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E-PALESTINE: DIGITAL STATE EMPOWERMENT AS GROUNDED DEVELOPMENT OPPORTUNITY

Master's Thesis

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Msc e-Governance Technologies & Services

TALLINNA TEHNIKAÜLIKOOL
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E-PALESTIINA: DIGITAALSE RIIGI MÕJUVOIMU MAANDATUD ARENGUVÕOIMALUS

Magistritöö

Juhendaja: Prof Dr Katrin Merike Nyman-Metcalf

Msc e-Riigi tehnologiiad ja teenused

Author's declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

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Abstract

e-Government has hailed the potential of harnessing the power of ICTs to re-build and deliver what often Government can't. In successful cases, a pro-innovative framework containing principles such as increased transparency, accountability and openness work towards enhanced relationships between Government and societal actors. In the case of Palestine, the potential is added to addressing the unique and complex needs of life under the Occupation. Through an assessment of Palestine's efforts to date along with its cooperation with Estonia, a pioneer in the field, this research aims at informing further development where the triad composed of the unique setting, technology and best practice dialogue to pave Palestine's way to good Governance.

This thesis is written in ENGLISH and is 71 pages long, including 6 chapters, 20 figures and 0 tables.

Annotatsioon
E-Palestiina: digitaalse riigi mõjuvoimu maandatud arenguvõoimalus

e-Riigindus on kutsunud esile IKT lahenduste potentsiaalse võimu ülesehitada ja pakkuda seda, milleks valitsused tihti ei ole võimelised. Edukate näidete puhul, edendavad pro-innovatiivsed raamistikud, mis sisaldavad põhimõtteid nagu suurendatud läbipaistvus, vastutus ja avatus, edendavad oma koostoimega ühiskonna liikmete ja valitsuse vahelisi suhteid. Palestiina näite puhul laieneb selle kasutuvuse potentsiaal addresseerides okupatsioonielust tingitud komplekssseid ja unikaalseid vajadusi. Hinnates Palestiina jõupingutusi läbi aja oma koostöös Eestiga, antud valdkonna teerajajaga, soovib see uuring teavitada edasisist arendustööd, mille triaad koosneb unikaalsest taustast, tehnoloogiast ja parimatest dialoogitavadest, et suunitleda Palestiina teed hea valitsemiseni.

Lõputöö on kirjutatud [INGLIISE] keeles ning sisaldab teksti 71 leheküljel, 6 peatükki, 20 joonist, 0 tabelit.

Acknowledgments

I hereby acknowledge all the valuable contributions I received throughout my research in hopes my work reflects them. My special gratitude goes to:

My family and friends whose continuous support and motivation form the backbone of any such an endeavour.

My supervisor, Prof Dr Katrin Merike Nyman-Metcalf for her assistance, ready availability and insightful discussions about the practices of e-Governance around the world. These were often hard to stop.

Dr Noam Leshem for his (usual) grounding remark; to “try and be humble about hi-tech "fixes" to very low-tech problems” hasn’t ceased to be a compass. I hope my work reflects it in some measure as well as the ways in which technology can be part of a solution.

My interviewees, for their time and the content they were willing to share. On the Palestinian side, the often long conversations resulted in my ability to draw a better and crucial understanding of a space I had no physical knowledge of. In this setting, conducting this research yielded much satisfaction from a geographer’s perspective, for being able to contact with unique “senses of place” making an unknown space more tangible.

The Palestinian Ministry of Telecommunication and Information Technology (MTIT), the Estonian Ministry of Foreign Affairs and the e-Governance Academy for their assistance, interest and resources’ sharing.

List of abbreviations and terms

PA	Palestinian Authority
OPT	Occupied Palestinian Territories
PCBS	Palestinian Central Bureau of Statistics
MTIT	Ministry of Telecommunications and Information Technology
OECD	Organisation for Economic Co-operation and Development
PLC	Palestinian Legislative Council
ISO	International Organization for Standardization
ICT	Information and Communications technology
NPM	New Public Management
PA	Public Administration
EC	European Commission
ISO	International Organization of Standardization
PPP	Public Private Partnership
UN	United Nations
WB	World Bank
UNDP	United Nations Development Programme
G2C	Government to Citizen
G2G	Government to Government
PKI	Public Key Infrastructure
IWS	Internet World Statistics

WB&G	West Bank and Gaza
GCC	Government Computer Centre

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1 Introduction

A pluri-millennial active space, modern Palestine is characterized by a complex mosaic of historical legacies, cultural, ethnic and religious diversity, high-profile international interest but most notably yet inclusive of all these elements, a reality of conflict. A space that used to stretch seamlessly from the Mediterranean Sea to the Jordan River, has been marred in disputes over land throughout most of its existence leading to the modern era's politically unresolved reality where the State of Palestine and the State of Israel pursue their existence in the respective roles of Occupied and Occupier. While the Occupied Palestinian Territories (OPT), composed of the West Bank and Gaza (WB&G), occupy an estimated 6,200 km² of land, these are largely controlled by Israel with heavy difficulties imposed on access to resources and populational mobility in violation of the international agreements in place. An estimated total population of 12.1 million Palestinians live scattered, divided between the Occupied Palestinian Territories (2.7 million in the West Bank and 1.7 million in the Gaza Strip) while the remaining 7.7 million are dispersed worldwide among 28 different countries of which many are refugees or stateless. The reality of occupation entered this year its 50th year as the international community continue to struggle in efforts of mediating a solution to the conflict while intervening in various ways to mitigate the situations arising from it.

Palestine's existential quest alongside one for stability and sustainability in its development present a riddle for the many involved in the field at a time when the dawn of the Information Age with ICTs as its backbone reinvent societies around the world and continue to unravel the significant potential contained within such tools, from eased instant communications to national development, drawing broad consensus among development theorists on the unaffordability of its neglect or dismissal. As much known

or yet unknown potential contained within the use of ICTs, the paradigm shift brought in by the Digital Revolution contains a direct challenge to existing structures, most notably in the way it put the State at the heart of a discussion about its role and attire in such an unfolding reality. In the same way many, inspired by neoliberal *laissez-faire* ideology, were prompt to claim the retrenchment of the State from the governance sphere others reasserted its need to be an active player in it to coordinate development within the new techno-economic paradigm. As part of it, the reinvention behind Government (termed as Government 2.0) see the traditional bureaucratic paradigm replaced by values harnessing the potential of ICTs and the Web which, among others, include openness, transparency, accountability, efficiency, continuous adaptation, vertical/horizontal integration guiding a citizen-driven mindset. Electronic Government (e-Government) presents the potential to become what Government isn't in the ways it transforms its relationships with other societal actors, by bringing the Governance process closer to them and restoring the trust in Government that may have not been present, conceivably paving a path to good Governance.

As the Palestinian Authority recognized the potential of ICTs for its national development, of which e-Government was a constituent part, this project includes itself in its building quest within the unique and complex environment of such an endeavour; apart from the identified benefits e-Government holds in principle, in a space shackled by Israeli checkpoints numbering in the hundreds, ubiquitous roadblocks of various shapes and sorts, pervasive dangers and often random stresses on daily life with an unhindered power of disruption, the question of how the deployment of e-Government can deliver on increasing the wellbeing of its population by namely reducing the need for physical mobility in State-related matters alongside facilitating the State's sustainable development is of direct focus.

In the PA's efforts to build its e-Governance ecosystem, the early engagement of Estonian cooperation due to Estonia's recognized and established track record in the

e-Governance field has been deemed instrumental. The research explores this cooperation to date and enlightens future developments within the existing knowledge sharing and capacity building framework. The thesis will follow the following structure:

- Part I will present an overview of the existing literature and influential concepts defining the research.
- Part II presents the research aims, its arising questions and chosen research methodology.
- Part III will put Palestine's e-Governance situation in perspective by firstly, introducing its record in the field in the context of its proposed guiding documentation, secondly, assessing its cooperation with donors and specifically with Estonia and thirdly by shedding light on the issues identified as challenges to current and further development
- Part IV encapsulates the research's assessment to address planned developments notably in Cloud Computing with the planned creation of a Government Cloud

1 PART I : LITERATURE AND CONCEPT REVIEW

Conflict is the source of pains, losses and severe anxiety. Its existence and prevalence act as major deterrence to societal achievements. Conflict for many is however, an inducer of human initiation of survival attempts, plans and policies. This is often coupled with the adaptation of mechanisms and possible innovation that serve to convert the pressure of conflict into a catalyst for human achievement in defiance of such pressure and consequent devastation.

Sabri Saidam (2007)

1.1 Development contexts

A perspective of multi-dimensionality is key to understanding the crisis spectrum of the Palestinian context and the conflict itself, from everyday fundamental struggles like access to water in Gaza to dealing with the lingering threat of direct bellic confrontation with Israel. Planning for safe, stable and sustainable development in these conditions is arguably challenging for both sides yet reality shows it is the Palestinian side which is unequivocally the one whose survival efforts most compromise the prospects of such a development. Here, the word "development" deserves to be explained for its diverse and often controversial understandings across practitioners in the field (Willis, 2011; Unwin, 2009). In general, the notion is associated with (economic) growth and progress, an understanding heavily influenced by the philosophy of European Enlightenment and reflected in the development discourse of international development institutions such as the World Bank and the UN (Unwin, 2009:7). The case of Palestine effectively debunks the myth of growth associated with popular

metrics such as the GDP, the GNP and other growth ratios which fail to account for the majority of outputs from the Palestinian economy as a direct outcome of the Occupation's reality and not concrete, sustainable growth which, without the steady inflow of foreign aid producing a 'cushion' effect, would lead the Palestinian economy to collapse (Bahour, 2010, Tartir, 2011; Le More, 2004). The "aid curse" in Palestine has been assessed by many as money donations or set programmes set a notorious track record of frequent lack of deliverables and the fuelling of endemic corruption alongside an aid-dependent mindset abolishing autonomy in defining and setting priorities (Tartir, 2011; Tartir & Wildeman, 2014: 306-309; Le More, 2004). Relevant to the context of the research is capacity building, an empowerment tool defined by a "process by which individuals, organizations, institutions and societies develop abilities (individually and collectively) to perform functions, solve problems and set and achieve objectives." (Bond et al, 2001: 355) where the capacity builder (Estonia) accompanies its donor funding with the process of sharing its expertise towards the goal identified by the receiving end (Palestine). The extent to which the success of the development approach found in technical cooperation can be measured has been flagged in the degree of autonomy of the individuals once the cooperation ends (Fukuda-Parr and Lopes, 2013); a range of literature documents the achievement and failure degrees of such cooperation, from lack of local cultural context understanding to inadequate post-project follow-up often leaving projects like e-Government implementation a "developed country's aspiration" (Heeks, 2002; Salem & Jarrar, 2010; Chatfield and Alhujran, 2009; Fukuda-Parr and Lopes, 2013).

1.2 ICTs and their recognised development potential

Since last century's dominant points on the UN global development agenda (e.g.

the eradication of poverty, achieving universal primary education, etc), the potential of ICTs has been identified both in achieving faster, cheaper and reliable mediums for change towards these goals but also in its potential to help developing countries in their national development and notably in increasing economic growth especially for their "support" characteristics of other economic sectors (World Bank, 2011; UN, 2014; Kraemer and Dedrick, 1994). ICT is already considered an "enabler" from a Palestinian economic perspective which some have argued that, due to for instance the ICT industry's remote working possibilities, ICT could be another way for the Palestinians to overcome the hindrances on movement imposed by Israel and that hinder other industries (given ICT's support of other economic sectors) yet critics point out this "occupation circumvention" as a diversion from the struggle of obtaining basic populational rights (Arafeh et al, 2015; Heeks, 2010). Similarly to many other developing country contexts, these concerns inevitably problematize the question of focus towards perceived priorities: in this case, what is more important, "ICTs development or free movement?" While the importance of obtaining populational rights is not in question, the cost of delayed implementation is unaffordable, states Basu: in current times no country, no matter its development state or size, can afford to ignore the potential gains to be reaped from ICTs but especially developing countries given, not exclusively, the 'leapfrogging' opportunities for national development available through such technologies (Basu, 2004:114). Basu continues to note how ICT and e-governance are part of a solution to reach economic gains: coupled with strategic and timely government policies the potential to reach development objectives faster and at a lower cost than conventional approaches is significant (Basu, 2011: 114-115). Further and to this point, the 8th Millennium Development goal (MDG) echoes the recognized benefits of ICTs in the global development agenda and it states "'[d]evelop a global partnership for development" including the aim "in cooperation with the private sector, make available the benefits of new technologies, especially information and

communication technologies" (The Millennium Development Goals, 2000). The partnerships to be made between the public and the private sector in the development of e-Government are here acknowledged making public procurement a key way to resort to in ensuring both the deliverables within a citizen-centric approach and to build towards economic growth via the creation of opportunity (Hazzlett & Hill, 2003: 445-449; Bekkers et al, 2011; Lember et al, 2013).

1.3 Divides and materiality of the "space of flows"

By providing a vehicle for the transfer of information in cost-effective ways, the ICT sector has been deemed essential for the establishment of a knowledge-based economy, an inherent part of the Information Age paradigm shift incorporated within the broader and current techno-economic paradigm (Carayannis and Von Zedtwitz, 2005; Perez, 2009). Within this paradigm shift, restructuring the range of economic development possibilities, the wider installment of the Castellian "space of flows" constituting cyberspace and characterised by "timeless time and placeless space" effectively shaping what Castells termed the "network society" (Castells, 1996) influences much of an equalized understanding of space (Kitchin and Dodge, 2015). As development theory highlights, this presents significant issues in addressing the vast differences shaping the global contemporary landscape and within the digital sphere, with the notable example of the digital divide. Few would object to the fact that cyberspace poses significant disruption to the spatial logic of modernist societies, but it certainly does not render it obsolete. Everywhere doesn't offer equal opportunities for production and consumption nor everyone has the same access to it and this is what would be needed for the modern spatial logic to be rendered insignificant (Kitchin and Dodge, 2015). To take the Palestinian example, the ICT sector itself has faced severe

constraints in terms of access to the requisite technology due to Israeli numerous restrictions and access to the internet is nonetheless far from uniform in the OPT which goes towards the crucial point of cyberspace's materiality and its importance in defining development possibilities for the 'connected' and the 'disconnected' (Aouragh, 2012; Norris, 2011). Yet, the liberatory potential gained once a node connected, is undeniable as cyberspace becomes the space where "the rich and poor, the oppressed and oppressor" co-exist in a levelled playing field and can "vividly compete within" (Saidam, 2007: 341). The role of e-governance in bridging the divide within spaces and, by extension, people set apart is considerable in creating an "equitable digital society" where the levelling of opportunities is available through e-government tools aiming at societal stakeholders empowerment (Stoiciu, 2011; Norris, 2011)

1.4 A question of Governance

Laying the grounds for development is inextricably linked to designing the central role the State is to play in that development. To echo Echebarría (2001:1), "[t]he direct correlation between the capabilities of government and countries' development has a long tradition in political and scientific thought, and is based on vast historical evidence. The most powerful nations' strength and ability to create and distribute wealth cannot be explained without acknowledging the central role of public institutions."

