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UNDP

Assessment report

Digital Maturity Assessment of the State of Palestine

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Executive Summary

Experts from the e-Governance Academy carried out the digital maturity assessment of the State of Palestine in September and October 2020. The current report is the result of surveys and interviews conducted with the following stakeholders:

1. Ministry of Telecommunications and Information technology (12 and 28 October 2020)
2. Ministry of Interior (12 October 2020)
3. Ministry of Transportation (12 October 2020)
4. Palestine Polytechnic University (13 October 2020)
5. Ministry of Education (14 October 2020)
6. Ministry of Health (14 October 2020)
7. Ministry of Justice (14 October 2020)
8. Palestine Monetary Authority (14 October 2020)
9. Ministry of National Economy (14 October 2020)
10. General Personnel Council (19 October 2020)
11. Palestinian Central Bureau of Statistics (19 October 2020)
12. Ministry of Finance (21 October 2020)

The report assesses the maturity of Palestinian public sector in 12 e-government domains and proposes recommendations based on world-wide best practice, which would help the State of Palestine to move towards more mature levels of e-government.

The overview of the current e-government maturity is depicted in Figure 1.
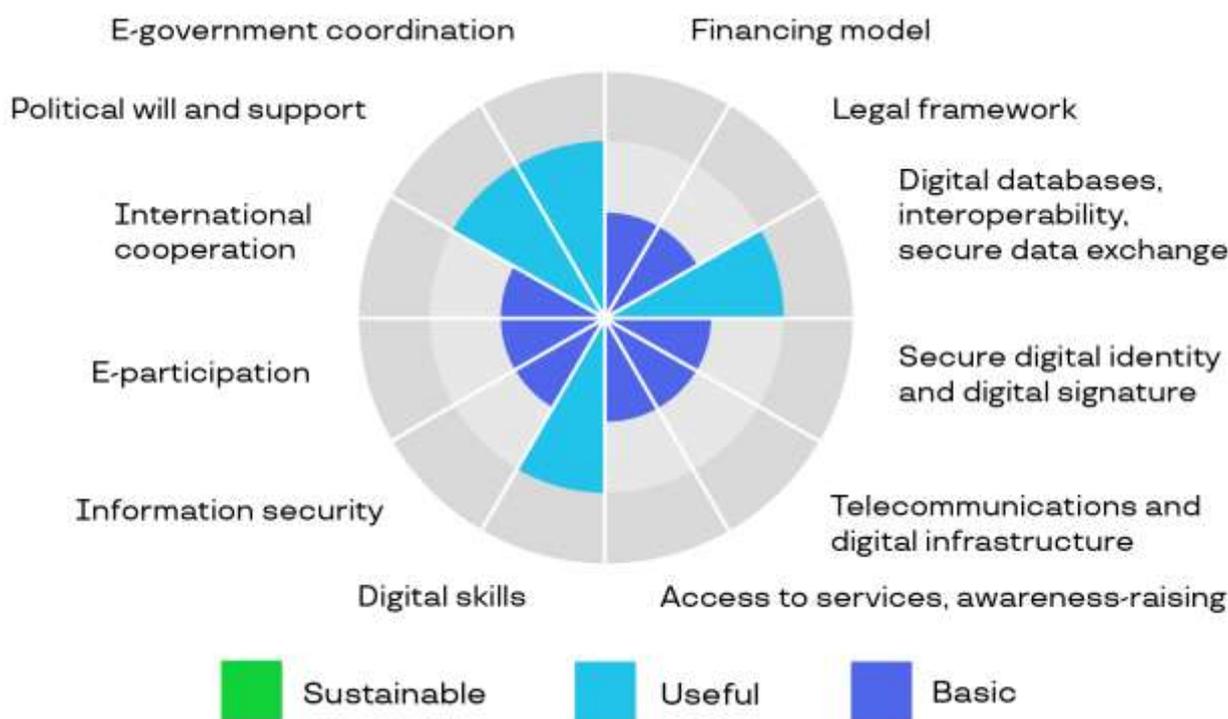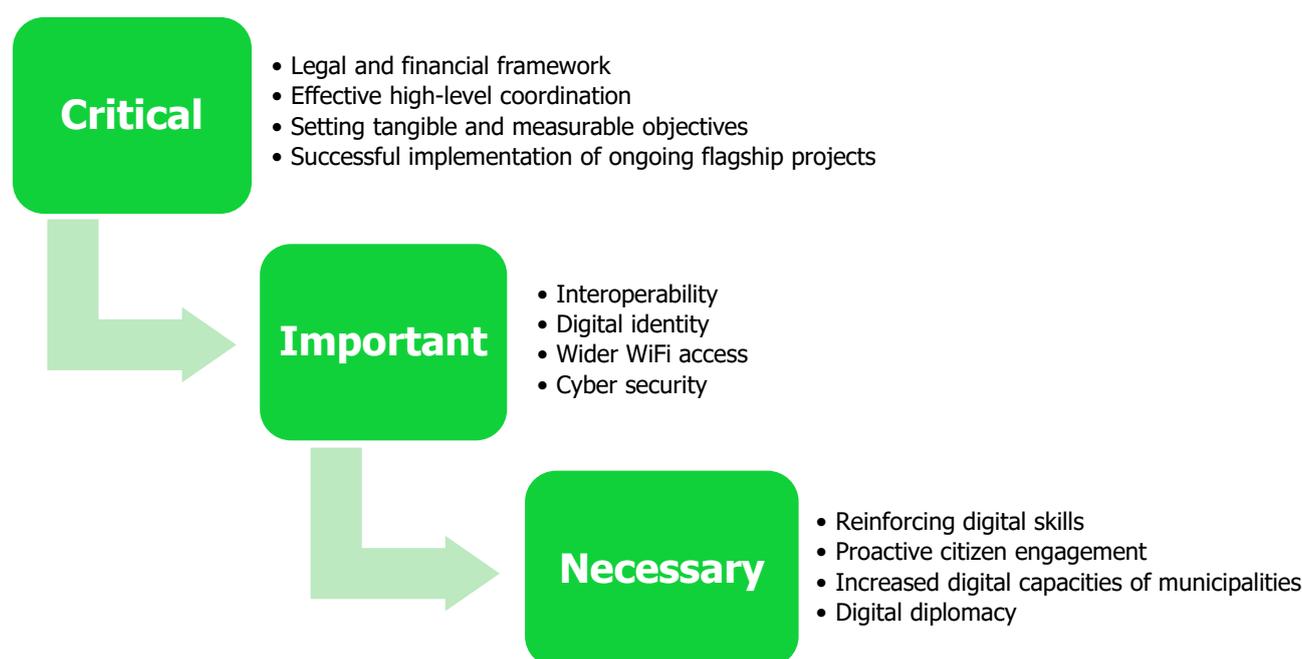

Figure 1: Current e-government maturity of the public sector of the State of Palestine

To reach a next level in digital transformation, it is critical for the State of Palestine to further improve the high-level strategic coordination of e-government together with the adoption of legal acts that would make further digitalisation possible. The timely successful implementation of ongoing projects featuring e-payments, Single Sign-On, and government e-services portal is a strategic priority that requires immense attention and careful monitoring.

As a next step, it is important to turn attention to digital transformation enablers such as digital identity management framework, quality of main state registers and their interoperability, improved internet access, and the practical implementation of strategic priorities.

At the same time, reinforcing digital capacities of citizens and municipalities should receive attention together with developing tools for engagement and advancing international cooperation.

Critical
- Legal and financial framework
- Effective high-level coordination
- Setting tangible and measurable objectives
- Successful implementation of ongoing flagship projects

Important
- Interoperability
- Digital identity
- Wider WiFi access
- Cyber security

Necessary
- Reinforcing digital skills
- Proactive citizen engagement
- Increased digital capacities of municipalities
- Digital diplomacy

To move forward with each of these priority areas, high-level agreement is needed for each one on the ultimate objective, target group, activities to be undertaken, and implementation plan including measurable objectives, responsible actors and timeline.

Key recommendations

Critical

1. <u>Adopting the necessary legislation and setting up relevant authorities.</u> Work on adopting pending legal amendments should be pursued more actively and without further delays. Legislation on access to information and data protection as well as an updated telecommunications legislation and digital transactions legislation are essential for Palestine's further digital development. Authorities responsible for the enforcement of these laws need to be set up.

2. <u>High-level strategic coordination.</u> A high-level coordination body should be mandated and enforced to set the national digital agenda (across sectors) as well as to harmonise and prioritise different digital transformation programmes. Policy development within the international cooperation framework also needs to be further enhanced.

3. <u>Investments with clear socio-economic impact.</u> There should be political drive and responsibility behind promoting digital transformation. Political priorities need to be translated into tangible digital services and financing priorities with measurable social and economic impact. The roll out of these

services should be monitored and reported to the political leadership level. Metrics, such as timeline and key performance indicators, must be an inseparable part of the strategy and periodically (e.g. semi-annually) monitored through reports to the government level.

4. <u>Financial framework of e-government</u>. The annual operating budget for digital expenditure needs to be articulated clearly at the level of ministries and agencies. Development of new digital solutions and infrastructure of all ministries and agencies needs to be addressed in similar financing templates that indicate the Key Performance Indicators of the investment as well as the expected impact.

5. <u>Provision of e-services.</u> Careful implementation of the e-payment / Single Sign-On (SSO) project is essential to the development of further e-services and establishing an effective one-stop-shop citizen portal of e-services offered by Palestinian public authorities.

Important

6. <u>Interoperability standardisation and assurance body.</u> To manage risks related to large IT projects, it is recommended to establish or mandate and enforce an interoperability standardisation and assurance body to sign off on all new digital development projects of all ministries and public agencies that create new services and/or new databases and have a budget exceeding a certain budget (e.g. 1 million USD).

7. <u>Digital identity management strategy.</u> A comprehensive analysis on the legal, organisational and management aspects of digital identity management is needed to develop a strategy and action plan for identity management development together with a selection of the token(s) of digital identity to be used and the necessary human resources, skills and communication efforts.

