for one-way referral traffic giving the predictable, but rather minor impact derived from office automation. Only after a few SPs in the internal medicine area started, on their own initiative, to utilize the system for teleconsultation a new business process started to emerge. A number of supporting systems had to be created as well, for example, the local governments had to revise their economic system to include teleconsultations as well as actual visits as basis for remuneration to hospitals.

A three-step evolutionary process could be observed. The traditional paper-based process, still at use in case B, was the starting point. An IT-system was introduced at case A as simple office automation with electronic documents replacing paper. This led to predictable effects in transfer speed and filing effectiveness. As a third step, users started to play around with the system creating an entirely new business process in the course.

The impact of IT-based referral system

The basic assumption when the integrated referral system was installed was that some 20% of referral cases could be treated at a HC with the help of teleconsultation. In practice, the ratio of referrals that were returned to the HC grew to 50% of all referrals, which represent a radical improvement and a fundamental change in the process.

The consequences from this were, first, that the number of patients who were asked to actually visit a SP was reduced to half thus reducing the burden on specialist resources. According to the doctors involved, this happened in 75% of the cases without any observable problems to fulfillment of the appropriate treatment. Second, it was discovered that the rate of teleconsultations given by SP varied depending on referral urgency. Only 10% of the most urgent, priority I referrals lead to the use of teleconsultation, while the percentage was 30 for category II, and over 50 for the category III referrals. Consequently, the major cycle time reduction came to the least urgent cases. Third, the number of HC patients, whose problems got the attention of a specialist through teleconsultation, roughly doubled from five to ten patient visits out of hundred. This was due to the learning experience to utilize co-operation with SPs in borderline cases. As a fourth effect can be added the hard to measure effects that frequent exchange of experiences had on learning on the HC side.
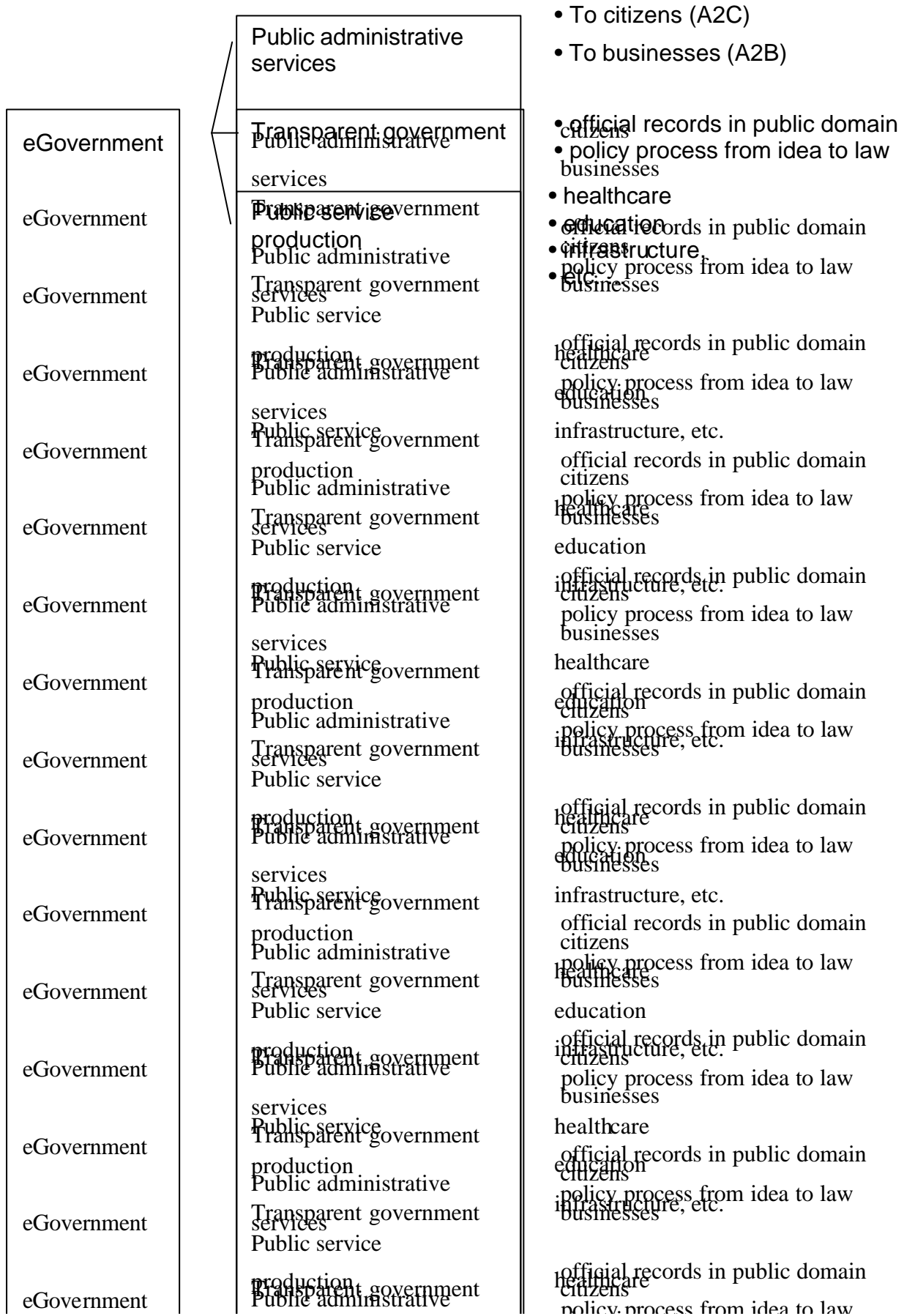
Table 1: Common list of basic public services

	Public Services for Citizens (A2C)	Status in Finland
1	Income taxes: declaration, notification of assessment	4
2	Job search services by labour offices	3
3	Social security contributions (3 out of the following 4) • Unemployment benefits • Family allowances • Medical costs (reimbursement or direct settlement) • Student grants	4
4	Personal documents (passport and driver's licence)	3
5	Car registration (new, used and imported cars)	4
6	Applications for building permission	4
7	Declaration to the police (e.g. in case of theft)	3
8	Public libraries (availability of catalogues, search tools)	3
9	Certificates (birth, marriage); request and delivery	3
10	Enrollment in higher education / university	4
11	Announcement of moving (change of address)	3
12	Health related services (e.g. interactive advice on the availability of services in different hospitals; appointments to hospitals.)	4
	Public Services for Businesses (A2B)	
1	Social contribution for employees	4
2	Corporation tax: declaration, notification	4
3	VAT; declaration, notification	4
4	Registration of new company	4
5	Submission of data to statistical offices	3
6	Customs declarations	4
7	Environment-related permits (incl. Reporting)	4
8	Public procurement	4

Note: The status is indicated on a scale:
1. Posting of information online
2. One-way interaction
3. Two-way interaction
4. Full online transaction including delivery and payment.

The Finnish status is a Ministry of Trade and Industry informal estimate and has not been independently verified.

Figure 1: The Structure of eGovernment

eGovernment

Public administrative services

Transparent government

Public service production

- To citizens (A2C)
- To businesses (A2B)

- official records in public domain
- policy process from idea to law
- healthcare
- education
- infrastructure, etc.

citizens

businesses

official records in public domain
policy process from idea to law

healthcare

education

infrastructure, etc.

Figure 2: The IT Benefit Mechanism

eGovernment initiative

INPUT

IT –BENEFIT SYSTEM
(Enabler-Effect chains)

OUTPUT

Application	Automation	Cost reduction
Process	Information and knowledge repositories	Perceived quality
Infra-structure	Quality of control information	Second-order benefits