While many question(ed) the ability of the government to function and even exist amidst today's fast and diverse technological developments shaping globalization (Friedman, 2005), one has to stress that in the same way the dawn of new technologies have presented a direct challenge to the State's structures they also became tools to incorporate in its contemporary structure and furthering its necessity of existence as a

capable actor in a Schumpeterian, innovation-shaped realm. In fact, current key economic and development issues, from sustainability to dynamic development, have shown to boost the role of the state in economic growth (Reinert 1999). As Drechsler shows, since the demise of New Public Management (NPM) as a dominating theory in public administration (largely due to its failure of delivery on *laissez-faire*, business-inspired "efficiency" promises), the restoration of the State's image in public discourse within its attributed values of regularity, transparency and due process in addition to its innate orientation toward the public good (as opposed to the private sector) have helped establish its role in leading good Governance in contemporary times (Drechsler, 2004, 2005 2009). Following the concept of the Neo Weberian State (NWS) proposed by Pollitt and Bouckaert (2004), the State is called in within a framework of facilitation to the new problems posed by globalisation, among others, tasked with reaffirming the role of representative democracy as a legitimating element within the state apparatus which e-government, as a tool, can harness in shaping the performance of governance (VD N Dou, 2004; Tapscott and Caston, 1993).

2 PART II : RESEARCH METHODOLOGY

2.1 Research aims & questions

Holistically speaking, this project aims at providing an assessment of the situation of e-Governance in Palestine to further inform its development and potentially its cooperation with Estonia, its most involved donor partner in the field to date. Firstly, through the assessment of Palestine's track record in e-Governance development, the research aims at giving a firm grounding of this context. Secondly, by inserting

Palestine's e-Governance situation in cooperation perspective with Estonia, an established pioneer in the field. Thirdly, the research explores a solution to selected challenges identified in the Palestinian context within Cloud Computing with the creation of a Government Cloud, with the aim of informing better development in further cooperation with Estonia. The following questions are designed to reflect these aims:

- To what extent can the expansion and strengthening of the Palestinian e-Governance ecosystem assist Palestine's development goals?
- How can further cooperation with Estonia based primarily on knowledge exchange support this aim?
- To what extent do further developments in the form of a Government Cloud are a solution to better inform Palestinian e-Governance development?

2.2 Research methodology

The methodology used in this project was inscribed in a quest to best match the research's broad aim and its arising research questions while minimizing the consequences of the fact that the researcher was limited in understanding due i) to having never been to the main field of study i.e. Palestine, ii) having no possibility of conducting research on site iii) not speaking the local language (Arabic).

Acknowledging firstly these limitations in the face of the unique space and world of study at hand built into a quest to understand as accurately as possible the context and the links between three components which Foucault thought necessarily related to understand spaces: space, knowledge and power. In Foucault's words, "it is somewhat arbitrary to try to dissociate the effective practice of freedom by people, the

practice of social relations, and the spatial distributions in which they find themselves. If they are separated they become impossible to understand" (Foucault, 1984: 246) Therefore the chosen methodology had to firstly account for the primary limitations by balancing it with research method(s) capable of providing enough depth in information in order to better fundament findings and secondly, to allow for validation against hypotheses made from factual knowledge. To this point, the project chose a more naturalistic approach instead of a positivist one to allow the research subjects to both explain the way they perceived the context of study and enlighten avenues of investigation (Rubin and Rubin, 2012: 16).

Given these settings, a qualitative research methodology was seen as best suited due to its inherent focus on the social world, its in-depth methodologies allowing a form of social inquiry which looks at how individuals make sense of their experiences within the world in which they live (Liamputtong, 2009: 45). Within qualitative methodology, interviewing was deemed to be the most suitable option..

Firstly, interviewing presented itself as a suitable research method for its intrinsic characteristics as an accurate way of firstly, gaining information about opinions, experiences or events (factual information) but secondly and more particularly, for the valuable insightfulness, depth, detail it allows in contrast with other research methods such as questionnaires, for instance, aiming at coverage and breadth (Aitken et al, 2010: 65). The reconstruction of events through the compilation of information from separate interviews allowed to draw a portrait of a situation through the unveiling of its processes apart from facilitating cross-validation of the data gathered from various sources. Further to this point, in what concerns textual sources, the research acknowledged the outdated nature of some of the key official documents governing the e-Government field in Palestine and thus put additional emphasis in setting the most recent line of events by validating data with different interviewees. Overall, the qualitative lens employed combined (1) analysis of relevant documents

governing the e-Government development in Palestine and (2) in-depth semi-structured interviews with key individuals associated with the field within different sectors of society (government, policy advisors, project managers, academics, etc) (see Appendix 1)

2.3 Research procedure

On the Palestinian side, considering the researcher was unacquainted with the e-Governance ecosystem in Palestine, field-mapping to identify suitable interviewees was initially performed. This was achieved in a number of ways by i) reaching out to people with publications in the field (academic, blog posts, policy documents, etc), ii) contacting the individuals involved in the projects carried out by the e-Governance Academy and iii) following further recommendations from contacted individuals. On the Estonian side, having the advantage of being familiar with most of the actors in the field through the researcher's own academic network, the researcher proceeded to contacting them with preference given to individuals who had participated in previous cooperation projects. These individuals on occasion further directed and provided me with higher-level contacts (at Government level) given the involvement of the Estonian Ministry of Foreign Affairs in overseeing the e-Governance Academy's projects. In total, 11 interviewees were performed, lasting between 30 mins - 1h30 minutes depending on the interviewees' availability and mutual interest to expand on the topics discussed. A key issue of consideration was the performance of the research in itself i.e. how and where the researcher was to conduct research. At the time of this research the researcher was located in Estonia on a permanent basis and given that travelling to Palestine was not an option coupled with Estonian participants often being unavailable to meet in person or prefered to contribute online, the research was carried out online,

firstly through e-mail contact and then through Skype. Participants were asked for permission to audio record the interview with the guarantee of being anonymised in any further use of the data provided.

To maintain a certain degree of informality coupled with seeking answers to a number of pre-set themes, semi-structured interviewing was considered to be the type best matching this quest which aims at a successfully conversational, highly engaging and rewarding interchange following a predetermined order i.e. an interview schedule of discussion points set by the researcher (Dunn, 2005: 79; Willis, 2006: 144; see Appendix 2). This type of responsive interviewing requires attentive listening to formulate new follow-up questions based on the answers provided. Questions were thought of in a pyramidal structure (Dunn, 2005: 83), starting with more straight forward questions, for instance what was the interviewee's background in association with e-Governance in Palestine and steadily progressing to more elaborated, conceptual ones like analysis of obstacles to further development of the e-Government strategy (see Appendix 2).

2.4 Critical assessment of methodology

In sum, the research method proved to be a successful one due to its depth allowance and high versatility i.e. different interviews allowed for a specific focus on different research questions depending on the interviewee's background and involvement with the research topic.

Nevertheless, questions pertaining to questions' wording, formulation, researcher standing, and interviewees' personal setting arose. Firstly, during the interview the researcher took particular care in wording the questions as clearly and neutrally as possible in order to ensure the answers to be as relevant as possible and listened carefully to spot potential tails of further inquiry so as to respect the

semi-structured type of interviewing; in the case of interviewees less fluent in English, additional care had to be considered in wording. Secondly, resisting the urge to interrupt was often encountered due to the perceived need to redirect the focus of the question or due to being too eager to follow up on a certain point or detail. Thirdly, one of the main concerns in keeping the interviewer position as neutral and objective as possible was to refrain from wording or asking questions from an ideological point of view i.e. given the researcher's alliance with the Palestinian cause it was often challenging not to ask questions overly engaged in depicting Israel as an oppressor.Lastly, the political nature of the research had to be considered in so far as some interviewees' roles as Government (MTIT) (main body responsible for advancing the e-Government agenda) employees had to be taken into account when asking for critical assessments of the MTIT's performance to date in pursuing the agenda.

3 PART III: PALESTINE'S LANDSCAPES IN E-GOVERNANCE

We Palestinians like anything that can make our life easier, better.
Participant D, female, 30s, government employee

3.1 Palestine's e-Government: an overview

The potential of ICTs to assist in the making of a more reliable future, from an individual to a national level was recognized in the early 2000s when Government-led initiatives formally inserted ICT on the map of Palestinian national development defining it as one the main means to drive economic growth and social development and e-Government as a necessary step within it (MTIT, 2005: 16). In 2004 President Abbas gave the go-ahead for the PA's ministerial council to assign a national committee for the preparation of the "National Strategy for Telecommunications and Information Technology", ultimately approved in June 2007. The Ministry of Telecommunication and Information Technology (MTIT) was appointed as the main public body responsible for implementing the strategy in cooperation with stakeholders, including higher academic institutions and the private sector (MTIT, 2005). The discussions and plans for the introduction of e-Government in Palestine culminated in the e-Governance Strategic Plan (2005), a carrier of the PA's vision "to provide a better life for our citizens by being a Government that:

- "Empowers citizens to participate in government;

- Connects citizens, the private sector and institutions to drive economic growth and meet community challenges;
- Delivers real public value through citizen-centric government services".

OECD's 2011 assessment identified e-Government as well integrated in all broader national policies of the PA with detailed descriptions in ad hoc strategies yet a need for an updated e-Government policy document is identified to improve alignment with current PA priorities as present for example, within the National Development Plan 2014-2016 and to address technology-related aspects of current and future infrastructural developments (e.g. shared IT infrastructure policy). In addition, an implementation master schedule should be drafted to ensure projects are better managed and monitored (see Fig. 1; OECD, 2011: 7; Participants B, D)

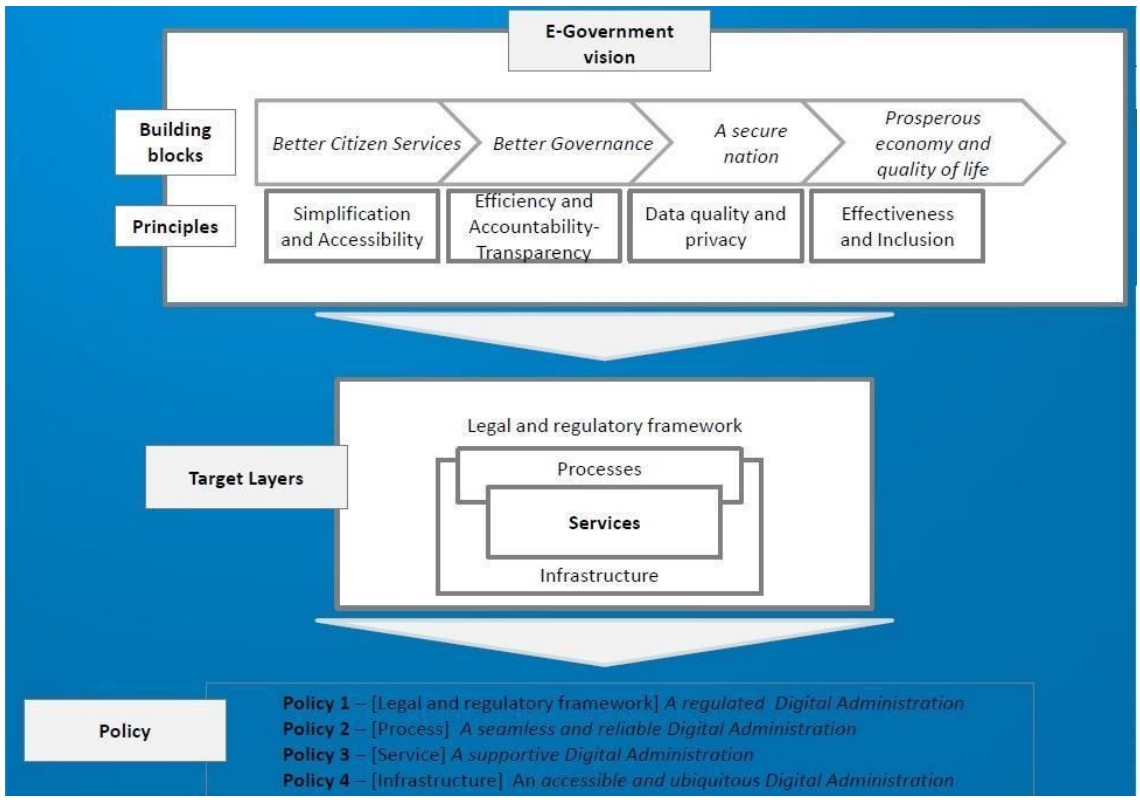

Fig 1. The PA's Policy Framework (OECD, 2011)

As a debut to concrete developments, it wasn't until two major conferences in late 2007, the Annapolis conference followed by the Paris conference, that more significant developments happened namely in terms of financing the development of Palestinian e-Government where the PA received $7.6 billion (Abdullah, 2016) .

Infrastructurewise, the Government has been operating its own internal network (GovNet) since 2010, enabling all ministries to be interconnected and connected to the Government Computer Center (GCC) (see Fig. 2). To ensure high speed and enough capacity, over 850 fiber optic lines connect governmental institutions and their branch offices across the West Bank to the network (Participant B). A security framework was developed in order to ensure the security, integrity, authenticity, and availability of data being transported over the government network between the connected ministries or the data stored in data centres. Further key developments include the development of the Palestinian data exchange layer (X-Road) in cooperation with Estonia (analysed in section 3.3.)

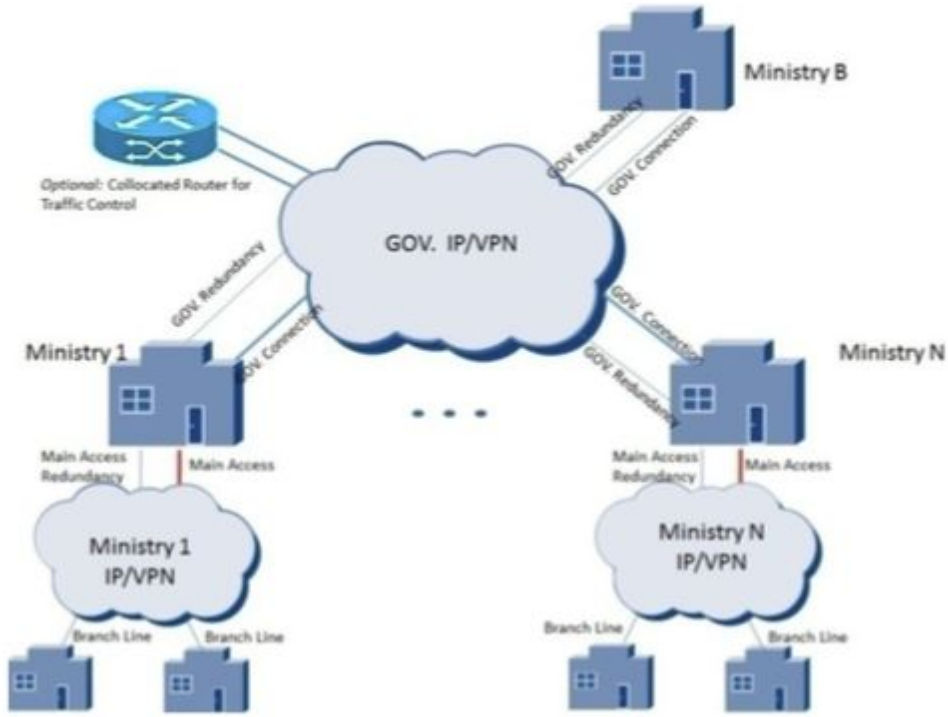

Fig. 2. The Infrastructure Framework: *GovNet Topology and usage assumptions*
Source: Palestinian e-Gov Academy

Among efforts in standard setting is Zinnar, the Palestinian Interoperability Framework successfully integrated by the MTIT and aiming at establishing the necessary foundation for the interoperation of heterogeneous information systems in the different governmental ministries in the WB&G. It enables easy composition, matching, mapping, merging and data exchange between e-Government services and is composed of 5 components (Ontology Server, Entity Server, Address Server, Service Repository and Database of Databases) (see Fig. 3; Jarrar et al, 2011). Apart from Zinnar there is a current lack of standards across the spectrum posing substantial risk to the further e-government implementation process.