8. <u>Wider WiFi access.</u> As an alternative to the existing limitations on new mobile network generations rollout, focus can be turned to wider access to WiFi. The importance of lightweight multimedia design for public services should be kept in mind.

9. <u>Cyber security strategy, standards, and training.</u> The development of cyber security activities should be guided by a cyber security strategy, which builds on an assessment of cyber security capacities and sets out a strategy and implementation plan for the next years. In addition, a cyber security standard should be established for the public sector together with cyber security requirements for essential service providers and training for public officials and the general population.

Necessary

10. <u>Reinforcing digital skills.</u> To further raise the level of digital skills, training courses should be provided to both public officials and citizens based on skills assessment and carried out with the possibility to obtain a certificate of completion. Since digital services and infrastructure are critical for society, cyber hygiene and individual cyber competences need to be set as standard for not only civil servants but for the whole society.

11. <u>Proactive citizen engagement through online tools</u>. The use of online tools can make a significant contribution to increasing transparency and reducing corrupt practices. Hence, it is recommended to continue developments related to the open data portal and establish an open data strategy, use crowdsourcing for citizen involvement in policy-making and implementation of accountability mechanisms, and make sure that e-participation possibilities are taken into account when developing the citizen/e-service portal.

12. <u>Increased digital capacities of municipalities</u>. It should be seriously considered to establish a common e-services platform that could be modified and used by all Palestinian municipalities. Stronger cooperation of municipalities should be ensured on their digital initiatives and roadmaps with the aim to consolidate the scarce financial and human resources and avoid overlapping of similar initiatives.

Moreover, a joint promotional campaign should be considered to increase public awareness of digital services offered and reduce resistance from citizens towards consuming e-services.

13. <u>Digital diplomacy</u>. Ensure that the presence of foreign policy and international relations is well represented in digital channels. A position or a department responsible for representing Palestine and its digital transformation interests should be established as part of Palestine's foreign policy activities. These interests need to be presented towards other countries and international organisations as well as towards technology companies.

1. Introduction

1.1. Objectives

The aim of the assessment was to evaluate the current digital maturity of the public sector of the State of Palestine, draw general findings and offer suggestions for further activities in 12 e-government focus areas:

1. Political will and support
2. Coordination
3. Financing model
4. Legal framework
5. Digital databases, interoperability, secure data exchange
6. Secure digital identity and digital signature
7. Digital skills
8. Access to services, awareness-raising
9. E-participation, e-democracy
10. Information security
11. Telecommunications and digital infrastructure
12. International cooperation

The current Digital Maturity Assessment report provides the State of Palestine with a good understanding of its current digital maturity and can be used as the foundation and inspiration for strategic national documents on digital transformation. The report also serves as an input to the Digital Landscape Assessment tool developed by the UNDP in cooperation with eGA, which helps identifying digital entry points for acceleration towards achieving SDG goals.

1.2. Methodology

The assessment was conducted in six steps.

1. **Preliminary research**: review of existing policy documents, strategies, government political agenda, public reports, statistical sources, etc.

2. **Online introductory seminar** for key officials and stakeholders to present the project, the content and objectives of the Digital Maturity Assessment, as well as the expected benefits to the stakeholders and the input expected from them.

3. **Digital Maturity Assessment questionnaires** were filled in at the central and municipal levels. A comprehensive digital maturity questionnaire was filled in by the Ministry of Telecom and Information Technology (MTIT) to map the existing digital governance situation in Palestine. In addition, invitations were sent out to 17 larger Palestinian municipalities to fill in a questionnaire designed to explore the digital development maturity of municipalities.

4. **Online interviews with key stakeholders** were conducted to get a deeper understanding of their current state of digital development as well as their plans and challenges faced. In total, 12 online interviews were held with representatives of relevant ministries and authorities as well as with a representative of the academic sector (see Annex 1).

5. **Development of the Digital Maturity Assessment Report**, based on the input from the desk research, questionnaires and interviews**.** The report assesses the state's current state of digital maturity in the specified focus areas and provides suggestions for next steps. The report places the state at a certain level of maturity – either basic, useful or sustainable – in each category and makes recommendations for next steps to be taken. The draft version was discussed with the main local partners and their feedback was integrated to the report.

6. **Workshops to present the report** to national stakeholders and the international donor community.

1.3. Background of e-government development in the State of Palestine

The State of Palestine can be characterised by significant historical legacy together with cultural, ethnic and religious diversity, and has been managing the reality of conflict for more than 50 years.

The State of Palestine was experiencing an economic downturn already before the COVID-19 pandemic hit. UNCTAD lists "recurrent hostilities, geographical and economic fragmentation, technological regression, restrictions on imported inputs and technology, the loss of land and natural resources, settlement expansion, the leakage of fiscal resources and the near collapse of the economy of the Gaza Strip" as reasons for the unfavourable economic situation[1].

The GDP per capita is projected to decrease by 3% to 4.5% due to the pandemic[2]. In September 2020, the Palestinian Central Bureau of Statistics reported an unemployment rate of 28.5% (of individuals aged 15 years and above)[3]. The unemployment rate for graduates in Information and Communication Technologies was 29.5%. According to World Bank data, more than a quarter of Palestinians lived below the poverty line prior to the pandemic, whereas the share of poor households is now expected to increase to 30% in the West Bank and to 64% in Gaza[4].

Palestine relies heavily on donor support, which has declined substantially in recent years according to the UNCTAD report, falling from 32 per cent of GDP in 2008 to 3.5 per cent of GDP in 2019.

The foreign occupation has significantly influenced the development of e-government development in the State of Palestine. On the one hand, the possibilities of the State of Palestine to benefit from the use of modern technologies is hindered because of restrictions set on the movement of goods. The World Bank report emphasizes that the Palestinian territories are "among the last places in the Middle East to launch 3G in the West Bank and 2G in Gaza", bringing them to a competitive disadvantage, as they face "restrictions on access to spectrum, sites for network coverage and import of certain telecom equipment". The World Bank report estimates that Israeli operators have a 20% mobile broadband market share in the West Bank, as they can offer unlimited 4G and LTE services to those in proximity to Israeli networks.

At the same time, ICTs as a backbone of governance provide a source of stability and sustainability that can act as an accelerator to achieve the Sustainable Development Goals.

Looking back at the historical timeline of digital transformation, the first National Strategy for Telecommunications and Information Technology was announced in 2004 by President Abbas and was adopted in 2007, recognising e-government as one of the main means to drive economic growth and social development in the territory. The Ministry of Telecommunications and Information Technology has been in charge for national e-government strategies.

Noteworthy nation-wide e-government undertakings include the operation of the GovNet (since 2010), which connects all ministries to the Government Computer Center, the development of the Palestinian Interoperability Framework (Zinnar[5]) that involved developing a joint meaning of data and maintaining metadata of government databases and services, and the development of the Palestinian secure data exchange solution (X-Road) based on the Estonian solution of the same name.

An e-Government Core Group, chaired by the MTIT has been operating since 2010, involving representatives of more than a dozen government authorities, academia, and the private sector (since 2016).

The two main capacity-building efforts include setting up the Palestinian e-Governance Academy in 2010 by the Birzeit University and MTIT to support interoperability, security and legal informatics in the framework of a two-year EU-funded project, as well as established an ICT Training Centre within MTIT in 2014, which is still operational.

The Palestinian Authority's National Policy Agenda: Putting Citizens First (2017-22) emphasises the importance of digital transformation by having digital economy as one of the priorities to achieve an inclusive and sustainable economy, as well as by promoting digitalisation in education.

In the most recent Global ICT Development Index issued by the International Telecommunications Union, the State of Palestine is ranked 123rd out of 176 countries. Palestine's performance is below the world average as well as below the average score of the Arab States (see Figure 1). The report specifically notes that the "Palestinian telecommunications sector is characterised by the presence of a private regulated monopoly and increasing competition" and that "efficiency in the telecommunication sector will have far-reaching effects throughout on the Palestinian economy".[6]
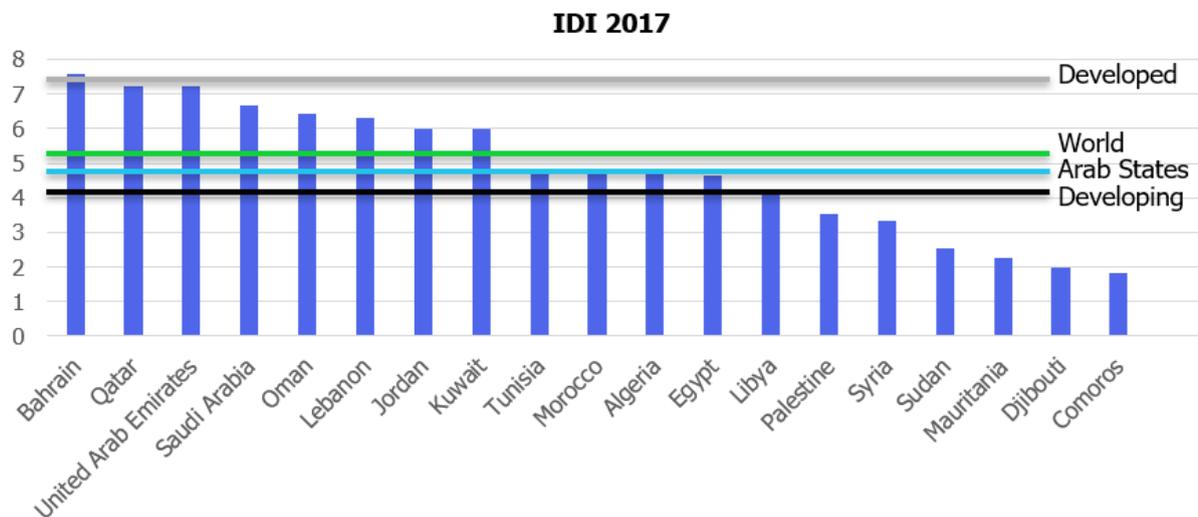
Figure 2: Arab States in IDI 2017

The year 2020 has added further challenges to the already complicated political and economic situation, with the COVID-19 pandemic having a major influence on the economy and society of the State of Palestine. At the same time, the pandemic raised the demand for remote work and studying as well as digital solutions for the economy and government interactions with citizens and businesses.

COVID-19 has also led the Ministry of Telecommunications and Information Technology to update the ICT Strategy 2017-2022. Its updated version for 2020-2022 was in the process of being approved at the time of writing of this report.

Indeed, there are great efficiencies to be gained from digital transformation, just like in June 2020 the World Bank Economic Monitoring Report to the Ad Hoc Liaison Committee[7] placed a lot of expectations to the digital

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[1] https://unctad.org/system/files/official-document/tdb67_d5_en.pdf (7 December 2020)

[2] Ibid.

[3] http://www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_8-11-2020-lf-en.pdf (7 December 2020)

[4] http://documents1.worldbank.org/curated/en/844141590600764047/pdf/Economic-Monitoring-Report-to-the-Ad-Hoc-Liaison-Committee.pdf (8 October 2020)

[5] http://zinnar.pna.ps/InteroperabilityPortal (2 October 2020)

[6] https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2017/MISR2017_Volume2.pdf (2 October 2020)

[7] http://documents1.worldbank.org/curated/en/844141590600764047/pdf/Economic-Monitoring-Report-to-the-Ad-Hoc-Liaison-Committee.pdf (8 October 2020)

economy to boost economic development in the State of Palestine, provided investments are made in national digital infrastructure. The next chapter will provide an overview of the current state of e-government as well as suggest next steps to be taken on Palestine's digital transformation journey.

2. Digital maturity of the central government

This chapter provides an overview of the current e-government situation in the State of Palestine, looking at 12 e-government domains. For each topic, the report places the State of Palestine at a certain level of maturity – either basic, useful or sustainable.

- **Basic maturity**: Organisations implement e-government activities based on the level of their internal capacities. There is no clear strategy or coordination in place. The activities are mostly sporadic, and processes are reactive in nature.
- **Useful maturity**: A strategic framework for e-government is in place and a division of roles exists. Conditions are created to be able benefit from standardisation, coordination and the shared use of digital components and resources, but there are certain shortcomings when it comes to implementation.
- **Sustainable maturity**: E-government is a natural part of the operation of the public sector and the society as a whole. Public sector and the private sector jointly use digital components to reach the strategic objectives of the country. Processes are controlled and measured, with effective stakeholder involvement and a good balance between the top-down and bottom-up approaches.

In addition to indicating the maturity level, the report provides recommendations for further actions in each topic.

2.1. Political will and support

High-level political leadership paves way to the adoption and implementation of relevant policies and agendas. The introduction of e-governance should be a political priority and an agreement between all political forces. Political will must be declared at the highest possible level, for example, by the President or the Parliament. For this to have proper effect, it is important to identify roles and determine responsibilities for coordination and implementation, also encouraging public-private partnership and cooperation with academic institutions. The agreement shall state the use of digital technologies to be successive as well as a main method of developing the society and addressing its challenges. Political will, if possible, should be affirmed with a political document, such as "Fundamentals of Information Policy", which would be a guarantee of such will.

Government and its leaders must be able to change the mindset of officials at all levels, to reengineer existing public services and related operations, and guarantee the enforcement of the strategies and legislation by setting up relevant authorities. Political leaders need to stay engaged and commit time, budget, and even political capital to the cause of e-governance. In addition, ongoing open government and e-governance capacity building is necessary.

Current situation in the State of Palestine

According to the survey response by the Ministry of Telecommunications and Information Technology (MTIT) and the e-Government Core Group where all key e-government stakeholders are represented, there is strong support from the political level towards the implementation of e-government and there is a general consensus

between all political forces of the importance of digital transformation. The main spokesperson for e-governance in the State of Palestine is His Excellency the Minister of Telecommunications and Information Technology, Dr Ishaq Sider.
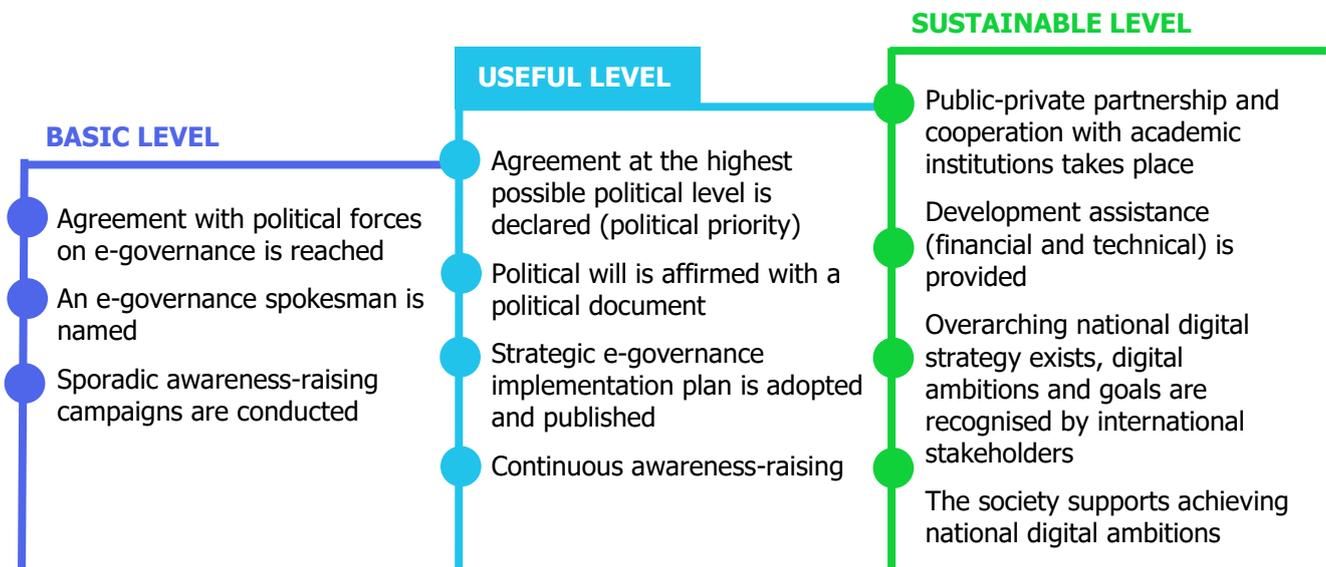
The main high-level document on e-government is the ICT Strategic Plan, which had been adopted for 2017-2022 after consultations with a wide range of stakeholders from the public, private and academic sectors, and was updated in the context of the COVID-19 pandemic. The updated version of the strategy for 2020-2022 has been drafted and was in process of being approved at the time of writing the report.

The updated ICT strategic plan envisions five strategic objectives to be reached within the next three years (by 2022). The first strategic objective is a secure, comprehensive and advanced infrastructure, which includes among many other things a functioning national data centre (incl. use of private cloud and an external disaster recovery centre), and an electronic authentication unit. The second strategic objective is a modern and comprehensive legislative and regulatory environment. The third strategic objective is advanced and effective electronic services, which envisages 30 online services by different government authorities and an e-payment system. The fourth strategic objective focuses on a competitive digital industry and the fifth one on qualified and productive human resources.

In the digital maturity assessment questionnaire, MTIT and e-Government Core Group indicated all fields of e-governance as having high priority of development, highlighting in particular the upgrade of X-Road to the latest version to achieve a higher level information security, implementing e-services for citizens and businesses as well as implementing the national e-payment system.

Throughout all interviews the political support was recognised and its presence was considered very important, however this has not been converted into a regularly monitored and adjusted policy framework. Politicians are seen as enthusiastic about the benefits of digital transformation and they are not hindering e-government development, but they are also not the driving force behind the progress.

Maturity level of Palestine: USEFUL

BASIC LEVEL

- Agreement with political forces on e-governance is reached
- An e-governance spokesman is named
- Sporadic awareness-raising campaigns are conducted

USEFUL LEVEL

- Agreement at the highest possible political level is declared (political priority)
- Political will is affirmed with a political document
- Strategic e-governance implementation plan is adopted and published
- Continuous awareness-raising

SUSTAINABLE LEVEL

- Public-private partnership and cooperation with academic institutions takes place
- Development assistance (financial and technical) is provided
- Overarching national digital strategy exists, digital ambitions and goals are recognised by international stakeholders
- The society supports achieving national digital ambitions

Recommendations

Investments with clear socio-economic impact. Political priorities need to be translated into tangible digital services with measurable social and economic impact. The roll-out of these services should be monitored and reported also at the political leadership level. Metrics, such as timeline and key performance indicators, must be an inseparable part of the strategy and periodically (e.g. semi-annually) monitored through reports to the government level.

<u>Digital transformation and international cooperation.</u> Policy development within the international cooperation framework needs to be enhanced. Regular peer meetings with colleagues at ministerial level should include topics on digital transformation, relevant to Palestinian priorities. Active participation in multinational policy development (incl. UN, ITU) is highly recommended. These interventions should reflect the present situation and digital ambitions of the State of Palestine.

2.2. Coordination

The coordination component includes designating an institution that will have the mandate to take decisions on e-governance for the entire administration. It is possible to have regional (federal state) solutions, but in any event, coordination will be needed. This does not mean centralising but ensuring that relevant decisions are properly coordinated. The coordinating institution is responsible for the strategic planning necessary for a state building e-governance and, more generally, an information society. The higher in the hierarchy the appointed unit is, the better the chances of directing ministries and agencies. The power and competences of the coordinating institution should be determined by legislation.

Current situation in the State of Palestine

The overall responsibility for the coordination of e-government topics in the state lies with the Ministry of Telecommunications and Information Technology, who is responsible for the telecommunications sector, the information technology sector and the postal sector[8]. In the IT sector, this also includes responsibility for sectoral standards and strategies as well as responsibility for the government computer centre, which manages the government network and a data centre, and hosts the government email system and human resources system. The ministry also includes a training centre for ICT training.