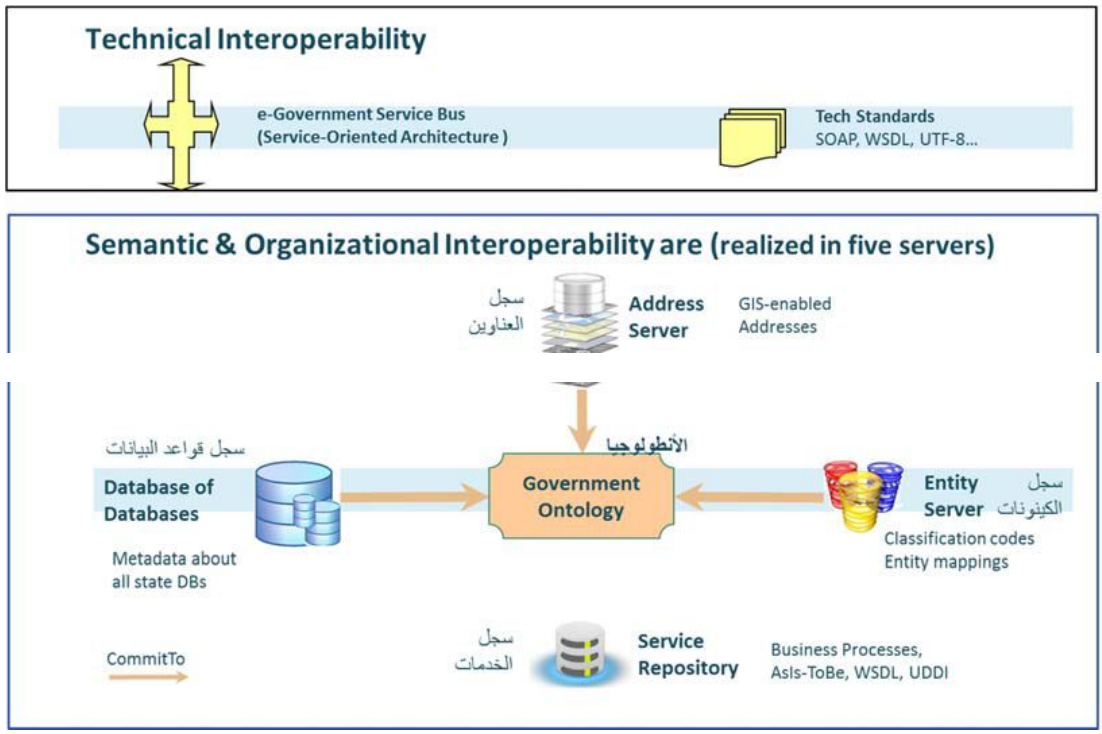

Fig. 3. Zinnar, the Palestinian Interoperability Framework (The Palestinian e-Governance Academy, 2014)

Governancewise, an e-Government Core Team, chaired by the MTIT, was formulated in 2010 to lead and follow on the project's implementation. Currently, the Core Team consists of representatives from 15 different governmental institutions, the private sector (since 2016) and academia. In 2014, a Higher Ministerial Committee chaired by the Prime Minister was formulated with the responsibility to oversee the overall e-Government strategy, coordinate and manage e-Government budgets, integrate, and redefine Government policies and processes, endorse standards, and integrate schedules and plans (Participant A, B).

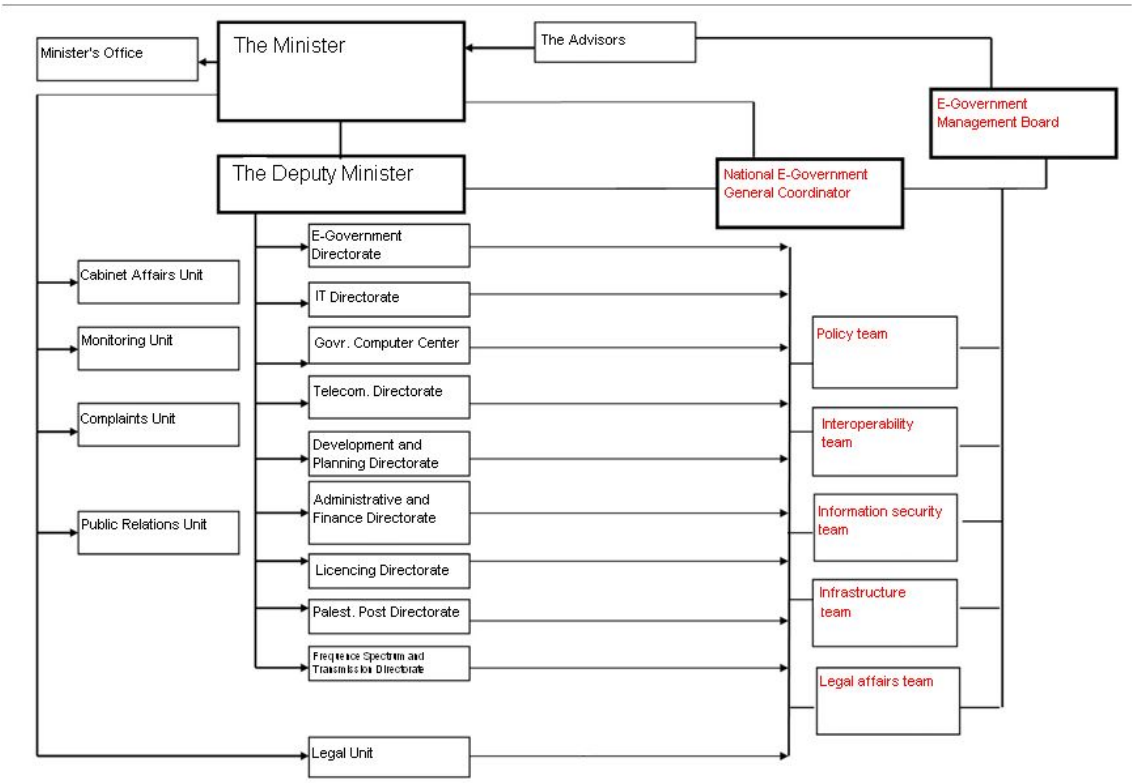

Fig. 4. Palestinian e-Government setup (OECD, 2011)

Two projects mark local e-Government capacity building efforts: firstly, a Palestinian e-Governance Academy was created with capacity building aims for the Palestinian society in the areas of interoperability, security and legal informatics seen as the main challenges for both e-services in particular and e-Government development more broadly. Funded by the EU (Tempus fund) for a duration of 2 years (2010-2012) and operating within an international academic consortium, the project includes 6 courses (counting approximately 300 training hours) developed jointly by Sina Birzeit University and the MTIT (Participant E; Palestinian e-Governance Academy, 2014). Secondly, an ICT Training Center established within MTIT in 2014 with funding, capacity building and technical assistance provided by the Korean International Cooperation Agency (KOICA). Designed as part of a wider initiative, the Palestine

Start-up Support (PASS) Program, the training center provides, among others, training programmes for government officials and staff in matters of e-government (KOICA, 2016).

3.2 e-Governance, an Estonian export

"e-Estonia" is a term commonly used to describe Estonia's emergence as one of the most advanced e-societies in the world – an incredible success story that grew out of a partnership between a forward-thinking government, a pro-active ICT sector and a switched-on, tech-savvy population.

e-Estonia website

A country that nowadays saves 2% of GDP through paperless government and shares its e-Governance expertise around the world came a long way from the early 1990s days when the international race to erect the Information Society began; the then freshly independent Estonian government was no less eager to 'catch up' and get ahead of the developed West to carve itself a future of prominence on the global arena despite its geographical size and, comparatively speaking, scarcity of resources to exploit and compete within a globalised reality (Reinsalu et al, 2009: e-Estonia, 2017). In retrospective and culturally speaking, the transitional period from a Soviet reality to a (neoliberal), technology-defined globalised one can be refined to be seen from two standpoints: firstly, the prospective technological change paving a new prosperous future direction was inscribed in a conducive context shaped by the modernist socialist values and the idealist belief in progress of Soviet times and secondly, given Estonia's long lasting link to the Nordic countries, as a quest to match the Nordic tradition in leading technological development (Lauristin et al, 1997; Reinsalu, 2008). Playing to the advantage of the new progressive Estonian government, the technological advances

began at a much more even state than the efforts to match Western levels of institutional democracy. Policy documents established the need for providing access to ICTs in order to increase competitiveness, increase social cohesion and improve democracy by fostering State–individual relationships (Principles of Estonian Information Policy, 1998) where the answer to Estonia's success in establishing itself as an e-Society and pioneer in the field of e-Government can be found in the general institutional framework governing ICT in Estonia: the fierce promotion of competition within the government's radical rulemaking in the economic sphere was more fundamental in the e-Government success than were specific e-Government initiatives (Lember and Kalvet, 2014; Kitsing, 2011). It allowed for the early emergence and active participation of private sector actors such as banks who became instrumental in creating demand for Estonia's arguably most advanced aspect of e-Government, the public e-services.

By introducing Internet banking in 1996, the banking sector became an influential IT innovator with the quality, security and simple user experience and interface of its service attracting the majority of Internet users as its customers (57% of Estonians used Internet banking in 2002) classifying the service as the third most important reason for Internet use behind e-mail and search engine use (Luštšik 2003: 24). Some attribute the reasons of such a success to the narrow time difference between banking in general and internet banking (5 years) and thus not allowing enough time for customers to get used to branch services (Kerem, 2003), alongside a generally tech-friendly population (Runnel et al, 2009: 30). The banking sector's achievements made it possible for many state agencies to provide their services online by using the Internet banking's authentication system at a time when Estonian electronic ID cards weren't ubiquitous yet. As the government made progress in developing its digital services in the early 2000s, a critical achievement with growth and scalability in mind effectively ushered in a new form of governance for the e-Governance ecosystem: the data exchange layer (X-Road) allowing for distributed, secure, seamless, cost and

time-effective communication between the State's heterogenous information systems (Kalja, 2002; see Fig 5). As one of the pillars of the Estonian e-State and a model for the European Interoperability Framework, the X-Road was developed due to firstly, the increased amount of data manipulation requiring more inter-connections between various databases, secondly, the need for a standardised interface allowing for better dialogue between State actors and thirdly the need for a standardised authentication service allowing the authentication of users online (at the beginning done through both Internet banking services and Estonian ID card) (Kalja, 2002: 48). Yet two projects contributed significantly to Estonia's rise to international acclaim as an innovative e-State and e-Governance success story namely and firstly, the Tiger Leap program (1997) concerned initially with bringing ICTs to schools yet becoming a metaphor for a broad computerisation of society and secondly, the Internet based voting (i-voting) (Runnel et al, 2009; Reinsalu, 2008). As Runnel et al (2009) note in assessment of outcomes as compared to policy statements, although it is often claimed that once people start using and trusting online banking, the rest of other Internet applications will follow, the Estonian experience suggests otherwise: due to the government's stark competitiveness promotion and focus on e-Government's infrastructural quantitative and technology centered measures, the void of attention towards people using it was left for the private sector sphere to fill apart from the failure to engage citizens in online democratic participatory activities thus making the Estonian experience one where the leap from e-Government to e-Governance is still to be comprehended and made (Runnel et al, 2009: 32). Estonia's successful branding in the field and good performance measured by indicators lays the fundaments for its current position as a knowledge exporter (Runnel et al, 2009: 33-34): the creation of an e-Governance Academy, a nonprofit think-tank and consultancy organisation dedicated to exporting the knowhow of the Estonian experience in e-Governance was founded in 2002 with the goal of training and advising internationally in all matters relating to the field. The record to

date includes training over 3500 officials from over 60 countries alongside having led or participated in over 60 international ICT projects on different national levels (eGA, 2017).

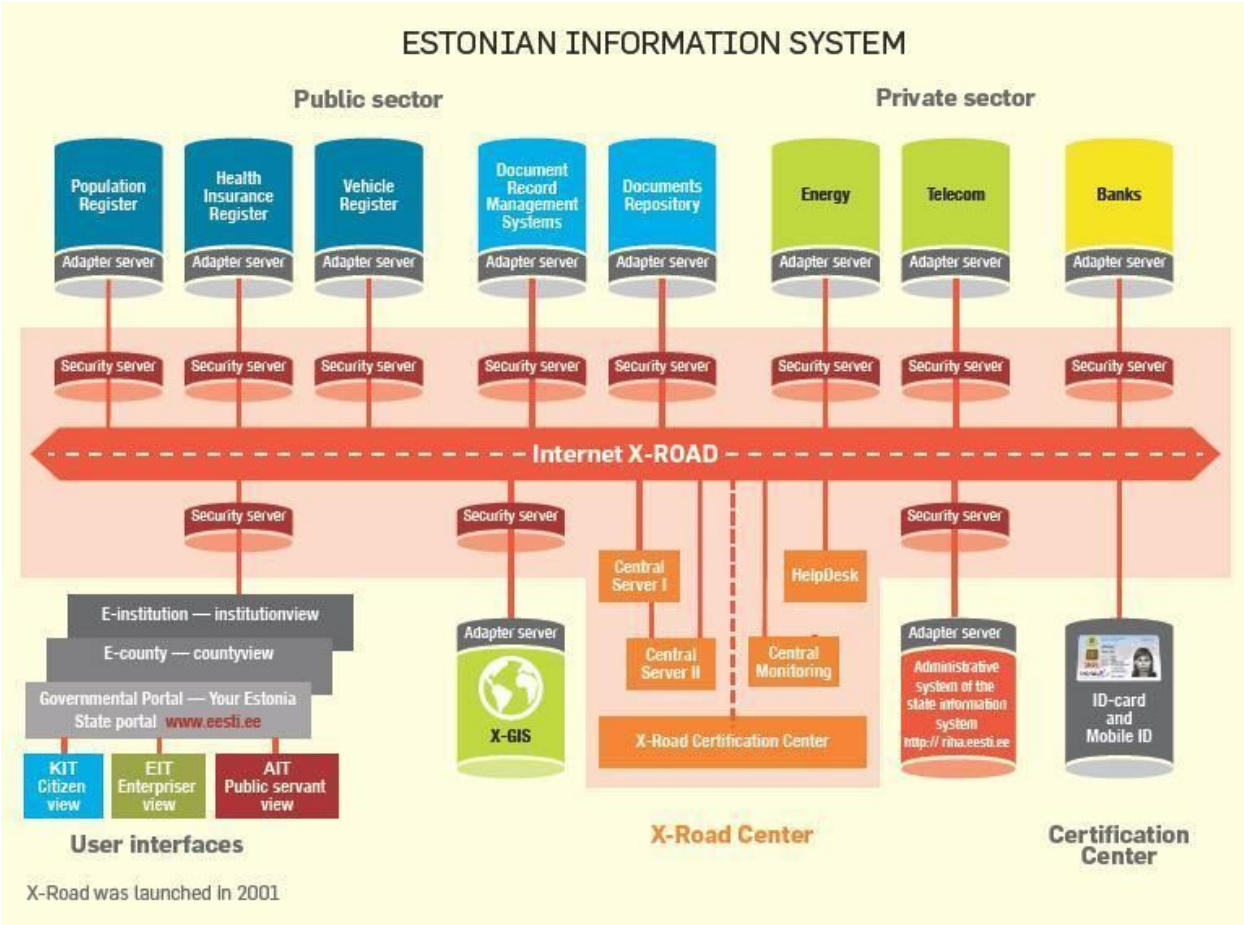

Fig. 5. X-Road, the backbone of e-Estonia: the databases and other components that make up the X-Road (Source: E-Estonia, 2017)

3.3 Finding the fit: axis of cooperation

3.3.1 Infrastructure: the Estonian Fit

From early on in the PA's journey in e-Governance, the search for a suitable match countrywise in terms of a strategic roadmap for development and implementation

coupled with experience outcomes' success became a defining one. The eventual Estonian pick from the countries studied may induce a lack of surprise given its established international reputation in the field by then yet key factors cement a relationship which, at the time of writing, witnesses an engagement in a fourth project of cooperation, dating back to the aftermath of the Annapolis conference when Estonia pledged an individual contribution of 0.8 million € to the PA for the development of the Palestinian e-Government (Abdullah, 2016) .

Understanding the fit Palestine found in the Estonian model goes to the core of the Palestinian context in terms of internal challenges to its organisation and prospects for further development in the field. The new, distributed form of governance Estonia founded via the X-Road implementation presented many benefits yet critically one, for its unification capability of State databases, is noteworthy in the Palestinian quest for a match firstly due to its immediate potential to reduce drastically government fragmentation among connected agencies by 'obligating' them to collaborate via data exchange to perform e-Government, secondly for allowing heterogenous information systems (based on different platforms) to communicate with each other without hindrance from their specific features and thirdly yet crucially, for reducing if not eliminating the need for citizens to travel between State offices to submit and/or retrieve information (Participants E, G). The security component of the X-Road's decentralised and distributed architecture ensures secure e-Government due to data availability, integrity and confidentiality remaining unchanged during data exchanges while each member retains ownership and responsibility over its data and information system (data autonomy principle). Further, in terms of data security, the solution technically abides by the principles of data integrity, confidentiality, users authenticity, movement traceability and detectability (Kalja, 2002; RIIA,2016) In practical terms, the benefits for the end user translate into convenience and speed in either accessing information or submitting it via an e-service given that the X-Road provides the outcome of a wide

range of complex operations i.e. accessing numerous State databases to retrieve query relevant information, in a simple, unified way e.g. tax declaration or automatic granting of health insurance to a newborn.

Before the introduction of the X-Road in Palestine, a first project with the objective of developing efficient and secure online government for the country was designed by the Estonian e-Governance Academy at the request of the Palestinian Ministry of Interior and supervised by the Estonian Foreign Ministry. A knowledge exchange in the form of consultants from Estonia travelling to train Palestinians (government employees, policy advisors, etc.) was initiated and from the other side a number of Palestinian teams from the various ministries and IT departments came to Estonia for additional training and the opportunity to experience directly the Estonian modus operandi (eGA, 2013; Participant I). The X-Road project (2013-2015) thus built on top of this 4-year work with the added further step of key G2G e-services implementation. As of March 2017, 14 governmental agencies are connected to the X-Road and the exchange of data for 25 G2G e-services via X-Road is operational (Participant A; see Fig.6).

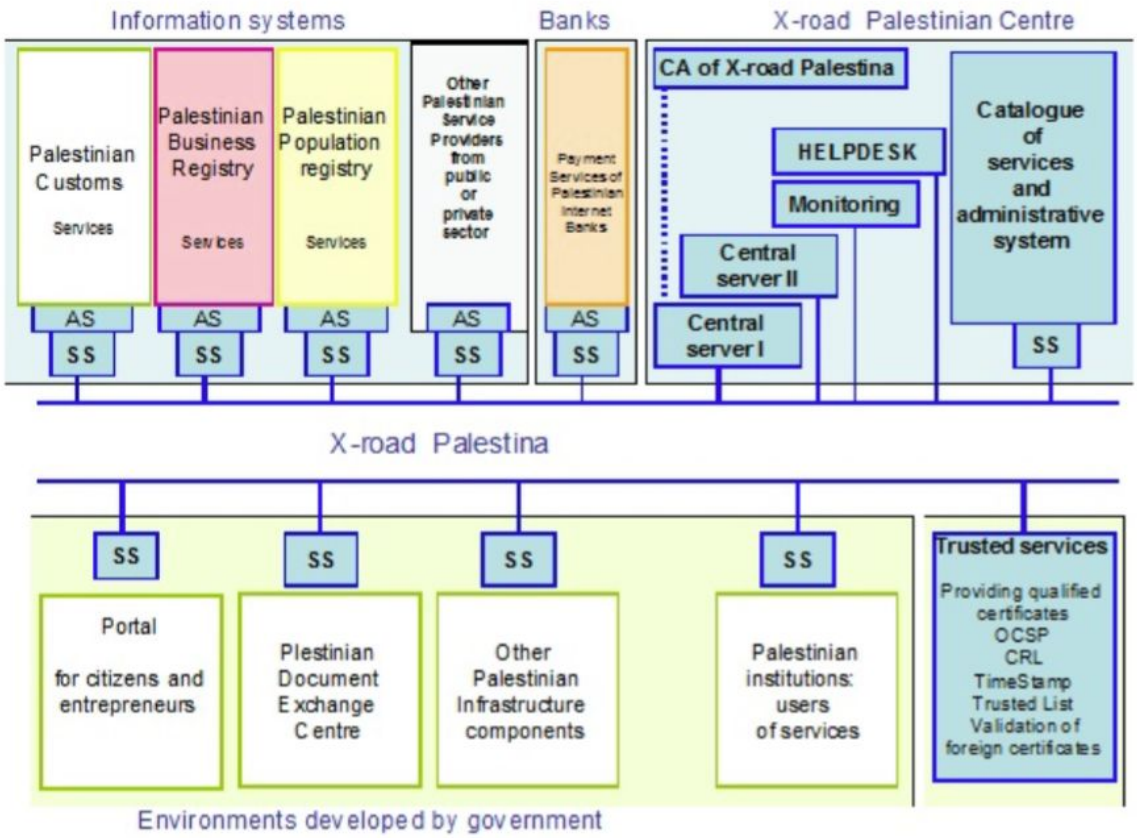

Fig. 6. The Palestinian e-Governance Architecture (The Palestinian e-Governance Academy, 2014)

Although e-Government has the potential to bring in a range of benefits, as seen thus far in terms of infrastructure, it also adds a new type of threats to the State's security (if not existence) as the digital ecosystem develops and gains ground within daily operations. Protecting and securing the infrastructure becomes thus critical. Although the concern is a ubiquitous one governmentwise, here again Estonia's experience is noteworthy for how its infrastructure was put to test during coordinated cyberattacks in 2007 which eventually contributed to an internationally recognized expertise building in the field of cybersecurity and cyberdefence (Czosseck et al, 2011: 24-34). Most notably the setup of NATO's Cooperative Cyber Defence Center of

Excellence in the Estonian capital, Tallinn, attests to this recognition.

Here again, unsurprisingly perhaps, the Estonian-Palestinian cooperation is ongoing (2016-2018) as part of Phase II (out of III) of Palestine's Cybersecurity Emergency Response Team (PALCERT) implementation, consisting of both network security monitoring and security assessment and focused on both developing and offering more advanced e-services. Best practice mandates the creation of a CERT to be tasked with providing a central point capability to identify, respond and manage cyber threats while simultaneously enhancing cybersecurity of the State (eGA, 2016: 34). Included in the projected setup, a noteworthy step towards standards' setting is planned with the implementation of an international standard for information security assurance (ISO/IEC 27001:2013) (Participant B). As an added project component, the formulation of prerequisites for online authentication in the form of digital signatures and electronic identity is scheduled to be addressed. Currently, capacity building for key Palestinian government personnel continues in the areas of information systems resilience, development of new e-services as well as electronic data exchange form the cooperation's scope agenda under the aim of building a more robust understanding of information society development (eGA, 2016).

As a form of development assistance, the Palestinian-Estonian technical cooperation has been widely considered a vital one on the Palestinian side (Participant, A, B, D, E, F); the capacity building associated with the infrastructural setup and best practices contributed to form Palestine's e-Government base. Although infrastructurally speaking Palestine has been deemed "well fitted", at a local level issues concerning autonomy remain in the post-project phase where relevant knowledge remains within the circle of trained personnel proves problematic when these are absent thus often creating an over-dependency on the MTIT's resources (Participant A, C, E). On the cooperation level, questions regarding the (critical) post-project phase have been raised as a lack of monitoring and support have arguably contributed to stagnation which could

have been prevented with a more dedicated approach from the Estonian side (ibid.). On the matter, the World Bank notes the high degree of failure of e-Government implementation due to among others, inadequate follow-up strategies from the donor side to help ensure continued development (in Heeks, 2002). As was previously noted, significant and complex factors challenge Palestinian development heavily impacting the reasons for delayed implementation on which donor involvement is limited by choice and by design (Participant K), further explored in sections 3.6 and 4.

3.3.2 Citizen-orientation

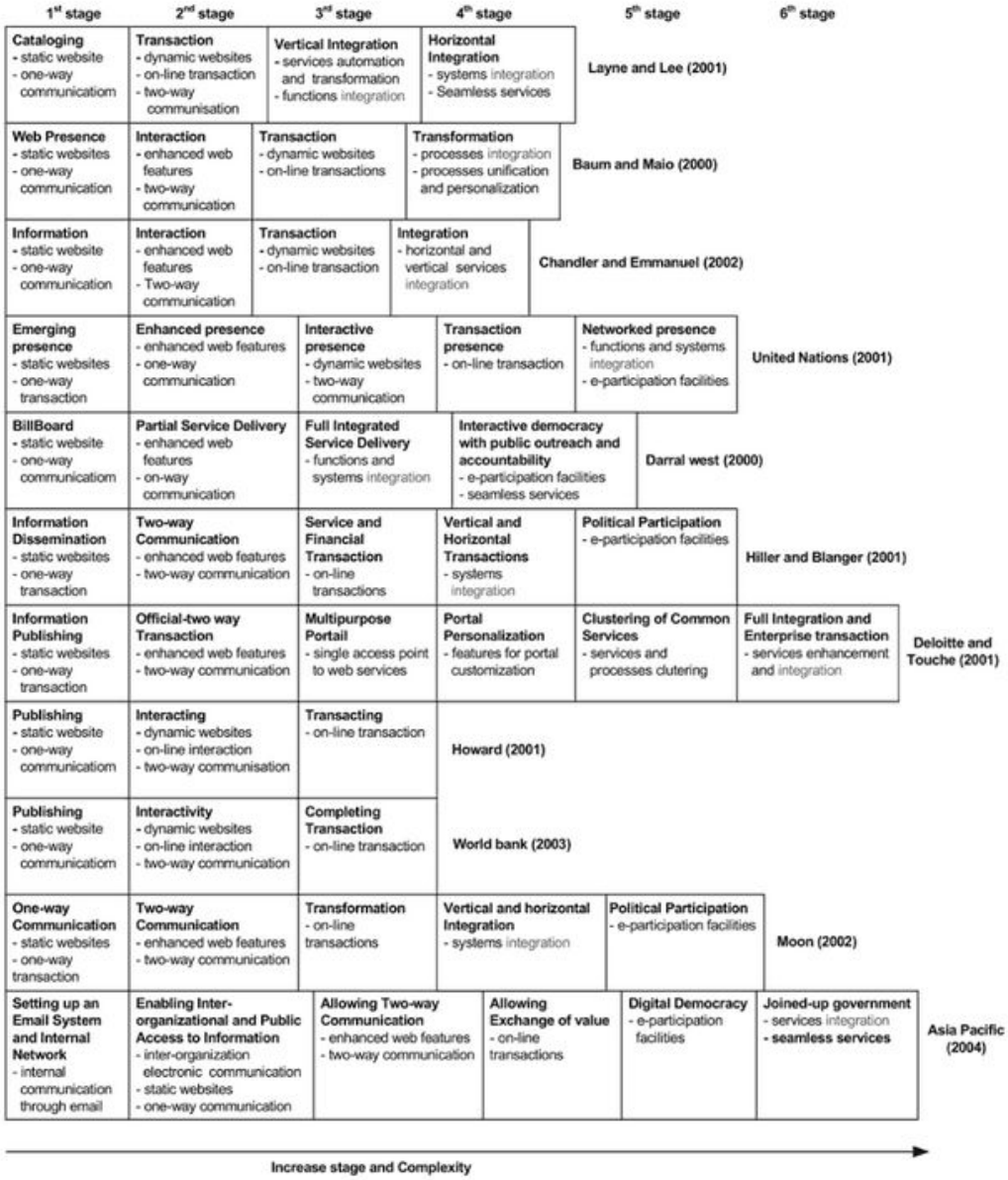

Figure 7. Summary of eleven e-Government maturity models (Zaigham, 2013)

Thus far the endeavours of the Palestinian e-Government project have addressed mostly the internal governmental needs, concerned with the so-called “back office” changes. Although most e-Government maturity models identify such concerns as part of the

initial phase of e-Government implementation (see Fig. 7), the explanations to a quasi-lack of citizen-oriented approach can be explained to some extent by the missing legal and security frameworks to fully implement the e-Government plans. Currently non-integrated “islands” of G2C services exist within each ministry accounting for a scattered approach to implementation resulting in a cumbersome, if not frustrating, citizen experience, additionally (yet crucially) noting the challenging Palestinian physical mobility context. Attempts to address the situation have been made as part of a new cooperation setting with USAID with the delivery of 10 G2C e-services, within the scope of Enterprise Development for Global Competiveness Project (“Compete”), a six-year project whose broad objective is to facilitate access of Palestinian SMEs to the global economy by invigorating the competitiveness and export potential of a minimum of seven sectors deemed indispensable to the future prosperity of the Palestinian economy (Office of the Quartet, 2015). Section 3.4 will expand on the ICT sector’s involvement within this project as part of developing the new e-services. For deeper analysis purposes the research will take two proposed services from the list and insert them in their current development state to inform future changes.

Service	Ministry/ies responsible
1a) Smartcard/biometric ID for authentication	MTIT and MoI
1b) Citizen portal/service gateway	MTIT and MoI
2a) SMS Gateway (cross-Ministry functionality)	MTIT and MoI
2b) Central call center for G2C service information	MTIT and MoI
3) Obtaining a Vehicle Import Approval	MoT
4) Car purchase and maintenance services: - Dynamometer car history - Garage service information	MoT
5) Traffic advisory services - accidents - traffic jam alerts - traffic awareness	MoT
6) Social support one-stop shop - Cash transfer - Emergency aid - Small project loans - Orphan aid - Loans for the disabled - Food aid	MoSA and others - MoF - MoI - …
7) Civil records - Birth certificates - Death certificates	MoH and MoI
8) Renew Driving License	MoT
9) Property tax payment and pertinent sub-services - assessment information	MoF
10) Letter of good standing	Cross-cutting

Fig. 8. USAID proposed 10 e-services (USAID, 2015)

3.3.2.1 e-Fundaments: e-Identity, e-Authentication and e-Signature

For many it comes as no surprise that as we progress further in the Digital Age and grow accustomed to dealing online with matters that previously required increased physical mobility, the ways in which we identify ourselves, interact and transact in the digital sphere need to come with the same if not enhanced guarantees of safety, integrity and security. Governments bringing their services online and businesses realizing the

potential lying in the electronic world face the need to ensure these guarantees which the ability to identify oneself and give binding commitments requires for any transactions to happen. Furthermore, as will be reviewed in section 3.6, adequate regulation and legislation is a prerequisite for operational e-Governance (and for operational e-commerce) as the signature and identity are different in the digital world than in the offline world (Nyman-Metcalf, 2014: 41).