MTIT has the main responsibility for e-government legislation and has coordinated the implementation of the framework for secure exchange of data in the public sector. The e-government department at the MTIT includes a support unit that provides support for X-Road systems (connectivity, e-services, security server, central systems), a partnerships unit working with other ministries, the business sector and donors, an integrated applications unit developing services such as mobile apps and the e-services portal, a standardisation unit mainly working on the Zinnar interoperability framework, and a strategies and policies unit that develops and follows up on e-government strategies and policies. MTIT's role as the coordinator was also recognised in the interviews by other ministries.

Each ministry has their own IT unit who are in charge of their system and services, whereas MTIT provides consultancy and support in information security issues as well as sets the general strategic and regulatory framework. The IT units of ministries are headed by a Director-General. Together with representatives of the private sector (Palestinian Information Technology Association of Companies or PITA) they form the permanent e-Government Core Group. This group meets on a monthly basis. However, one ministry still called for better administrative cooperation between ministries.

Although each ministry is responsible for planning and implementing their own ICT projects, for certain projects of national importance there are steering committees where MTIT is also included. Through such committees MTIT is involved in establishing guidelines for the new project and ensuring compliance with general regulations and principles. One example of such a committee is the committee on a national e-health strategy, which is tasked with the creation of a single national health database connecting both public and private hospitals as well as clinics.

Based on the interview with the Palestine Polytechnic University, the government has involved the academic sector into e-government discussions in the past, with also some joint projects conducted for advancing scientific research into e-government, boosting employment and development of industry, but there has been no significant cooperation over the last 3-4 years. However, according to MTIT the Palestine Polytechnic

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[8] https://mtit.pna.ps (5 January 2021)

University is a part of the e-Government Core Group and the reason behind the limited involvement of the academic sector over the last years is embedded in limited financial resources.

Maturity level for Palestine: USEFUL

BASIC LEVEL

- Sustainable organisation or person responsible for e-governance development is designated
- Power and competences of e-governance coordination are mandated by legislation

USEFUL LEVEL

- Tools for coordination are applied (policies, legislation, and regulations; budgeting; monitoring; common standards; nation-wide re-use of data; data exchange; re-use of software solutions; rapid development of online services, etc.)
- Continuous development of ICT skills of public officials

SUSTAINABLE LEVEL

- The coordinating institution manages overall e-governance architecture and developments from a holistic point of view
- Development of policies and standards is centralised, while implementation is decentralised

Recommendations

High-level coordination body. A high-level coordination body should be mandated and enforced to set the national digital agenda (across sectors) as well as to harmonise and prioritise different digital transformation programmes. This body should be led by the Prime Minister and include representatives from selected key public sector authorities, private sector, critical infrastructure operators, private sector and academia. The E-Estonia Council[9] could serve as an example with its composition and tasks to:

- direct the implementation of the national digital agenda that provides a vision for the digital transformation of all sectors of society in Palestine, incl. initiating and giving opinions on agenda review proposals, approving the action plan for the agenda and its implementation reports, giving opinions on proposals to evaluate agenda implementation and the evaluation results, guiding collaboration between government institutions and sectors;
- form and give opinions in matters related to digital society development in the country, elsewhere in the region and the world, incl. input to national positions in international organisations;
- make proposals for preparing of policy documents to steer the development of digital society, reviews and gives opinion on relevant draft proposals;
- act as a sectoral monitoring committee for international donor involvement and funding in the ICT policy field.

Interoperability standardisation and assurance body. Establishment or mandating and enforcing an interoperability standardisation and assurance body that signs off on all new digital development projects of all ministries and public agencies that create new services, new databases and have a budget exceeding a certain budget (e.g. 1 million USD).

2.3. Financing model

General financing and financial models for e-services need to be developed in order to ensure sustainability. For every e-governance solution, the total cost of ownership of the solution must be planned. The introduction of e-governance will have a cost, even if it will soon lead to savings in other respects, so it is essential that there is adequate provision for the necessary funds in a sustainable manner. The provision can be made

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[9] https://www.riigikantselei.ee/en/supporting-government/e-estonia-council (28 October 2020)

centrally but also at the level of specific institutions. In any case, sufficient financing should be provided on a medium- to long-term basis, preferably through multi-annual budgeting. Authorities must be able to manage the risks arising from cyclical planning of the state budget. For example, in the state financial forecast a separate budget line is allocated for the development of e-governance. To support that allocation, clear procedures for planning the e-governance budget and managing the use of budgetary resources must be established. The transparency and accountability of the financial model need to be ensured.

Current situation in the State of Palestine

Each ministry and authority is in charge of planning and executing their own annual ICT budget.
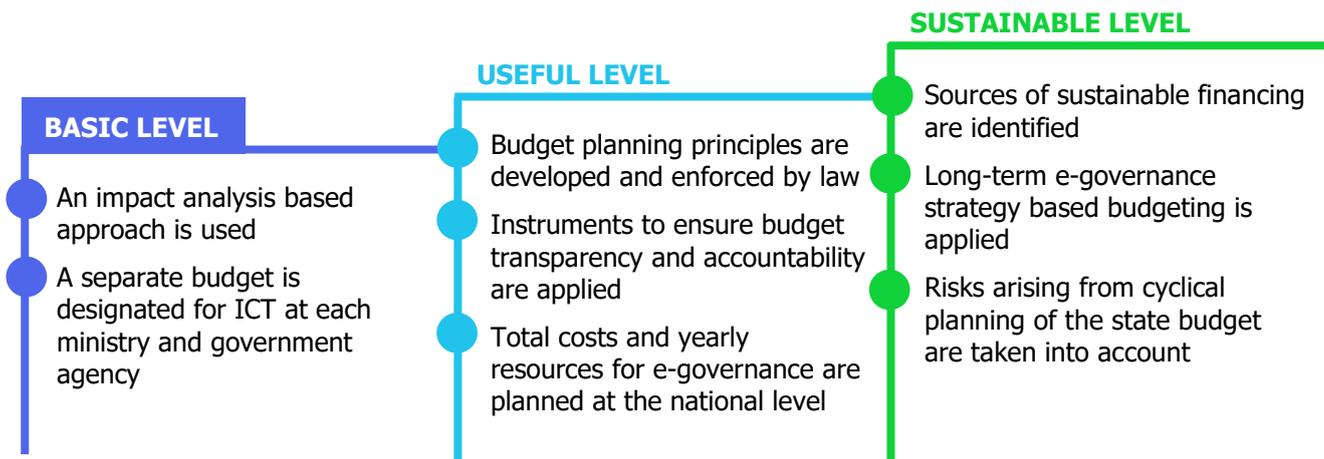
As a part of the budgetary process, ministries make their budget proposals to the Ministry of Finance, these are defended by the submitting ministry and evaluated. According to MTIT, ICT budgeting is based on a prioritised list of projects based on actual needs. Budget planning principles are set and enforced by the Ministry of Finance and Annual Budget Law.

In the budget implementation phase, there are controls applied to the use of the budget and reporting. For instance, a computerised accounting and financial system (BISAN) used by all ministries and government agencies, which shows transactions and financial accounts and is used by authorised users with specific user privileges according to their professional roles.

The main challenge faced is the instability of financial resources, stemming from the political situation. Over the last years and especially in the context of the COVID-19 pandemic, the main issue has been the lack of funding. Whereas many interviewees claimed that many ministries barely have funding to maintaining their existing systems, there were a number of ministries whose representatives state that development costs constitute around half of their ICT budget.

Development of e-government is partially dependent on international donor funding. The main donor organisations supporting digital transformation in the State of Palestine include World Bank, OECD, UNDP, and EU. The Department for International Cooperation at the Ministry of Finance is involved with donor coordination. There is no procedure for MTIT to review or approve proposals submitted to donors.

Maturity level of Palestine: BASIC

BASIC LEVEL

- An impact analysis based approach is used
- A separate budget is designated for ICT at each ministry and government agency

USEFUL LEVEL

- Budget planning principles are developed and enforced by law
- Instruments to ensure budget transparency and accountability are applied
- Total costs and yearly resources for e-governance are planned at the national level

SUSTAINABLE LEVEL

- Sources of sustainable financing are identified
- Long-term e-governance strategy based budgeting is applied
- Risks arising from cyclical planning of the state budget are taken into account

Recommendations

Digital operating budget. The annual operating budget for digital expenditure needs to be articulated clearly at the level of ministries and agencies. This should be expressed in a separate budget line – digital operating expenditure. For larger projects, centrally coordinated guidelines developed by the MTIT should be available.

Financing templates for digital solutions. Development of new digital solutions and infrastructure of all ministries and agencies needs to be addressed in similar financing templates that indicate the Key Performance

Indicators of the investment as well as the expected impact. To ensure interoperability and technological harmonisation and to avoid duplication, digital development budgets need to be signed off by the institution overseeing the interoperability standard, approved at the national level in Palestine. Financing plans should be tied to the ICT sector strategy or the national policy agenda to ensure sustainability.

2.4. Legal framework

There are no legal prerequisites for starting the process of introduction of e-governance. There are, however, several laws that need to be looked at and this legal overview should be made in the early stages of e-governance development. The more innovative the e-governance solution, the more it changes the existing workflows. Major changes in workflows may require new or amended legislation. The changes needed in the legal framework are country-specific, but often relate to electronic signature, data protection, accepting electronic information, etc.

The key legal issues to keep in mind in the context of introduction or further developing e-government can be summarised to include (but are not limited to) the following:
- There should be no obstacles to using electronic format for administrative acts;
- Electronic acts should have the same legal force as traditional acts;
- There should be a possibility for secure electronic identification and signature;
- Data protection provisions should be in place and implemented;
- There should be rules on the establishment of databases and interoperability of data;
- Issues of responsibility for adoption of necessary rules and regulations should be clear.

In addition to laws, different strategies and plans need to be developed and drafted, clearly indicating the connection between the legal component and the governance one.