Firstly, as an extension of one's identity card, an "electronic identity" is a means for people to prove electronically that they are who they claim to be. Secondly, to back this identification process there is a need for authentication to verify the presented identity. In general terms, a government agency is responsible for issuing personal identification documents to citizens, a certification authority is needed to both maintain the electronic infrastructure necessary to issue and use the card online as well as develop the associated relevant software services and lastly, a card manufacturer. The card is chip-based (allowing to be read by a card reader) to provide digital access to the e-services available to the citizen. Regarding the digital signature, it employs public-key cryptography which includes a unique pair of keys – a private and a public key, the first kept by the sender to encrypt the message and the second available to the public to decrypt the message, and utilises a Public Key Infrastructure (PKI) to manage this public-key encryption. Its use is justified by its general perception as a high security option for digital authentication and signing which the electronic ID card includes as individual certificates for both these actions (Madise and Vinkel, 2014:61).

Although there is little doubt that the matter of e-Signatures is extremely important for the functioning of e-Governance, studies show many OECD and MENA countries having implemented numerous well-functioning e-Government services in the absence of an e-Signature or by using alternative methods of identification (e.g. two-factor authentication, password-based solution, etc) (OECD, 2011:14). Due to the 'semi-online', non-transactional structure of current Palestinian G2C e-services, the

authenticity of an identity presented online can and will only be verified by the physical presence of the individual at the service's provider premises (e.g. Ministry's office) (Participant E). As an example, for the renewal of an identity document, one can obtain the necessary forms online but will need to file them personally. Alternative methods of secure e-access are being considered for the interim phase until electronic identity cards with PKI infrastructure replace them: firstly, at an official level, options include password-based access and two-factor authentication (Participant A, B) and secondly, within civil society, the use of bank authentication methods given the higher trust levels conferred to the banking sector and its online banking environment as opposed to the current skepticism and mistrust towards Government are part of the debate (Participant D, F, G).

Given the involvement of multiple donors (USA, France and Estonia) in the matter of electronic identification, questions of projects' overlap ensue, for instance between USAID's and France's plans which research found to have been coordinated so as to prevent any effort duplication: since France's and the Ministry of Interior's efforts to develop electronic identity cards will follow the initial and ongoing phase of biometric passport development, USAID retracted this service from its planned list. Estonia, as previously mentioned, remains on a strictly advisory position in terms of the prerequisites for both the digital signature and electronic identity (Participant B). Critically speaking, neither France nor the USA dispose of electronic identity card schemes in contrast to Estonia, one of the few countries in the world to have done so and continue to innovate in the field of digital identity (Madise and Vinkel, 2014: 61).

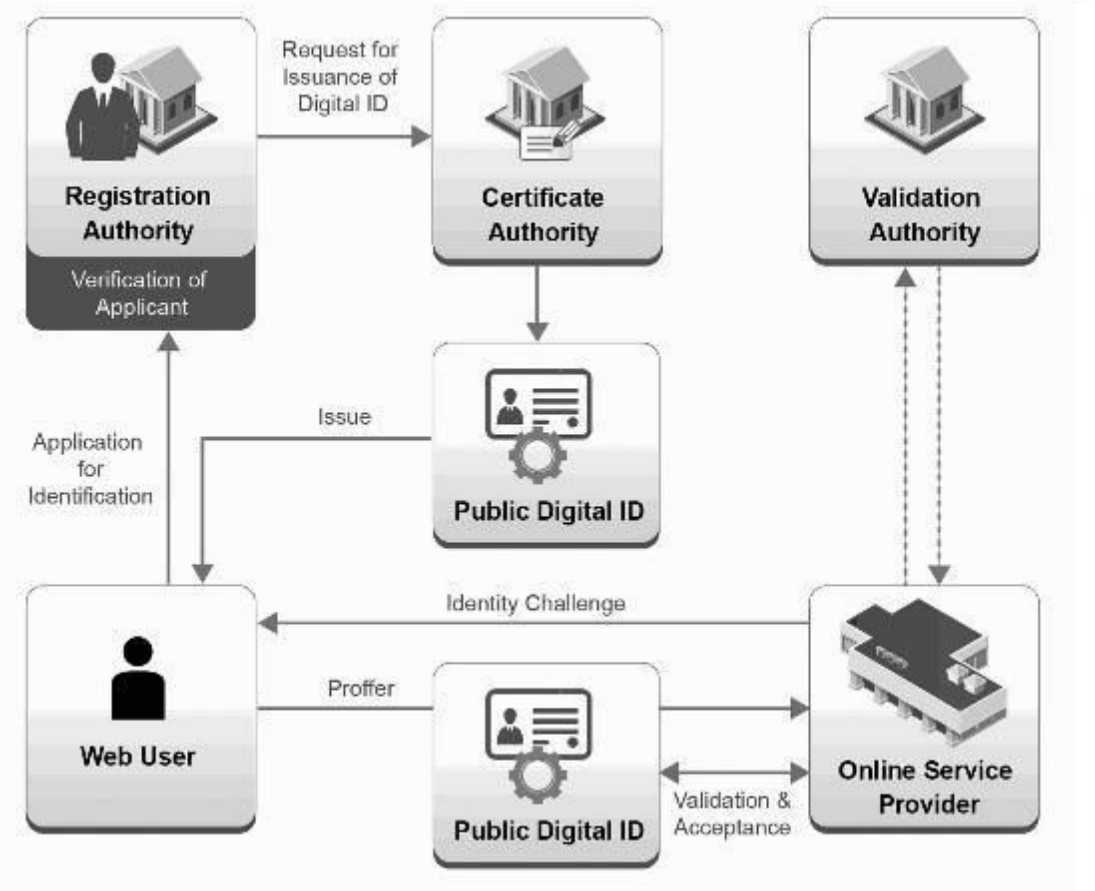

Fig. 9. The role of government as an identity service provider
Source: (Al-Khouri, 2014: 186)

3.3.2.2 Citizen portal

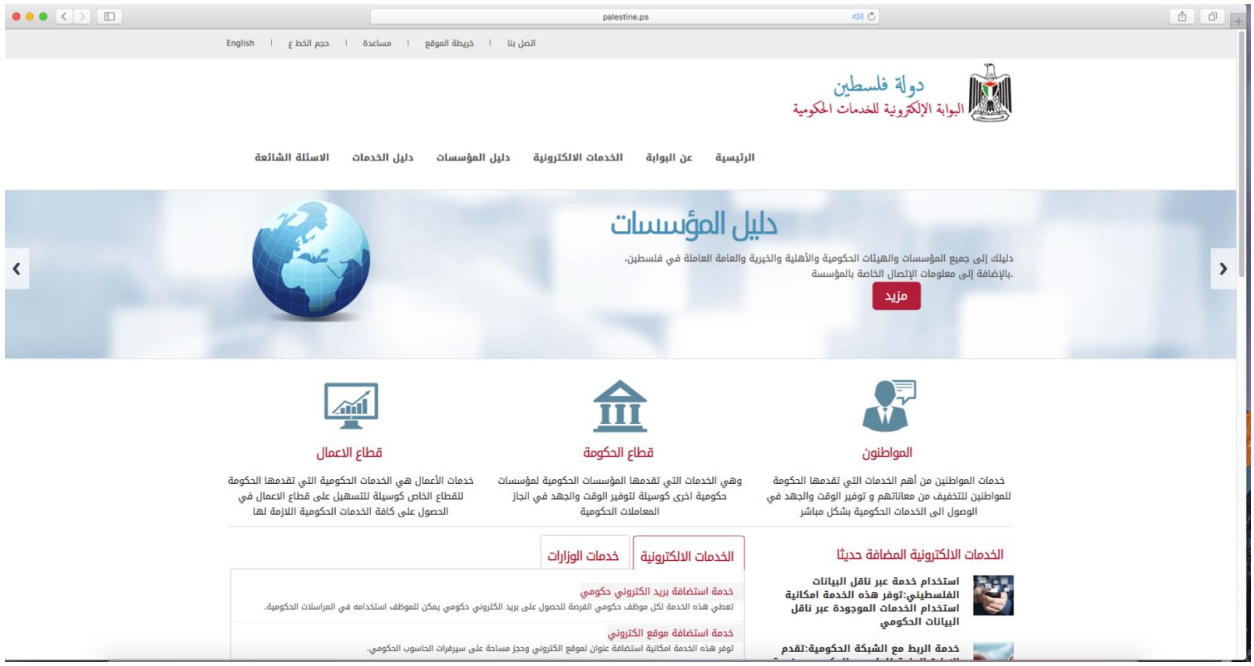

Fig. 10. Citizen Portal Homepage (www.palestine.ps)

As an integrated and coherent way for the government to provide access to public e-services, the citizen portal is conceptualized within the principles of a ‘one stop shop’ or ‘single window system’ to achieve this end. This system refers to the integration of government information, e-services and other relevant resources to the end user (citizen, business or organisation) available 24h. By definition, the building of such a portal requires e-government services across all government agencies to be effectively re-engineered and integrated within a single access point. When citizens request a service through it, the service is accomplished by automatically gathering the required

information from relevant government agencies integrated through the access point. In Palestine's case, citizen portals are available at www.palestine.ps (for the West Bank) and www.eportal.gov.ps (for Gaza), even though, as previously mentioned, the existence of 'islands' of G2C e-services draws a scattered scenario across government agencies' individual websites (see Fig.10). By reviewing numerous government portals in selected Arab countries, Al-Khouri concluded that despite development efforts and investments, "those portals are still in the first and second phases of Layne and Lee's (2001) e-Government evolution model" (Al-Khouri, 2012; Al-Khouri & Bal, 2008).

In what concerns Palestine, the assessment proves accurate as in its current state, the portal can be considered of value as an information point redirecting to individual government agencies and other bodies (universities, unions, etc.) yet stuck in the initial phases of broader e-Government adoption, as analysed in many Arab countries (see Fig. 11) (Participant E,G). Analysing it from the viewpoint of a (prospective) single point of access brings out the disadvantages such as the repeated content under different tabs, inactive and misdirecting links, inability to download forms due to 404 errors, misleading content (e.g. "Contacts us" no provides no information or way to interact with the government via website). To the portal's current advantage, apart from the contact information of various bodies, the detailed outline of procedural steps in relevant services e.g. the service "Battered women" having 12 steps and requiring 5 documents, is already considered a valuable tool (Participant C, F).

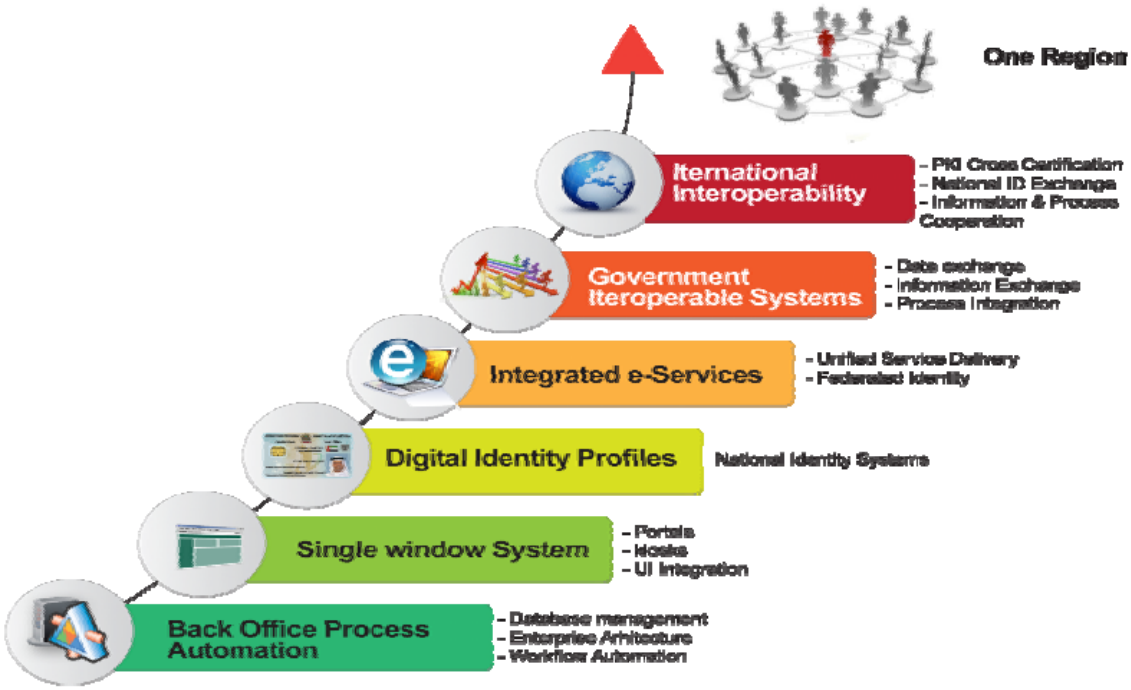

Fig. 11. Six-Stage Roadmap for e-Government adoption in Arab Countries (Al Khouri, 2013)

3.3.2.3 Engagement, involvement and means of service delivery

The means of delivery of information and e-services to the end users goes to the core of the meaning given to citizen-centrism in approaching e-Government delivery (VD Ndou, 2004). The world shift from e- to m-Governance provides clear indications in thinking and designing delivery as, following the 2014 UNPAN e-Government Survey, "between 2012 and 2014, the number of countries offering mobile apps and mobile portals doubled to almost 50 countries, where they are often used directly to support poverty eradication, gender equality and social inclusion, as well as promote economic development, environmental protection and disaster management." (UNPAN, 2014). According to the PCBS, in Palestine mobile phones have a 96% penetration rate (with 51% households owning a smartphone) against approximately half of households with

continuous internet access. The inevitable question of access (to e-services) is posed as the ongoing developments in electronic identity cards (section 3.3.2.1) looking to enable access to e-services do not account for this predominant mobile aspect, not fitted to integrate hardware (such as card readers) by design. The sharing of Estonian innovative expertise in the field of digital identity (with solutions such as Mobile-ID and most recently SMART ID) leads to speculation on the need for the cooperation to address this matter (Martens, 2010: 213-220) Mobile interaction between Government and citizens is already an established channel of communication, notably with SMS services being used by multiple ministries for information dispatch, for transaction status, for reminders, for 2-way interactions, for information inquiry, for remote secure access and for notifications (PCBS, 2014; Participant D). The current USAID e-services plan to expand on this aspect with the SMS Gateway service (see Fig 8) and research suggests the mobile aspect will continue to play a dominant role in G2C communications.

Regarding involvement and engagement, a difference in citizen roles is available, from one of customer in the delivery of public services to one of partner; the concept of citizen co-production within the scope of e-democracy and e-participation efforts has gained vast interest and coverage, notably with the use of social media by governments as an important tool to engage with its citizenry (Linders, 2012: 446-447; Criado et al, 2013: 320) and to foster a culture of transparency (Bertot et al, 2010; Bertot et al, 2012) ; the use of such mediums is fast increasing with "the number more than tripling from 2010 to 2012 and with another 50 per cent rise in 2014, so that today 118 countries use it for e-consultation and 70 for e-government generally." (USAID, 2015: 6) In Palestine, according to official data, people who used social media networks reached 75.1% of Internet users in the year 2014 with entertainment, acquaintance and phone calls being the 3 most popular uses of it respectively (PCBS, 2015). With the non-exclusive aim of working towards a dialogue with wider society, the government's use of social media as a significant complement to the national portal, could be

considered as a transparency step to, on one side regaining trust from the population, and on the other, gain interest and acceptance of its e-Government agenda which is currently perceived as unknown by a vast majority of society (Participant B, C, F). These could be considered critical steps in engaging the citizen base from relatively early on in the e-Governance path and reducing the risk of alienation, contrary to the Estonian experience (Runnel et al, 2009; Kitsing, 2011; Lauristin et al, 1997).

3.4 Key partnerships: public and private

3.4.1 ICT sector in Palestine: brief overview

The ICT sector in Palestine has been deemed both a key partner in the achievement of e-Government goals as well as an important vehicle for development (MTIT, 2005). Regarding GDP contributions, the ICT sector in Palestine contributed in 2008 with less than 1 percent of GDP growing fast to contribute to approximately 6% of the GDP in 2012 (PCBS, 2014). The services offered by ICT companies range from selling and assembling hardware products, software development, consultancy, internet services, and office automation equipment (PITA, 2017). In terms of human resources, it is estimated that there are approximately about 20,000 ICT professionals (5,000 officially employed and 15,000 indirectly employed) (PITA, 2017). Out of a total of approximately 250 Palestinian ICT companies, over 150 are cohesively organised under the umbrella association PITA (Palestinian IT Association) created in 1999 with the mission to lead the ICT sector in Palestine, with a member base representing a diversity of ICT related specialties (out of which 50% work in software development, consulting and online services) (PITA, 2017; Nusseibeh, 2016: 48). Internationally connected, 50%

of companies have partnerships outside Palestine in markets including the USA, Canada, Europe, Middle East and the Gulf Area while 30% are exporting services and products (PITA, 2017). An approximate number of 2500 students graduate annually in the field. In addition to universities, there are five ICT centers of excellence hosted within Palestinian universities, considered as research incubators for ICT researchers and innovators (PALAST, 2017; Khatib, 2013).

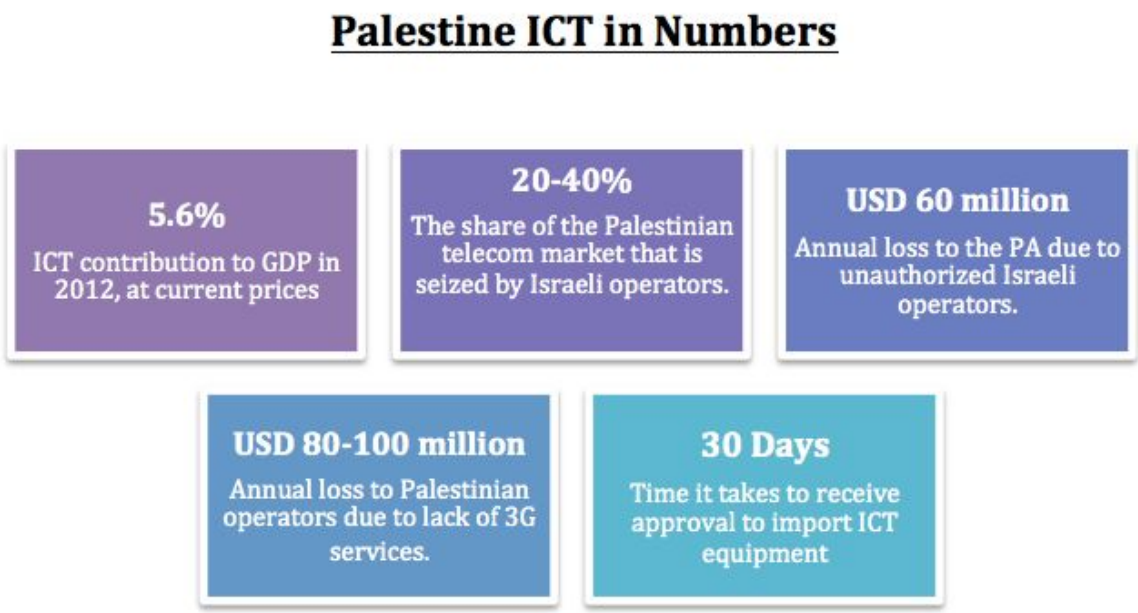

Fig. 12. Palestinian ICT in numbers
Source: Al-Shabaka, 2015

3.4.2 Partnerships: Estonian lessons

The potential and need for this cooperation have been assessed both in practice as well as in theory demonstrating that there is clear opportunity for both Government and private entities to benefit individually and, by extension, the economy and society (OECD, 2015: 4; World Bank, 2016). The benefits of using public procurement and

engage PPPs as a tool for Governments to meet their obligations towards citizens have shown to be significant across the spectrum yet particularly in the ICT or e-Government context they become of particular interest for the prospects of development they come to define (Lember et al 2013; Lember and Kalvet, 2014) .

The Estonian e-Governance case, where the banking sector and the early development of safe and secure Internet banking played a key role in catalysing the launch of arguably one of the country's most advanced aspects of e-Governance, the public e-services, exemplifies the combination of limits and opportunity shaping a partnership arrangement: the creation of a mutually beneficial solution for both parties is recognized, where on one side the private sector shares its unique, state of the art expertise, finances and operates a service while on the other the government is relieved of the administrative and financial burden associated with service provision while being in a better position to "ensure" effective delivery of the service, ultimately providing the citizen with a higher quality product (Lember et al, 2013: 6-10). To take Estonia's National ID Card, the scheme is managed by a PPP between a government agency, the Police and Border Guard Board and two private partners: SK AS, a joint-venture company, and TRUB Baltic AS. The Police and Border Guard Board issues the identity cards to citizens while SK manages the e-access and signing operations and TRUB Baltic AS manufactures the card. The partnership is governed by Estonia's Digital Signatures Act (eGA, 2016: 49).

Estonia's stark emphasis on competitiveness as part of its e-Governance strategy allowed for the emergence of private sector agents which played a crucial role in cutting transaction costs for the supply and creating the demand for public sector online services. Hence, the existence and early involvement of such private sector agents alongside their innovation component are instrumental for understanding e-Government success in Estonia.

3.4.3 Partnerships: the Palestinian potential

3.4.3.1 Overview

In Palestine the record of public-private cooperation to date has proven thorny even though the 2005 National Strategy of Telecommunication and IT mentions the importance, value and individual aspects of such a partnership on multiple occasions alongside the need for effort orchestration to help turn the Strategy goals into reality (MTIT, 2005: 4, 8, 14). Overall, research points to a general reluctance within government towards outsourcing and instead preferring in-house solution development (Participant D, F; USAID 2015: 6). Past project outsourcing experiences indicate both perceived and concrete difficulties such as "challenges with cost coverage for both set-up and maintenance costs, unclear service designs and technical specifications and the lack of a comprehensive architecture strategy" failing to enable the private sector to train or hire staff accordingly to match specific technology needs under that architecture, notable exceptions including the Ministry of Health and municipalities (USAID, 2015: 6; Participant B, F). Currently ongoing donor efforts aim at changing the state of affairs: the USAID-funded Enterprise Development for Global Competitiveness Project ("Compete") by involving the ICT sector (as one of the seven target sectors) in cooperating with the government as part of further e-Government development (USAID, 2015: 4; see Fig 8)

3.4.3.2 e-Services development

The ongoing e-Government efforts included in the Compete project aim at delivering locally identified high-priority and high-impact 10 G2C e-services firstly aimed at serving directly Palestinian citizens and secondly, spur policy changes to create an enabling environment for the private sector in the provision of e-services in the G2C section. The design of a multi-stakeholder approach where the local IT sector

is included in a PPP inclusive of the Government, partner donor and other decision-level stakeholders is defined as key for the successful design and decision-making process of e-Government services (USAID, 2015: 8).

	Design	Build	Finance	Operation	Maintain
Government			X	X	X
Private sector	X	X	X	X	

Fig. 13. Suggested business model for Traffic advisory services e-service (USAID, 2015: 20)

	Design	Build	Operate	Finance	Transfer
Public			X	X	
Private	X	X			

Fig. 14. Suggested business model for Civil Records e-service (USAID, 2015: 23)

	Design	Build	Finance	Operation	Maintain
Government			X		
Private sector	X	X		X	X

Fig. 15. Suggested business model for Central G2C call center (USAID, 2015: 16)

	Design	Build	Finance	Operation	Maintain
Government			X	X	X
Private sector	X	X			

Fig. 16. Suggested business model for G2C SMS Gateway e-service (USAID, 2015: 15)

The general framework governing the PPP is defined as a Design-Build-Finance-Operate-Maintain (DBFOM), an arrangement type most commonly applied in governmental large scale building and infrastructure projects (Ramsey & El Asmar, 2015:1). Emphasis is placed on expanding the private sector's role in designing, constructing, operating, maintaining, and especially financing such

projects (ibid.) which could be considered at odds with the development of e-Government G2C services almost exclusively with donor funding (see Fig. 14, Fig. 15 and Fig. 16). According to project literature, the choice was a preliminary one to allow the assignment of roles anticipated from each party (public and private) yet subject to further refinement in the formulation of final PPP arrangements (USAID, 2015: 10). The benefits for all parties involved can be defined in both material and immaterial gains, along the axis of time-money. Strictly financially speaking, variations between subsidized, partial and full outsourcing (with revenue share in some cases) are available e.g. where Mobile Network Operators (MNO) partners donate cost of bulk outgoing SMS in return for advertising in the context of a G2C SMS gateway creation (see Fig. 16) or full outsourcing with revenue share and initial build cost coverage in the case of traffic advisory e-service due to it being a highly multi-party integrative service projected to run on a subscription-basis (see Fig.13: USAID, 2015:15). The cost-benefit analysis assessment of a property tax payment e-service and associated sub-services allows for an enhanced initial assessment of savings both in terms of time and money for the Government as well as the citizen (see Fig. 17).

Property tax payment and other sub-services (Ministry of Finance)

Factor	Qty	Estimated cost (USD)	Cost saving annually
SMS to citizens	350,000 message	(0.02)* 350,000= 7,000	0.00
Calling citizens by department	3-4 minutes	Cost of 1 hour = 5 USD Cost of minute =0.83 Cost of employee time=0.83*4 =0.333 Cost of one call=0.333+ 0.06 =0.339	If the department call back 1% of registered users, then cost of calling is (1/100)* (305,000)*0.339= **1,033.00 USD (Government's saving)**

Receiving calls from citizens	5-10 minutes	Cost of employee time=(0.333* 3)=0.999 Cost per citizen=(0.06 * 3)= 0.18 Total cost call = 0.999+ 0.18 =1.17	If 10% of citizens call the department (0.999)(0.1)(305,000)= **30,195 USD (Government's saving)** (0.18)(0.1)(305,000) **=5,490 USD (Citizens' saving)**
Visit to department by citizens	~300,000 [total number of registered citizen)	15 NIS per visit = 4.3 USD	4.3 * 305,000=**1,311,500** USD If 1% have to go back to the department if they didn't pay in the same month of the receipt, then the additional cost will be 4.3*305,000*0.01=**15,225** Citizens have to visit the department after paying at bank 4.3 * 305,000=**1,311,500** USD If 50% of citizens download and fill the application online, then the total saving will by =(0.5)(1,311,500+15,225) **663,362.5 USD (Citizens' saving)** If only 20% of citizens use the online submission after payment , then the cost saving will be ==(0.2)(1,311,500)= **262,300 USD (Citizens' saving)**
Copies of receipts	3 copies	Cost per page 0.028	0.028*305,000= **8,540** USD **(Government's saving)**
Cost of face-to-face transaction	~300,000 [total number of registered citizen)	Average Service Time (10 min)/citizen Average waiting time (30 min) Cost of employee time=0.83*4 =0.333/min	If 50% didn't visit the office, then we can free in total 305,000*10*0.5=1,525,000 min and the reduction of total cost will be 1,525,000*0.333= **507,825 USD (Government's saving)**
Citizens' cost reduction/year			**931,152 USD/ year**
Government's cost reduction/year			**547,593 USD/year**

Fig. 17. Cost-benefit assessment of sample service (USAID, 2015)

3.4.3.3 Future directions

The development of Government e-services via coordinated efforts as part of local PPP arrangements clearly demonstrates the tangible potential for growth opportunities of the ICT sector (World Bank, 2016). Specifically, as prospects widen in the Palestinian context, the readiness of the local ICT sector comes into question, as reports of past troubled public-private cooperation indicate on the human resource side an important need for both opportunity and capacity development to advance supply while Government's need for clarity and openness in terms of strategy are required to inform demand, crucially noting the case of over 2,500 yearly ICT graduates with low employment prospects in the sector. The Compete project's rationale behind the active involvement of the ICT sector in the development of Government e-services sheds additional light on these issues while at the same time unraveling a promising picture in terms of skills and resources gap assessment (USAID, 2015: 30). As the assessment notes, the ICT sector holds a proven track record of operational success in joint R&D projects with major companies such as CISCO, Intel, HP and Microsoft thus accounting for additional metrics of strong performance along with savviness and resourcefulness shown both in supporting past e-Government solutions (at a municipal and ministerial level) and curbing occurrences of insufficient local capacity in those by including relevant third parties (USAID, 2015: 30; Office of the Quartet, 2017).

It is within this setting that initiatives like the Compete project or the KOICA-funded PASS programme (inclusive of the IT training center within MTIT) working to assist in changing government attitudes towards external cooperation can be seen as resourcefully enabling the creation of opportunity, prompting simultaneous stimulation of local demand for IT goods and services and the development of specialized human resources supply as a result of which the growth of local industry is

empowered. The involvement of the donor's networks is an additional advantage namely for securing training and employment opportunities for graduates with both local as well as international companies locally involved (KOICA, 2016; Office of the Quartet, 2015). Specifically in terms of e-Government and firstly, the identified need to inform capacity development for the ICT sector particularly in expertise relating to e-Government like the X-Road, PKI as well as secure software development becomes an additional point of public-private cooperation where the disclosure of Governmental strategy architecture as well as the inclusion of the local ICT sector in the design and decision-making process have the potential to pave the way to a stronger, more comprehensive partnership. Secondly and relatedly, capacity building efforts found in the e-Governance Academy or the KOICA IT Training center hold the potential of creative dialogue between different societal stakeholders (academia, civil society, government, etc) in the making of Palestinian's e-Government (e.g. via joint e-services development) while simultaneously paving the path to an inclusive e-Governance design.

3.5 Occupational challenges to e-Governance development

"The modern spatial logic can only be totally destroyed if everywhere offers equal opportunities for production and consumption, and everyone has access to it. (...) the use of cyberspace as a globalising agent is still dependent on real world spatial fixity - the points of access, the physicality and materiality of the wires (Graham & Marvin, 1996)."

in Kitchin & Dodge (2015)

Although research found Israel to pose no challenges in principle to the ongoing

development of e-Governance in Palestine, the intrinsic Occupational context continues to pose them. The following two aspects enlighten where these are experienced.