Current situation in the State of Palestine

The proper legislative process does not function in Palestine as the Legislative Council is inactive since 2007, but under the Basic Law it is possible to adopt legislation by Presidential decree. The MTIT is generally responsible for the legal framework related to e-governance, in cooperation with other partners and stakeholders. Palestine has not conducted a thorough overview of legislation to identify any possible obstacles to e-governance. In addition, many relevant laws are not properly updated or not fully in line with the protection of rights as set out in the Basic Law and in international instruments. Palestine adopted a Cyber Crime Act in 2018. This law is controversial, as it has been claimed by civil society and independent observers that it allows for excessive restrictions of freedom of expression. In some areas, legislation and strategic documents are available but need to be updated to fully correspond to the needs of digital development. The telecommunications law in force is from 1996, as legal amendments initiated in the early 2000s (and most recently reflected in a draft from 2018) have still not led to the adoption of a new law, which would include the creation of an independent regulatory agency. It is hoped that a new law – suitable for the modern ICT sector - will be adopted in 2020. There is an electronic transactions law (from 2017), which is the process of being updated and which should provide the legal framework for a certification authority. It was mentioned by one interviewee that e-services could not properly be offered with the current legislative framework, because the law states that a person needs to retrieve certain documents after authenticating themselves in person.

Many legal acts are currently being drafted or are soon to be adopted, e.g. the amended telecommunications (ICT) law, amendments to the electronic transaction law, legislation on personal data protection, law on digital identity, National Payments Law, Information Security Policy, etc. The State of Palestine does not have a separate law or regulation on databases, on access to information, or on e-participation.

There is no specialised independent authority responsible for personal data protection. There is no data protection law, although privacy is protected by the Basic Law. Until now, each institution has been responsible for maintaining the confidentiality and privacy of the personal data it holds. Access to (electronic) data has at times been handled as a technology issue with insufficient regard to the need for a legal basis before any

access can be given. One interviewee specifically highlighted the issue that breaches concerning personal data cannot be prosecuted. It should also be mentioned that the interviewees specified practices of sharing personal data between authorities without a proper legal basis and without due consideration of whether the sharing is necessary and proportional. Specifically, personal data has been shared for statistical purposes without being duly anonymised.

All in all, legal constraints were among the top challenges/constraints to digital transformation mentioned by the interviewees.

Maturity level of Palestine: BASIC

BASIC LEVEL

- Analysis of the legal system is conducted
- Any legislation incompatible with e-governance is identified

USEFUL LEVEL

- A minimum level of legislation relevant to e-governance is adopted
- Specific regulations for data protection, electronic identity and signature, civil register and protection of national cyberspace are adopted

SUSTAINABLE LEVEL

- All legal acts take the details of e-governance solutions into account
- The legal environment at the pan-regional level is harmonised

Recommendations

Adopting pending legal amendments. Work on adopting pending legal amendments should be pursued more actively and without further delays, including updating telecommunications legislation to create an independent regulatory agency and updating digital transactions legislation to include digital identities and a certification authority. Furthermore, access to information legislation and data protection legislation should be adopted. Pending the adoption of the latter, guidelines for data protection can be issued to set out principles of proportional and necessary data sharing between authorities, e.g. including instructions on when data should be anonymised prior to sharing.

Setting up relevant competent authorities to enforce the adopted laws. Protection of personal data as well as the perception that such data is protected is essential. An independent Data Protection authority needs to be set up to guarantee this through proactive working practices. Likewise, an independent telecommunications regulatory authority is needed to advance this crucially important sector.

Identifying legal obstacles to e-governance. A proper legal analysis should be conducted to identify any obstacles to e-governance, in order to be able to determine what further legal changes are necessary to remove such obstacles (whether in the form of amendments to various laws or the inclusion in one law with general provisions stipulating that digital signatures/documents generally, across all legislation, should be seen to have the same value as traditional ones). This analysis should be carried out by local legal experts who need to have expertise in primarily public law (but need not be e-governance experts), who should identify exactly which legal acts need to be reviewed. Such a review should be undertaken together with e-governance experts, who can explain the technology so as to design the appropriate legal solutions. It may be necessary and sufficient to change definitions in legislation, to ensure that existing laws can include electronic transactions and documents.

2.5. Digital databases, interoperability, secure data exchange

The digitisation of public services means that ministries and government agencies capture and process data in a machine-readable form. It is important for a citizen-centred and service-oriented state to make sure that different organisations and information systems are able to work together and exchange information. Authorities need to take advantage of the data that the state has already collected from the citizens and businesses and not burden them with asking for the same information several times or have citizens request information from one public authority simply to hand it over to another public authority. Hence, digital databases and data exchange between those are needed.

Modern e-governance model is a component-based service model, allowing the establishment of public services by reusing, as much as possible, existing service components. Public administrations should agree on a common scheme to interconnect loosely coupled components and put in place the necessary infrastructure. A general conceptual model for integrated public services (based on the European Interoperability Framework) is illustrated in Figure 3.
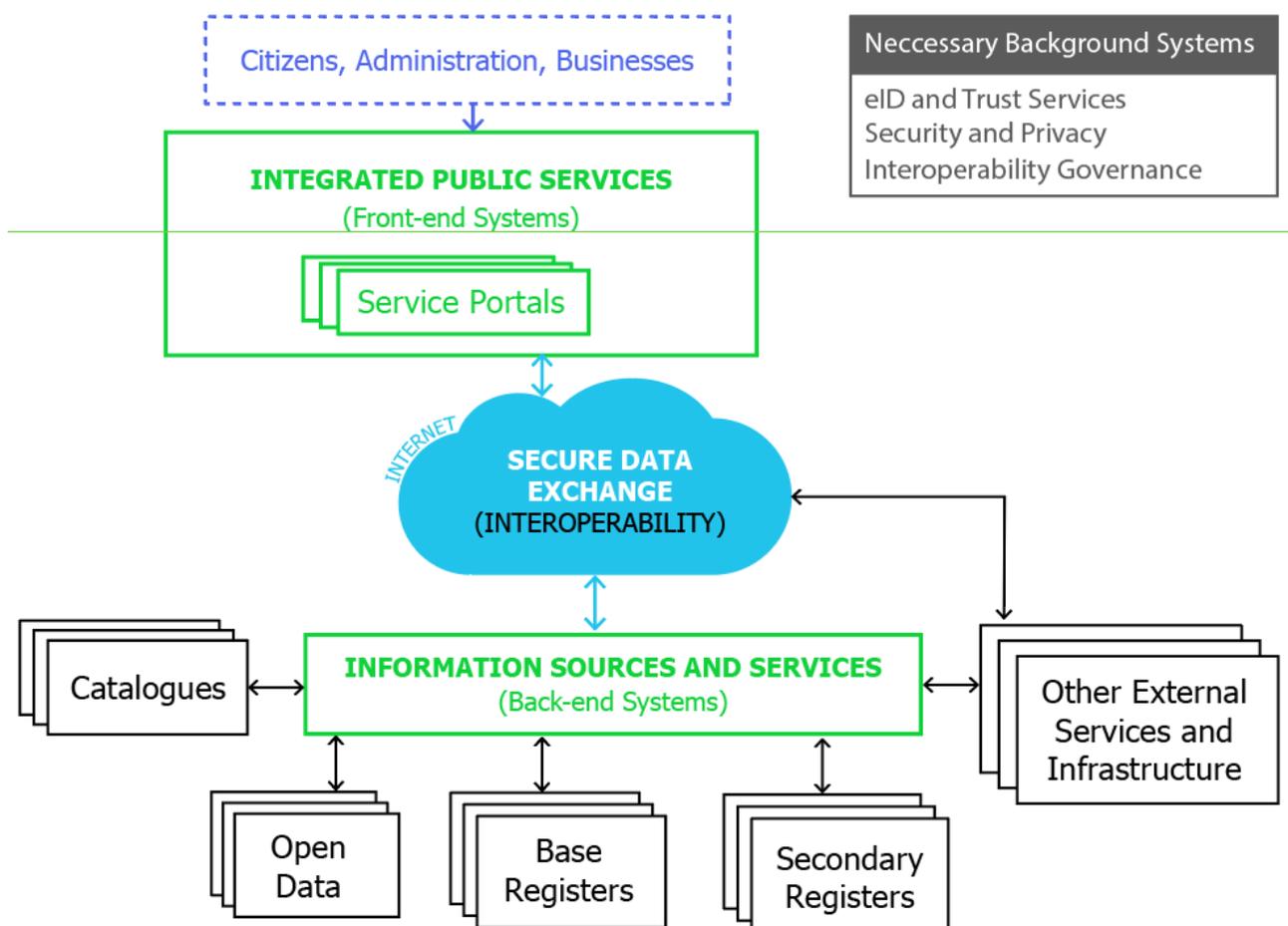

Figure 3: Conceptual model of integrated e-government (based on the European Interoperability Framework)

The model is modular and comprises loosely coupled service components interconnected through shared infrastructure.

The model promotes reusability as a driver for interoperability, recognising that the public services should reuse information and services that already exist and may be available from various sources inside or beyond the organisational boundaries of public administrations. Information and services should be retrievable and be made available in interoperable formats.

Current situation in the State of Palestine

All ministries interviewed are in charge of several databases. The main databases (civil register, business register, tax registers, custom register, social security register, etc.) are available in digital form and according to MTIT assessment the data therein is of good or at least acceptable quality. Oracle, SQL and MySQL were the most commonly named databases in use. However, there are also databases that are not yet connected to the X-road (e.g. NGO database of the Ministry of the Interior) and some that are even not yet digitised.

Ministries use information systems to facilitate their day-to-day operations: human resources management, financial management, document management, archiving, etc. The human resources management system is administered by the General Personnel Council and the financial system by the Ministry of Finance. Most of these systems are not used as a shared service. Branch offices of institutions seem to be well connected to the main office and its information systems.

The Zinnar Interoperability Framework was established in 2014 to facilitate the exchange of data between public sector systems and services. Zinnar consists of five servers: Ontology Server, Entity Server, Address Server, Service Repository, and Database of Databases. The interoperability framework also prescribed that all government entities have to adopt a set of agreed standards to exchange data messages.