3.5.1 ICT sector development challenges

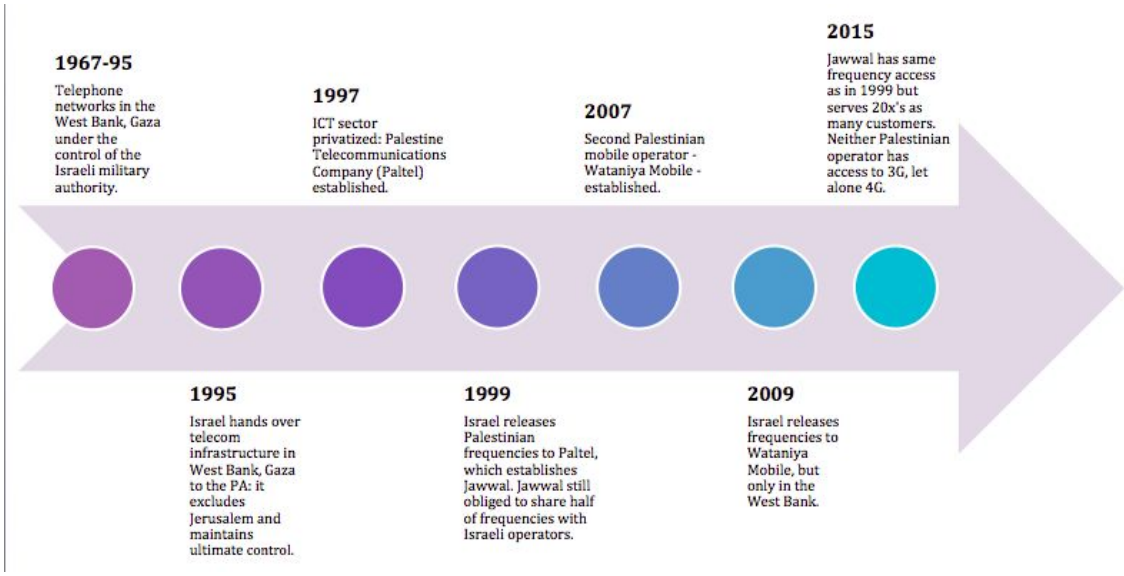

Fig.18. Timeline of Palestinian Telecommunications developments (Source: Al-Shabaka)

A general overview of the Palestinian Telecommunication sector can be seen in Figure 18. A contentious history of telecommunications resources' control on the Israeli side and challenging negotiations between both parties draw themselves since the aftermath of the Six-Day War. From 1967 (after the Six-Day War) until 1995, Israel controlled the telecommunication sector in Palestinian areas by having directly linked it to its own telecommunication network, claiming security concerns over an independent Palestinian telecommunication sector and submitting it to Israeli military orders and regulations to limit the development of the sector (Arafeh et al, 2015; Aouragh, 2012: 15). In 1993, with the Oslo Agreements clearly stating "Israel recognizes that the

Palestinian side has the right to build and operate separate and independent communication systems and infrastructures including telecommunication networks, a television network and a radio network." Israel handed the telecom infrastructure to only the West Bank and Gaza (and excluded Jerusalem) but retains ultimate control (Aouragh, 2012: 16). The right to build a Palestine-based international gateway which includes submarine cables, satellite earth stations, microwave systems, and optical fibers has been routinely denied apart from Israel also restricting Palestinian access to electromagnetic and radio frequency spectrums. Even though the status quo is in direct violation of the Oslo Agreement (1993) and the resolutions 12, 18, 25 of the International Telecommunications Union (ITU), Palestinians moved on to expand and better their telecommunication infrastructure, helped by financial and technical assistance from the international and donor community (Arafeh et al, 2015). Firstly, in 1997, PALTEL was established as a telecommunication company and licensed by the PA to provide landline, mobile phone and internet services for Palestinian customers. The company installed the infrastructure and equipped the digital network, which currently covers more than 90% of the Palestinian areas. Secondly and later in 1999, PALTEL established the first mobile telecommunication company (JAWWAL) and thirdly, PALNET was established in 2004 to provide wireless services, including: Dialup/ISDN, ADSL connections, frame relays, leased line connections, web hosting, and domain name services. Lastly, in 2007 PALTEL launched the second mobile telecommunication company ALWATANIYA (Aouragh, 2012; 17). So far, Palestinian operators have managed to build independent international gateways but outside Palestine which even though directly connects Palestinian operators to international carriers, puts them at a loss due to Israel taking a share on every call made from those externally placed gateways to their West Bank and Gaza users (Participant E). Regarding internet service provision, PALTEL as well as other ISPs are forced to use the Israeli company's International Direct Line (IDL) (BEZEQ). Infrastructurewise,

internet is provided using fiber optics, Symmetrical and asymmetrical DSL and microwave connectivity via countries such as Israel, Egypt, UK, and Jordan (Palestinian Information Technology Association of Companies, 2015).

Even though the two mobile telecommunication companies were established, Israel still restricts the two companies' ability to update their technical infrastructure and overall many point to Israel (illegally) benefiting from the restrictions by allowing exclusive business opportunities for Israeli ICT companies in the Palestinian areas as, for instance, even though there is no 3G commonly available, some Israeli operators benefit from their exclusive position by providing it (Khalib, 2013; Al Jazeera, 2016). The release of 3G frequencies is expected within 2017 (Al Monitor, 2017).

3.5.2 Imports

A severe obstacle to the development of the ICT sector are the lengthy process and potential prohibitions imposed by Israel on Palestinian imports of ICT equipment. As throroughly explained by Arafeh et al (2015), at a starting level this means an approval for each shipment made by the Israeli Ministry of Communications, even if there are multiple shipments of the same product. The process begins with an import request submitted to a division in the Israeli Ministry of Defense, the Coordination of Government Activities in the Territories (COGAT) followed by an approval by the Israeli Ministry of Communications and the Standards Institution of Israel. To get approval Palestinian shippers must be able to provide detailed information on their shipment: "a certificate of origin; an invoice; an air waybill; a packing list with details on the quantities imported and their standards, which should comply with Israeli standards; explanation of the need of the product and information regarding the end-user" (Arafeh et al, 2015). The average time for this process is approximately 30

days, down from one to two months in the early 2000s (ibid.)

Secondly, because of Israel's security concerns over potential "dual-use items", every shipment undergoes extensive testing standards compliance and security checks to determine whether the product can be used for military purposes apart from civilian ones often resulting in severe time delays with no guarantee of delivery. This was the case during the X-Road project cooperation (2013-2015) when the project suffered a 4-month delay in 2014 awaiting the receipt of Estonian-sent hardware (when the estimated time on the project management side was 1 month) (Participant G). Similarly, in 2009 AlWataniya Mobile faced a over a five month delay for the delivery of its necessary ICT equipment when it was beginning its operations in 2009. It is worth noting that most of the products undergoing checking or eventual prohibition can be purchased hassle-free in Israel (Participant C; Arafeh et al, 2015).

3.6 Legal framework

„The reasons why it hasn't worked yet have nothing to do with technology."

Participant B, male, 30s, Palestinian government employee

3.6.1 Background of the Palestinian legal environment

A universally renowned legal system for its extremely complicated legal environment, Palestine functions within a blend of regulations issued under several

varied political regimes, dating as far back as the Ottoman Empire. Similarly to Jordan, Palestinian law is a mixture of Islamic customary law, *Urf*, and the principles of Islamic Shari‟a (the main source of legislation), the stock of legislation applied or enacted under the Ottoman Empire (1516-1917), British Mandate Law (1917-1948), Jordanian legislation applied to the West Bank and Egyptian legislation applied to the Gaza Strip (1948-1967) (OECD, 2011b). There have also been subsequent Israeli amendments to previous legislation applicable in areas which were introduced by military orders, and, naturally, legislation enacted by the PA since 1994. This legacy creates a significant challenge when drafting new legislation. The "fragmentation of the Palestinian laws" and low public confidence in the judiciary poses strong challenges for implementing and enforcing laws (Palestinian Authority, 2008; OECDb, 2011). Currently, the political split between Gaza (ruled by Hamas) and the West Bank (ruled by Fatah) has far-reaching implications for the legislative process (also due to different legal traditions identified above) and an impeditive power over consolidation efforts for the Palestinian legal system. At the moment of writing, the PLC hasn't been in session for over a decade (since 2006) thus, as will be explained, dealing with legal issues takes the form of presidential decrees adopted under the system in place, pending a resumption of normal legislative processes. Understanding the law drafting process in the PA is indissociable from on one side, the unique international and domestic political context it lives in and on the other its historical trajectory and legacy (OECD, 2011b).

Since the PA's establishment in 1994 and the taking of functions of its legislature (the PLC), there have been significant changes in the structure of its executive. These developments led to the creation of a number of entities related to the drafting process, which analysis finds, "have somewhat overlapping functions and changing relationships over time" (OECDb, 2011: 15). As reviewed by the OECD (2011a), a number of important constitutional developments since the establishment of the PA impact the legislative process generally, and legislative drafting in particular.

These include: Laws 4 and 5 of 1995; the elections, initially in 1996, of a President of the Authority and of its legislature; and the Basic Law (adopted by the Legislative Council in 1997, eventually promulgated by the President in 2002, and subsequently amended in 2003 and 2005), which provides an interim constitution for the PA (OECD, 2011). Article 43 of the Basic Law plays a central role in the current law drafting process due to the fact that, in the absence of an operational legislature, a state of emergency is in force thus allowing the President to rule by decree. In sum, the PA's complex legal system poses significant challenges to the effectiveness of its legislation which, analysis finds, means that many of its laws may not completely meet the respective policy objectives (partially due to "deficiencies in the preparation and drafting of legislation" (OECD, 2011a: 7).

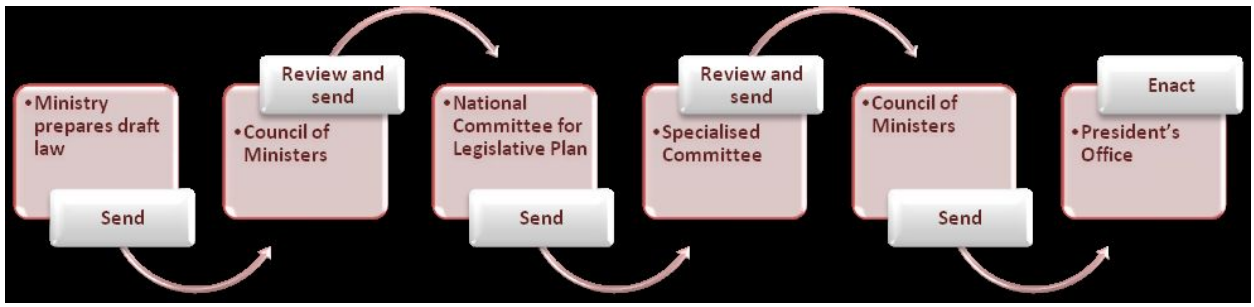

Fig. 19. Law drafting process in the Palestinian Authority under Article 43
Source: OECD Secretariat (in OECD, 2011: 18)

3.6.2 e-Governance legal requirements

The legal framework, being one of the pillars for the establishment and functioning of the e-Governance ecosystem, is often as intricate a matter as it is simple in principle. The problem in many cases seems to reside in the exacerbated legal and regulatory focus on the means to perform actions i.e. on the technologies used to perform them instead of the issues to be dealt with and/or the result to be obtained (Brownsword &

Goodwin, 2012). As unbalanced as this might seem given the rapid pace of technological developments, the risks of either suffocating innovation by over-regulating or leaving damage-prone areas due to under-regulation are concrete. Yet, as Nyman-Metcalf notes (2014: 37) the simplicity of creating a sound legal framework for e-Governance is surprisingly self-evident in this contemporary scenario: "[t]here should not be too many special laws, in order to avoid the creation of parallel systems" (Nyman-Metcalf, 2014: 37). Furthermore the task becomes one of integration of e-Governance with regular governance thus affecting how legal issues relating to e-Governance are to be handled i.e. not in a cohesive, unified way but in a matter-specific manner i.e. through amendments to various individual legal branches (criminal law, communications law, competition law, etc.). For instance, the advent of Big Data and its potential uses by third parties (human or not) refer primarily yet not exclusively to laws on data protection. Moreover, the organisational (re)structuring as part of e-Governance implementation is, as Nyman-Metcalf points out, key due to questions of responsibility (Nyman-Metcalf, 2014: 38). These, in the case of Palestine and as will be demonstrated in section 3.7, can be contentious issues due to issues ranging from an unwillingness to cooperate between ministries to a lack of a clear mandate to coordinate the implementation of e-Governance changes. Such reforms are context-specific i.e. there is no universal fit that would apply to all countries and technology is, in the face of such essential matters, rendered powerless (ibid.; Participant B) Based on the OECD's (2011b), and Nyman-Metcalf's assessment (2014) of the key legal issues affecting Palestine's e-Governance development, a review of these will be performed to present them and identify progress where there has been. These affect the following laws:

- The Electronic Transactions law (including the E-Signature law);
- The Law of Protection of Individual and Personal Data;

- The Intellectual Property Protection law;
- The Electronic Commercial Transactions, and Internet and IT Laws;
- The Law of Freedom and Confidentiality of Information in Electronic Communications
- Databases law
- Competition Law
- Procedural law (civil and criminal)
- The Cyber Crimes Law

This legal gap is shown in the OECD Survey (2011: 35), where ca. 60% of the questioned found legislative and regulatory barriers to be the most significant challenge to e-Government implementation, along with privacy and security concerns which also hold major legal components (see Fig. 20). Overall, the project's research results yield an unchanged perception of these obstacles when compared to OECD's 2011 study finds.

3.1. Please rate the importance of each of the following legislative/regulatory barriers to implementing e-government

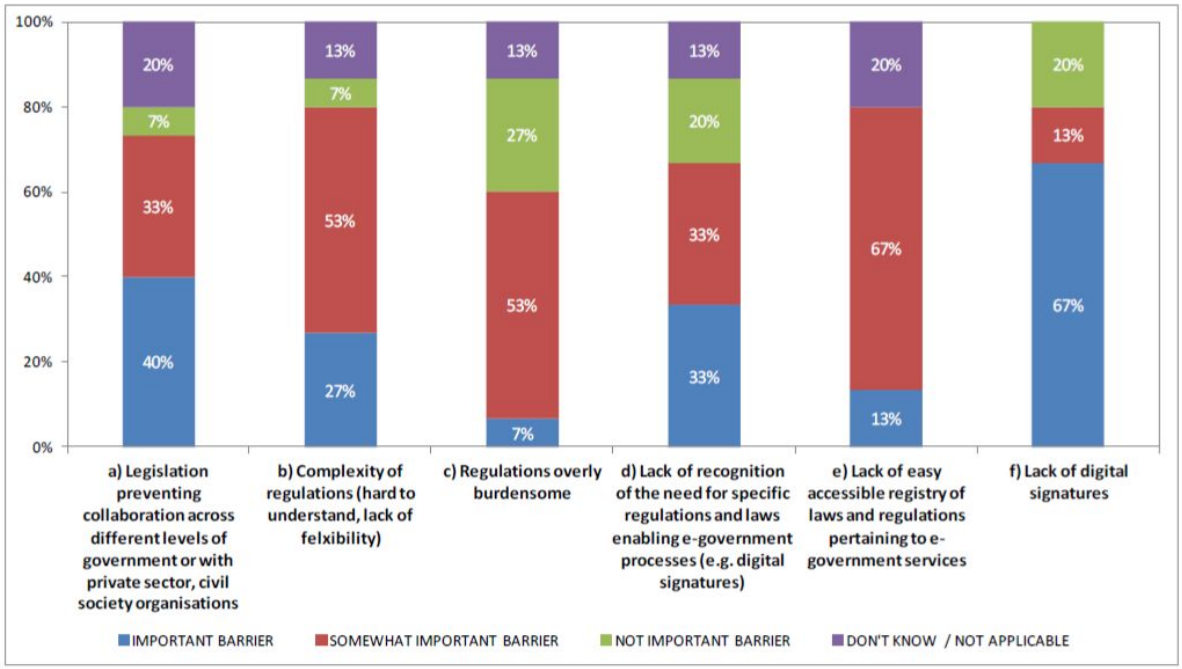

Fig. 20. OECD Survey results
Source: OECD, 2011

Among the field of general legislation that is affected by the introduction of e-Governance is administrative law, procedural law, public procurement law where administrative bodies and procedures undergo change due to the shifted nature of operation in the e-world. For instance in the case of administrative law there might be a need to ensure that there are no obstacles to e-Government or new rules for standardisation to safeguard interoperability. As for procedural law, the unprevented use of electronic documents as evidence or transactions to be carried out in a fully digital manner are examples of potential reviewing to be made. More fundamentally, for any e-Governance deployment possibility is the internet access provision relating to ICT