During the interviews the Ministry of National Economy was the only one to bring up Zinnar and the fact that they meet its standards. MTIT admitted that Zinnar has not been a priority topic, but that there is a need to have an overview of all registers, databases, services and information assets. MTIT sees the need to set it more in focus and restart the related discussions, this is why in 2019 the Zinnar team was reformed and is currently working on issuing new standards.

Palestine also implemented a secure data exchange solution in 2014, which allows ministries and authorities to exchange data between themselves and provide services. The solution is called X-Road and it is an implementation of the Estonian secure data exchange solution of the same name. In 2014, the central system was set up and 13 ministries and authorities were included in the first phase. Some 12 services were set up with the help of Estonian experts. Training was provided for MTIT staff as well as officials of participating ministries.

Joining the X-Road is a formal process, which involves signing a legal agreement regarding the data that will be exchanged. At present, 43 public authorities are connected to X-Road. According to MTIT and other ministries interviewed, the X-Road is operational and frequently used. For instance, during the first 10 months of 2020, the citizen registry inquiry service for citizen information based on ID number received more than 2 million requests. Ministry of Finance stated that they have X-road connections to all necessary public sector authorities. Furthermore, Ministry of Transport said all of their main connections are over X-Road and some new connections will be added in the near future (e.g. with the Customs Department of the Ministry of Finance to achieve further transparency and data integrity).

However, there are still ministries who wish to be better connected. For instance, Ministry of National Economy provides four services to a dozen ministries, but claims not yet to have access to the civil registry hosted by the Ministry of the Interior. In addition, there are other institutions that do not seem to be very well connected. For example, the Ministry of Justice is connected to the Ministry of Interior, but listed 13 other organisations with whom they have other types of connections (e.g. VPN with different branches of the military). The Ministry of Interior has opened up the civil register via X-road based on bilateral agreements with 22 government organisations, but has yet to connect the NGO database, citing security issues as the reason.

Yet, whenever ministries talk about adding new connections, these are planned over the X-Road.

Technical knowledge of the X-Road remains largely with the MTIT, who provide support to other ministries. One respondent seemed to be unaware of the fact that databases from different vendors could be connected
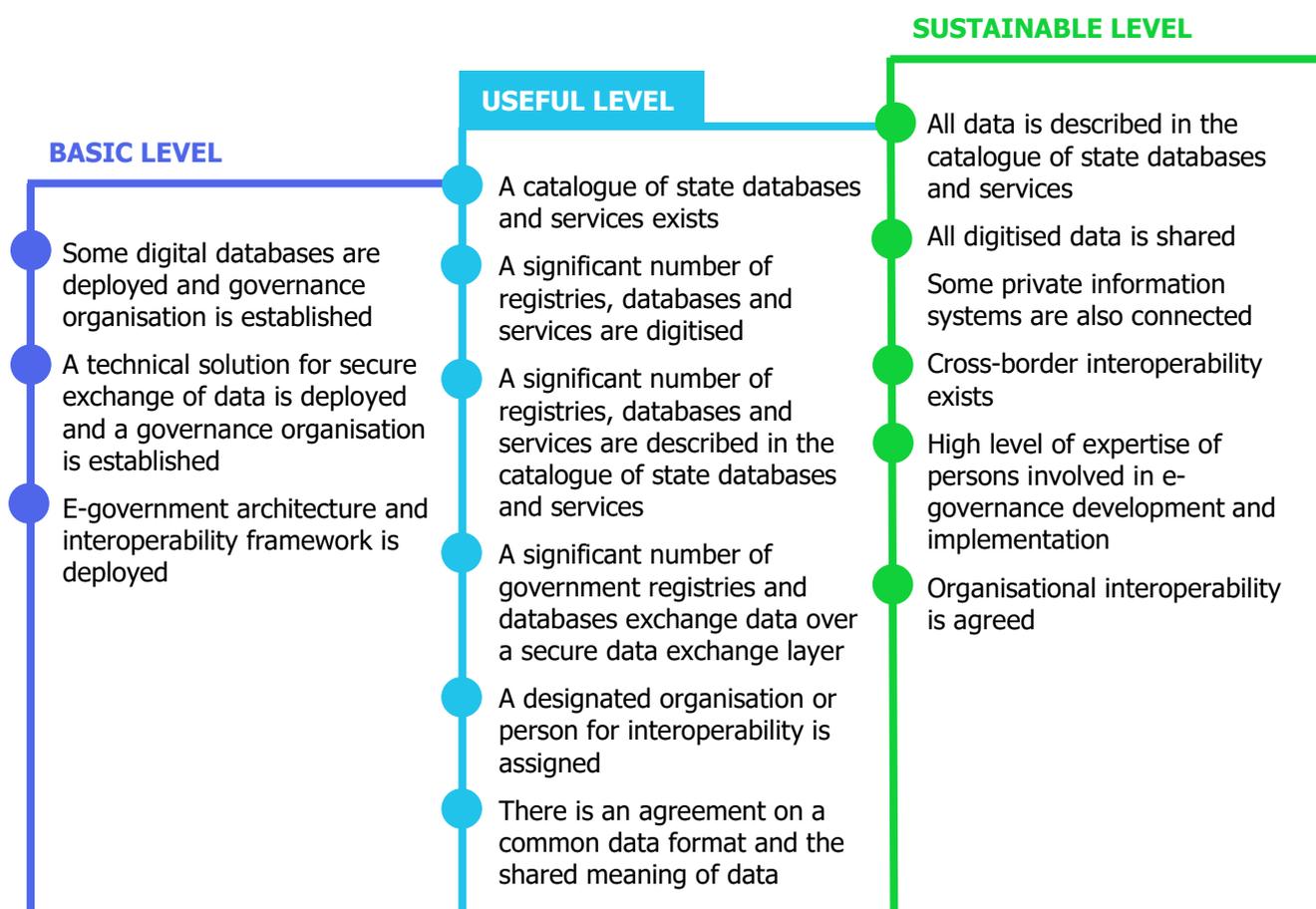
to X-Road to securely exchange data.

It should be noted that the X-Road in use in Palestine since 2014 is version 5 of the solution, which is no longer the latest version available. There are plans to upgrade X-Road to the newest version, which is expected to provide more security guarantees. Funding is currently sought to this end.

Two respondents also mentioned that they felt citizens were worried about the security of data exchange (incl. for online payments), because of the tense political situation and incomplete legislative framework.

All in all, Palestinian ministries are welcoming the chance to exchange data securely over X-road and taking part in nation-wide projects, but automation of e-services remains a problem as there are not many services that would use X-Road. There is a shortage of staff automating processes and reengineering services, both at the ministries and at MTIT who provides technical support. Many services are not yet operational as they require an e-payment solution.

Maturity level of Palestine: USEFUL

SUSTAINABLE LEVEL

USEFUL LEVEL

BASIC LEVEL

- Some digital databases are deployed and governance organisation is established
- A technical solution for secure exchange of data is deployed and a governance organisation is established
- E-government architecture and interoperability framework is deployed

- A catalogue of state databases and services exists
- A significant number of registries, databases and services are digitised
- A significant number of registries, databases and services are described in the catalogue of state databases and services
- A significant number of government registries and databases exchange data over a secure data exchange layer
- A designated organisation or person for interoperability is assigned
- There is an agreement on a common data format and the shared meaning of data

- All data is described in the catalogue of state databases and services
- All digitised data is shared
- Some private information systems are also connected
- Cross-border interoperability exists
- High level of expertise of persons involved in e-governance development and implementation
- Organisational interoperability is agreed

Recommendations

X-Road upgrade. Upgrade to new version of X-Road with renewed training to representatives of ministries, to guarantee effective operation and information security.

Reinforced implementation of Zinnar. A reinforcement of the Zinnar interoperability framework is recommended, to have a clear and updated overview of the state's information system as a whole. To guide future developments, information is needed on the existing information systems, which data are collected and processed in which information systems, who the contact persons of different information systems are, on which legal bases the information systems are operated and the data is processed, and which are the reusable components ensuring interoperability.

2.6. Secure digital identity, digital signatures

For e-governance services to be useful for all types of governance tasks, it is essential that the persons using them can identify themselves in a secure manner. This requires the development of a digital identity concept and tools. This can include digital ID or mobile ID together with a digital signature. Signatures must be secure enough to be recognised as evidence in court or similar situations.

Current situation in the State of Palestine

Public hospitals are connected to the Ministry of the Interior via X-Road and each newborn is assigned a unique persistent identity number at the hospital when they are born. The identity number is used for all citizens in West Bank and Gaza and is included on the Palestinian ID card.