(Telecommunications) Law where although the service is privately provided, the fact that the activity is one of direct public interest makes the setting of rules a necessity (for instance the requirement of a licence to enable service provision performance indication, quality and integrity assurance, etc.). Ideally, an independent organ monitors and engages with the activity in the field. The ICT sector within Palestinian Competition legislation faces the general challenges of a poorly enforced area noting abuses of dominant position (e.g. through tying) yet prompting the need for specific attention due the existence of various network systems with access issues along with high entrance obstacles. Datawise, legislation on data protection, access to information and big data/re-use of public information are affected; the first two being general governance matters require amendments where firstly data protection legislation should account for new threats to data safeguarding in the digital world by preferably introducing an independent monitoring organ (a Data Inspectorate) to oversee government's operations. Within Data Protection legislation and especially in the existence of an interoperable data system, a specific focus on databases regulation arises regarding their creation, access and data gathering. Secondly, the way access to information is given should be taken into account by extension and within the general democratic principles of "openness by default" with any exceptions legally defined (e.g. protection of national security secrets). The matter of big data/re-use of public information can be considered to be addressed by data protection and administrative law yet in increasing sharing-prone and interoperable settings, emphasis is to be found in the significant changes to data usage and sharing involving third-parties in the electronic world as compared to the offline world and thus prompting a legal assurance in terms of balancing the monitoring of information sharing yet at the same time ensuring so that useful applications are not unnecessarily hindered. Lastly, legislation addressing Cyber Crime and Cyber security account for the enlarged scope of criminal activity which include actions already criminalised by legislation or new ones made possible because

of the internet. Particularly concerning Cybersecurity law, Palestine's *de jure* sovereign state status difficults autonomous legislation in setting State security issues affecting (not exclusively) questions of network integrity within ICT legislation which calls for a thorough review of the legislative scope.

At the time of writing progress has been made in the field of e-Transactions (noting e-signature as a key component), Access to Information, Cyber Crime and Personal Data Protection Legislation. The first two are expected to be enacted within 2017, the third has been drafted and drafting of the latter has commenced in January 2017 (Participant B).

3.7 Organisational adjustments

Implementing an eGovernment entails reorganizing the government and reengineering its processes towards providing services to citizens and businesses as if they are clients who deserve every facilitation possible. Incepting an eGovernment is not a one-step process but rather sequential mutually dependent steps which are accompanied by a comprehensive awareness campaign targeting citizens and businesses with a governmental reform process and the stepping up of public sectors employees.

The National Strategy of Telecommunications and Information Technology (MTIT, 2005: 10)

Although e-Government responsibilities for coordination and development are mentioned in numerous key Palestinian documents such as the National Strategy of Telecommunications and IT (2005), the e-Government Implementation Roadmap (2012) and the e-Government Strategic Plan (2005), there have been numerous issues reported in the practical implementation from an internal organisational point of view.

Overall a visionary picture of the importance of ICTs as a means for driving national development seems to exist within high levels of government while a lack of commitment and political alignment with set policies and strategies across and within ministries has been reported (Participant D, F, G). From the aforementioned documents the MTIT is clearly indicated as a responsible party in driving change while the e-Governmental Ministerial Committee deals with the overall strategy.

Studies (OECD, 2011; Nusseibeh, 2016) and research find e-government implementation to have been uneven across government institutions in the PA, pointing to a number of lacks such as the lack of specific strategies for both horizontal and vertical coordination in policy documents and a lack of enforcement power for the MTIT to ensure that official and approved strategic directions are coherently transformed into practical implementation (Participants A, D, F). In terms of prevention to horizontal collaboration, research found the lack of incentives to work together as a significant obstacle with 80% of survey respondents backing the claim (see Figure 6.2. in OECD, 2011) Nevertheless cross-government collaboration on technical standards is happening; these efforts led by the MTIT seem to confer it a high level of recognition across government agencies in its leader position to drive the e-Government agenda, which currently legitimises its right to manage and coordinate IT policy (OECD, 2011: 12).

Concerning the improvement of coordination leading to better implementation powers, recommendations point to the establishment of a committee for e-Government at the Cabinet/Deputy-Minister level, as proposed in the MTIT's National Strategy for ICT and Post alongside more involvement from higher public officials such as the President or the Prime Minister in promoting the e-Governance agenda (Participant C, I, J). The former option would put the MTIT in a more officially and widely recognised position to coordinate all aspects of e-government implementation, not only technical standards. Similarly and targeting a mindset change, a suggestion for better

dissemination of ICT projects and initiatives to raise awareness among public officials would create a common understanding of the objectives and the importance of working together to achieve them. (OECD, 2011:12)

Yet conferring more power of coordination to the MTIT has to be acknowledged within the current practical limits of its resources to manage and implement a full e-Government program which would require significant capability and capacity. Firstly, apart from limited e-government budgets, due to an understaffing problem of the MTIT's e-Government unit (5 full-time employees at the time of writing) with many serving at 50% capacity due to duty sharing between MTIT's IT management and e-Government responsibilities, the management and coordination of e-Government across government institutions is currently beyond consideration (Participant A, E). Secondly, an enhanced e-Government unit both in terms of employees as well as key abilities is required to on one side cover the various important responsibilities such as stakeholder engagement, portfolio management, ICT procurement, shared infrastructure and application operations maintenance, formulating standards and guidelines, while maintaining and mandating both quality and security assurance. On the other hand, perform evaluation and monitoring to assess and inform further development (OECD, 2011a; Participant G) .

4 PART IV: CLOUDY FUTURE DEVELOPMENTS

"Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks,

servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

in Hashemi et al (2013:1240)

As a dominating topic in the IT sector, cloud computing is often hailed as the "big thing" for unleashing the potential within IT resources as these become dynamic, highly elastic, and easily accessible, effectively creating a convenience-based on-demand model. Numerous countries (e.g. Singapore, Thailand, Estonia have already joined the "Cloud Revolution" with their creation of a Government Cloud (or G-Cloud) Palestine has been no exception with a Government Cloud Computing solution planning since 2015 (Participant A, B). Cloud computing presents many advantages such as cost savings, scalability, or high availability, which make adopting it interesting for many sectors and regarding the public sector especially so due to limited budgets. Yet other notable advantages include the possibility for governments authorities to rather focus on their core business of serving the population instead of managing IT resource allocation and IT maintenance tasks. As identified by Hashemi et al (2013 : 1240), five key features of cloud computing include service demand on self, ubiquitous network access, location-independent resource pooling, rapid elasticity and measured service. Nevertheless, to realize cloud computing there are 8 fundamental elements to be considered for the concept to be a viable opportunity (in Wyld, 2010: 10-11):

1. Universal Connectivity — users must have near-ubiquitous access to the internet
2. Open Access — users must have fair, non-discriminatory access to the internet
3. Reliability — the cloud must function at levels equal to or better than current stand-alone systems
4. Interoperability and User Choice — users must be able to move among cloud platforms

5. Security — users' data must be safe
6. Privacy — users' rights to their data must be clearly defined and protected
7. Economic value — the cloud must deliver tangible savings and benefits
8. Sustainability — the cloud must raise energy efficiency and reduce ecological impact

As was demonstrated in previous sections, in Palestine's case many of these elements prove problematic, from a legal to a technical point of view. Nevertheless, immediate benefits considered from Palestine's current perspective would include the government's ability to harness the potential of the cloud to cover communication gaps, especially in remote areas, increase government transparency and collaboration between different government agencies, reduce data redundancy as well as track and monitor the effectiveness of government plans (Al Mabhouh and Alzaza, 2015). In terms of economic value, sharing the computational resources between the different government agencies will lead to a reduction in infrastructure costs. Apart from the provision of such benefits, cloud computing is of particular relevance in the Palestinian case given its ability to safeguard the State's valuable data in a conflict situation. Within this reasoning, the current initial Palestinian Cloud plans concern using a Cloud solution for the establishment of a backup data center for all government data hosted at the GCC, accessible only by the government. However, the implementation of Cloud Computing requires the Palestinian Cabinet's approval for its use as a backup solution for governmental data storage, applying security and connectivity measures to enhance governmental trust in the cloud computing system. To apply security measures, a disaster recovery site for the GCC is needed to ensure data protection and service continuity while redundant connectivity routes, power supply, maintenance and spare parts, and software will be required to apply the connectivity measures (Participant A, B).

The PA's move to the Cloud in the near future would enable the government to have a next-generation, whole-of-government infrastructure. This both includes and impacts e-Government in a number of ways. Firstly, the establishment of the best deployment model is key; the necessary move from a private government cloud to one accounting for the citizens' and organizations access needs to be considered bringing the choice to a hybrid deployment model which harnesses both public and private aspects to cater to different levels of security and governance requirements e.g. the storing of sensitive data on a private cloud instead of on a public one) (Wylde, 2010: 3). Secondly, the matching benefits between Cloud Computing deployment and e-government applications are significant especially in terms of scalability on high-peak situations (e-procurement, tendering, voting days, etc), payment scheme (pay-as-you-go enables public services to save on IT costs, strictly paying for resources used), availability (further ensuring 24h access due to the provision of services from distributed data centers thus breakdown-proof), low maintenance (management handled by cloud service provider) and easy implementation (no requirement for additional software or hardware for further cloud application developments) (Hashemi et al, 2013: 1243; Wyld, 2010: 7). Thirdly, challenges including security, data protection and compliance, interoperability and data portability, identity and access management and auditing weight on the easy Cloud implementation (ibid.)

As Palestinian plans progress into further phases of G-cloud development become clearer, with plans considering new central services such as government web service exchange and gateways to authentication and payment services will be added so do the prospects of further cooperation namely with Estonia. Similarly set up infrastructurewise, the sharing of best practices in migration to the Cloud and specifically ways in which the X-Road could be integrated with government portal platform enablers to facilitate e-service related requirements (for content publishing, collaboration and better connecting with the citizens) present an avenue of

consideration. Secondly, considering both parties to have peculiarly strong motivations for ensuring their digital continuity in the wake of an attack (Kotka & Liiv, 2015), cooperation between them may be based on a mutual type of understanding to be extended under the new symbolic Memorandum of Cooperation (MOFA, 2017).

5 Conclusion

Palestine's e-Governance development is inextricably linked to the unique and complex environment it is both being conducted in and aims at changing. This research has aimed at portraying such efforts in perspective to i) identify where challenges lay so as to subsequently inform further development and ii) demonstrate the grounded benefits in terms of facilitating Palestine's national development by pursuing its e-Governance agenda. Part I presented an overview of the relevant existing literature and influential concepts defining the research providing a context to Part II's definition of research aims, arising questions and chosen research methodology. Part III inserted Palestine's e-Governance situation in perspective by firstly, introducing its record in the field in the context of its proposed guiding documentation, secondly, by assessing its cooperation with donors and specifically with Estonia, a recognized pioneer in the field of e-Governance, and thirdly by enlightening the issues identified as challenges to current and further development. Part IV introduces planned developments notably in Cloud Computing with the planned creation of a Government Cloud.

The research yielded important lessons firstly, with regards to the reasons challenging Palestine's e-Government development, found primarily in its legal and organisational setting. On the legal side, a comprehensive review of the legal framework is required to keep in pace with technological developments in order to build

towards a setting of the rule of law, ultimately affecting both implementation and adoption of the new system. Current legal progress is being made to facilitate e-services roll out with the imminent adoption of the e-Transactions and Access to Information laws.

On the organisational side, although both policies and strategy have been coherently defined in the initial stages of the PA's e-Governance journey, an update reflecting the PA's current priorities and infrastructural developments is necessary. Identified challenges in implementation of set official strategic goals could be remedied with a clear mandate for implementation for the main responsible body, the MTIT with an acknowledgement of current limits of understaffing, limited budget, and shortcomings in necessary skills. Concerning governance, given the multi-donor scenario, better coordination of all e-government projects at the e-Government Ministerial committee level should be performed to ensure proper oversight, avoid projects' overlap and implementation in siloes.

Unanimous consensus binds both the Palestinian and Estonian side on how the bilateral cooperation has been instrumental in providing the Palestinian State with its e-Government infrastructure fundaments, most notably with the deployment of the data exchange layer and new form of governance comprised in the X-Road. The associated sharing of expertise included within a context of capacity building for the Palestinian side has shown tangible benefits as well as shortcomings in post-project follow up where a more continued approach from the Estonian side could sustain autonomy in further developments. Lastly, the perspective of ongoing further cooperation between both parties in matters of cybersecurity and the management of the information society raises questions if a more established, less strictly project-based relationship could not only address current issues in post-project follow up but include both parties' interests in their individually ongoing developments in the Cloud.

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Appendix 1 – List of interviewees

PALESTINIAN SIDE	
1. PARTICIPANT A	MTIT
2. PARTICIPANT B	MTIT
3. PARTICIPANT C	Academia/Palestinian e-Governance Academy
4. PARTICIPANT D	Al-Shabaka Policy Network
5. PARTICIPANT E	Al-Shabaka Policy Network
6. PARTICIPANT F	Al-Shabaka Policy Network/PITA
7. PARTICIPANT G	Academia/ Past e-Government project manager
ESTONIAN SIDE	
8. PARTICIPANT H	Academia/ Past e-Governance Academy Project Manager
9. PARTICIPANT I	e-Governance Academy
10. PARTICIPANT J	e-Governance Academy
11. PARTICIPANT K	e-Governance Academy/Academia

Note: To preserve the sources' identities and to avoid impact on their professional activities, interviewees' names remain confidential. Audio recordings and a research

diary were produced during the period between March - May 2017 and are in possession of the author and can be presented upon request. Interviews were held in English.

Appendix 2 - List of questions following a semi-structured interviewing type

1. Please introduce your background and how you became involved with the field of e-Governance in Palestine
2. Why do you think the development of an information-based economy should be a priority for Palestinian national development? And where does e-Governance development fit in there?
3. In an article you co-authored you mention ICT's potential in enabling "occupation-circumventing" activities. Where do you draw the line in allowing the ICT's sector development without questioning its potential adaptation or even legitimisation of the status quo?
4. How do you assess Palestine's current e-Governance situation?
5. Do you identify failures and/or achievements in the e-Government projects implementation? If so, to what are they due?
6. You have worked on projects such as the Palestinian Legislative Council

video-conference system between Ramallah and Gaza and its integration with the voting system. In your opinion, why and how should the decision-making in Government be improved?

7. How do you assess the Palestinian-Estonian cooperation in the field to date?
8. In your opinion, are there factors that the Estonian side is not taking into account to ensure the cooperation's success?
9. What improvements could be made, if any?
10. How has the donor community impacted on the development of e-Governance in Palestine?
11. To what extent Israel poses a challenge to the further development of e-Governance in Palestine?
12. Lastly, how do you assess the introduction of a Government Cloud in terms of solving or assisting with the resolution of current e-Government implementation problems?