The Ministry of Interior has been planning to add biometric information to passports and ID cards, but the related equipment has not been released by Israel since March 2018.
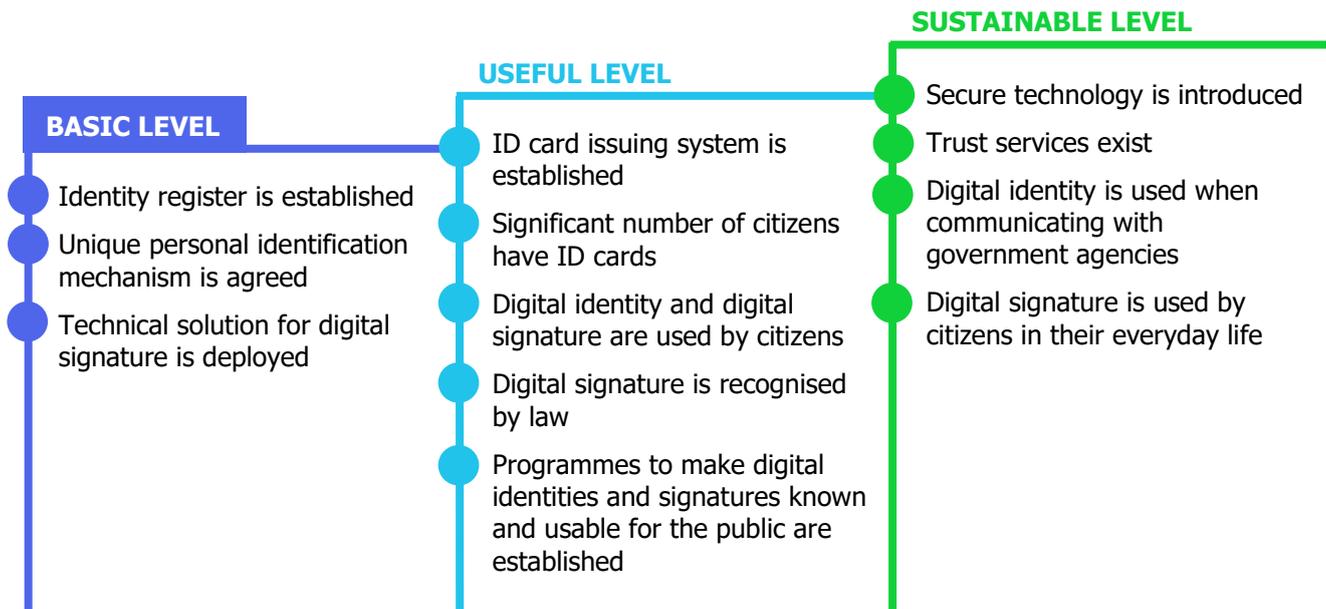
For digital identity, almost all government information systems have user names and passwords in use. There have been plans on introducing smart ID cards and trust services and the long-term plan is still to establish a Certification Authority and implement a solution based on Public Key Infrastructure (PKI), which would also allow for digital signatures. However, this solution takes time and currently MTIT efforts are directed at implementing a single sign-on (SSO) as a temporary solution that can be used to access all e-services.

It should be mentioned that the Palestine Monetary Authority (PMA) started working on a PKI solution already in 2010. One of its main objectives was to provide banks with a possibility of centralised authentication, encryption and signing. Initially the objective was to issue smart cards to clients, but recent trends favour mobile solutions for storing certificates. Although the PKI project is still under PMA control, its implementation requires close cooperation with other authorities and PMA does not see itself as in charge of the decision on how to proceed with the project. Also, they do not see themselves as the main responsible authority for PKI in the future, mainly because they do not have the staff to manage this complex service. However, they would be able to support MTIT on technical and procedural matters related to establishing PKI in Palestine. The MTIT stated in the questionnaire that digital identification infrastructure is planned to be implemented in partnership between the public and the private sector, where the government is responsible for licensing and auditing and the private sector is in charge of developing certification services.

According to the MTIT, it is foreseen that the digital identity and trust services would comply with the requirements set by the European Union's Electronic Identification and Trust Services Regulation (eIDAS), which would allow for mutual recognition of digital identities and trust services with all EU member states.

According to the interviewees, the main success factors for PKI include creating market need by promoting digital banking and electronic payment of utility bills (people currently prefer to pay in cash, as online payment is not widely available. A couple of interviewees also pointed out the importance of legislative acts, which are either partly outdated or are not sufficiently enforced (e.g. courts and the police are not dealing with electronic transactions).

Maturity level of Palestine: BASIC

BASIC LEVEL
- Identity register is established
- Unique personal identification mechanism is agreed
- Technical solution for digital signature is deployed

USEFUL LEVEL
- ID card issuing system is established
- Significant number of citizens have ID cards
- Digital identity and digital signature are used by citizens
- Digital signature is recognised by law
- Programmes to make digital identities and signatures known and usable for the public are established

SUSTAINABLE LEVEL
- Secure technology is introduced
- Trust services exist
- Digital identity is used when communicating with government agencies
- Digital signature is used by citizens in their everyday life

Recommendations

Careful implementation of the e-payment/SSO project. Having the strategic importance and extensive scope of this project in mind, it is essential to involve international best practice and expertise as well as continuous monitoring and reporting to ensure its successful implementation. After the technical implementation, significant efforts need to be turned to user acceptance and actual usage through media and communication campaigns.

Strategy for digital identity management. The implementation of digital identity and Public Key Infrastructure is a very important long-term goal. Considering the significant time required for its planning and implementation, it would be useful to conduct a comprehensive analysis on the legal, organisational and management aspects (incl. establishing a Certification Authority) of digital identity management and develop a strategy and action plan for identity management development together with a selection of the token(s) of digital identity to be used and the human resources, skills and communication efforts needed for this project.

2.7. Digital skills

The rapid development of digital technologies requires both public officials and citizens to acquire skills needed to use the new tools and enjoy the possibilities of a digital society. In addition to equipping all citizens and public officials with basic skills, authorities need ICT specialists with advanced IT and project management skills to maintain ICT architecture and user support, manage ICT procurements, and implement the government's digital strategy.

Current situation in the State of Palestine

Most public officials in Palestine have computerised workplaces. All organisations interviewed had an IT unit. Out of all staff, the percentage of ICT personnel was in most cases between 1% (Ministry of Finance, Ministry of Health) and 8% (General Personnel Council), with the exceptions of the Palestine Central Bureau of Statistics (15%) and MTIT (20%). Based on the questionnaire response by MTIT, most of the ICT positions are currently filled and ministries do not encounter difficulties with filling ICT vacancies. Furthermore, the retention rate of IT staff is said to be slightly below the overall retention rate.

Based on the interviews, ministries are generally satisfied with the level of digital skills of their staff. They

mainly see a regular need for upgrading skills as part of life-long learning, and to be able to make full use of existing technology and systems. This was further confirmed by the MTIT survey response where they evaluated the digital skills of their staff and rated all 11 skills as average or higher for non-ICT staff and good or excellent for all ICT staff. According to MTIT, training needs assessments are conducted for the most needed skills for better performance of job assignments and afterwards a prioritised list is developed to be implemented when financial resources are available.

Although some shortages in specialised digital skills were pointed out (e.g. advanced information security issues, specific skills related to the e-payment project), the shortage of staff was seen as a more pressing issue. For instance, according to MTIT, some 32 additional people are to be locally recruited in the near future for the e-payment system and other related projects.

Universities offer ICT education at the tertiary level, but this mostly includes computer systems engineering programs, while no curricula are specifically dedicated to e-government, cyber security or other specialised area related to e-government.

MTIT provides trainings and seminars in their training centre for civil servants and fresh graduates, and sees financial possibilities as the main challenge. Lack of financial incentives is also seen as one of the main reasons why the public sector is not a particularly attractive employer in general.

Local private sector companies and their staff are seen as highly skilled and good partners whom the public sector is glad to involve as experts, especially for the development of specialised systems. Some ministries in need of specialised systems also purchase solutions from abroad (e.g. customs programs). However, because of a lack of resources, private sector companies can sometimes only be involved in case of availability of donor funding.

MTIT and the e-Government Core Group view the digital skills of the general population generally as adequate. According to the Household Survey on Information and Communications Technology conducted by the Palestinian Central Bureau of Statistics in 2019[10], about 73% of individuals (10 years and above) in Palestine, who use computers, have basic skills such as copying files and folders and sending emails with attachments, whereas 46% have standard skills such as installing or configuring software and using computational formulas on spreadsheets. 11% of individuals have advanced skills.

Awareness-raising campaigns have been organised to this end, led by the private sector and local governments. MTIT believes that such campaigns and trainings should be expanded and have already foreseen awareness-raising activities as part of the e-payment/SSO project.

In 2016, Palestine Polytechnic University led a study on readiness for e-government and found out that digital skills of Palestinians are not a significant issue (people can use technology and have access to internet), but the main challenge lies in trusting electronic systems, especially for services where payments are required.

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[10] http://www.pcbs.gov.ps/portals/_pcbs/PressRelease/Press_En_17-5-2020-com-en.pdf (7 December 2020)

Maturity level of Palestine: USEFUL

BASIC LEVEL

- Government has an understanding of the digital skills needed for effective operation
- Limited awareness-raising campaigns on digital literacy and topics are conducted among public servants and the general public

USEFUL LEVEL

- Continuous awareness-raising and training on digital literacy of the general public
- Continuous development of ICT skills of public officials, incl. on-the-job learning
- Ability of involve temporary IT resources when needed
- IT staff have access to continuous professional training
- The management has sufficient digital skills to guide IT developments based on business needs and a long-term IT strategy

SUSTAINABLE LEVEL

- Government is able to attract and maintain specialists with high level of expertise to develop and implement e-government
- Government regularly involves private sector for additional competences, partnering models are in place
- The management has advanced digital skills and have embedded IT into the planning, management and development of all areas of activity
- A model of digital competences is implemented, which covers all roles in the organisation and supports value delivery

Recommendations

Digital skills training for various target groups. The level of digital skills in the society and technologically competent human capital is one of the key success factors in delivering digital transformation in practice. Training courses need to be based on skills assessment and carried out with the possibility to obtain a certificate of completion. Since digital services and infrastructure are critical for society, cyber hygiene and individual cyber competences need to be set as standard for not only civil servants but for the whole society. Curriculum development at universities needs not only to engage private sector needs and demands but it is highly recommended to involve practitioners in lectures, seminars and practice programmes at universities. It is also important to raise the citizens' level of trust towards e-services, but this can mainly be done through actual user experience, making sure that services are reliable and easy to use.

Improving capacities for ICT in education. To support the mainstreaming of digital skills in curricula at all levels of education, it is important to ensure that teachers possess the necessary modern digital skills and know how to use them in their area of teaching as well as to invest modern infrastructure.

2.8. Access to services

To be able to benefit from the advantages a digital society brings, citizens and businesses should be able to access public services online. These should not simply be available, but also easy to access on different devices and platforms, inclusive and user-friendly.

To communicate with the public, the administration should establish a device and technology neutral digital information channel, such as a government portal, operating on different devices. This information channel is used to provide both information services and procedural services. A well-functioning digital information channel will transform government services into a single whole and improve the availability of public services.

Current situation in the State of Palestine

Palestinian ministries offer a limited amount of e-services. Ministries have websites where information about the ministry, its functions, contacts and the public services it offers are published online. However, as a rule, such websites are informative and not interactive. Furthermore, not all websites of ministries seem to be regularly updated. Also the AMAN-Transparency Palestine 12th annual report[11] points out that according to their survey conducted in 2019, "a sample of 34 public institutions showed that 5 of these institutions do not have websites, and 3 have not updated their websites for the past three years or more". For those who had websites, only 62% had published all services provided to the public and the majority had deficiencies related to publishing contact details, results of tenders and purchased, strategies and action plans.

At the same time, there are good examples that stand out when it comes to provision of e-services. For instance, the Ministry of Transport allows citizens to request the renewal of their driver's license online and go to their nearest post office to pick it up and pay the related fee. In their online portal citizens can also access information about traffic violations and results of license examinations. The Ministry of Transport also has a mobile app, which makes it easier to renew one's driver's license by prefilling certain information before going to the ministry's branch office.

It is also possible for Palestinians to make online queries to the Land Register, e.g. about transactions related to land and apartments or to check purchase order transactions. One can also make a query to the Labour Register to check for work permit status for working in Israel or to the Post Register to track postal packages inside the state. Other services include the GeoMolg Platform for viewing geodata, the COVID-19 inquiry service, inquiry about the status of medical transfer transactions, applications for arbitration license and legal translation certificates, salary slip inquiry for civil servants, e-school service (for pupils, teachers and parents), etc. E-services seem to be priced at the same level as their manual versions.
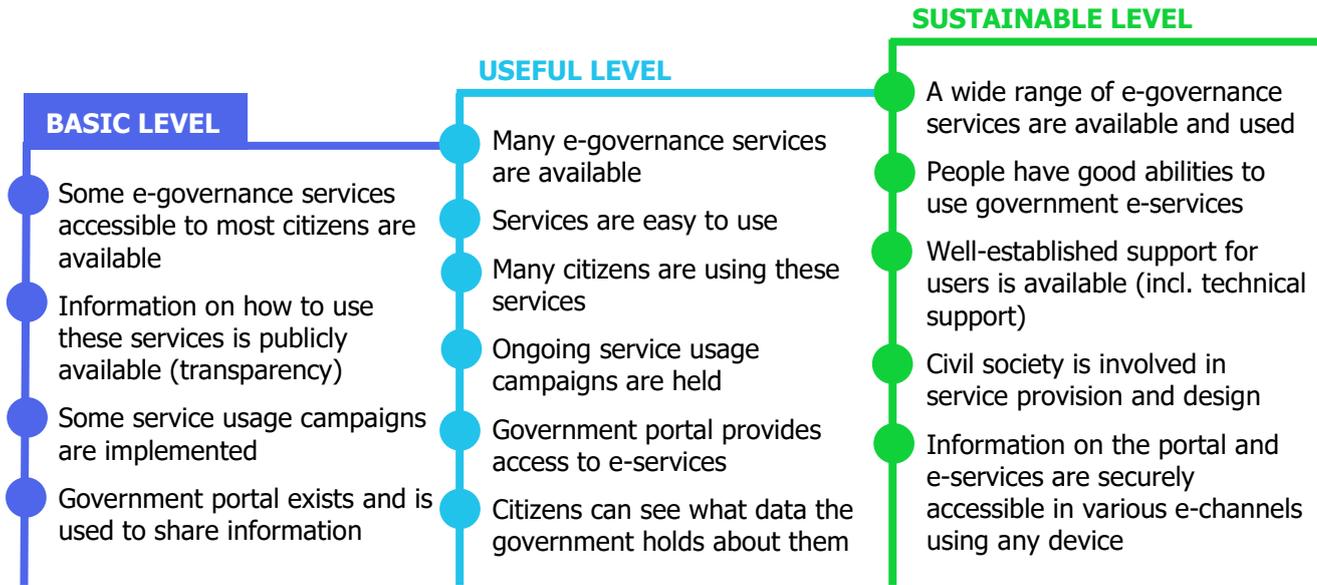
All ministries have new services in sight, which they would like to develop and are working in that direction. The interviewees mainly listed external factors that acts as constraints – e.g. unavailability of a nation-wide authentication solution and payment solutions), but also mentioned the need to update the legal framework.

MTIT is currently in the tendering process of creating a new government e-service portal, a single sign-on portal for the authentication of citizens using government provided e-services, a mobile app, and a payment gateway. The e-payment gateway will allow citizens and businesses to make online payments to the government, including payments for e-services consumed. This project is allocated 3.5 million USD and is carried out in cooperation of MTIT and the Palestine Monetary Authority with the input of a multitude of further stakeholders.

To complement the new developments, post offices will be turned into one-stop-shops providing access to computers, printers, data connectivity, etc. This will provide the citizens a good opportunity to use their single sign-on to consume public services. Some agreements between MTIT and ministries are already in place to provide certain certificates through post offices (e.g. between MTIT and the Ministry of Justice). However, as one interviewee pointed out, it will be a challenge to make sure that there are no delays related to the delivery of certificates after payment is made online. Other challenges include developing trust in electronic transactions and training public authorities to deal with electronic transactions. There are plans in place for awareness-raising campaigns and the Palestine Monetary Authority is negotiating with banks persuading them to provide internet banking access to all of their clients.

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[11] https://www.aman-palestine.org/cached_uploads/download/2020/10/06/12th-annual-report-final-1602000805.pdf (7 December 2020)

Maturity level of Palestine: BASIC

SUSTAINABLE LEVEL

USEFUL LEVEL

BASIC LEVEL

- Some e-governance services accessible to most citizens are available
- Information on how to use these services is publicly available (transparency)
- Some service usage campaigns are implemented
- Government portal exists and is used to share information

- Many e-governance services are available
- Services are easy to use
- Many citizens are using these services
- Ongoing service usage campaigns are held
- Government portal provides access to e-services
- Citizens can see what data the government holds about them

- A wide range of e-governance services are available and used
- People have good abilities to use government e-services
- Well-established support for users is available (incl. technical support)
- Civil society is involved in service provision and design
- Information on the portal and e-services are securely accessible in various e-channels using any device

Recommendations

Citizen/e-service portal. The unified e-government portal that is currently in the planning pipeline should offer an overview of all services (both manual and online) provided by different institutions in a one-stop-shop citizen portal manner. The portal must be accessible on different devices. Ideally, the information in the portal would be automatically retrieved from the database of public sector databases, where each ministry and authority keep their data up to date.

Computer skills training and awareness-raising. Basic training on computer skills and use of e-services as well as general awareness-raising on e-government should be organised for different target groups (adults, the elderly, other vulnerable populations, incl. people with audio-visual disabilities).

2.9. E-participation, e-democracy

E-democracy is an integral part of a nation's digital transformation. The smart use of digital tools enriches and transforms existing governance models and practices, increasing the transparency, responsiveness and accountability of government. It also offers citizens an additional opportunity to take part in political processes, resulting in better political outcomes for the society as a whole. For successful e-governance it is beneficial to examine how it is possible to support civil society and encourage citizen engagement. This is a part of general computer literacy development.

Current situation in the State of Palestine

Citizen engagement does not seem to be in the responsibility area of any particular authority. Ministries usually provide an opportunity to citizens to request for information or provide feedback to services. However, the interviews did not reveal any regular procedures for proactive citizen engagement.

The government has launched an open data portal at https://opendata.ps. In October 2020, the portal included 3 datasets: on post offices and services, on licensed telecom providers, and on incubators and accelerators. The government should seek to open up more datasets, also as APIs.
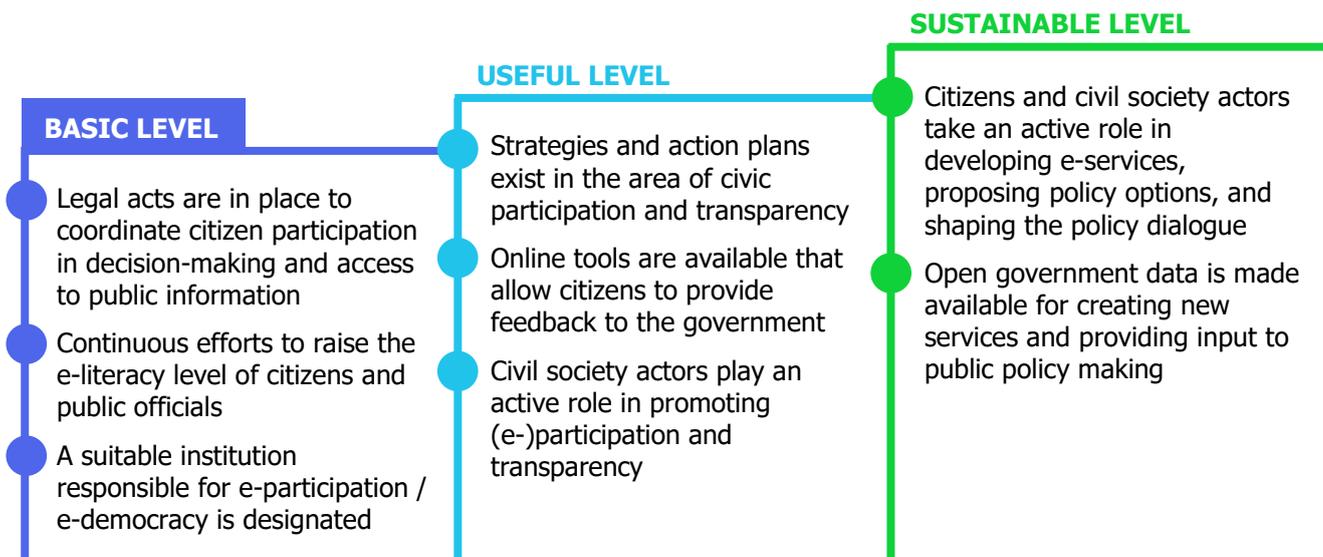
According to Transparency International's Global Corruption Barometer 2019 focusing on the Middle East and

North Africa[12], 32% of Palestinians claimed they were asked to pay a bribe and 17% of public service users claimed to have paid a bribe as an expression of gratitude in the previous 12 months, both of which mark the highest percentages in the region. The report notes that a third of Palestinians having used their personal connections to get the public service they needed, but also points out the issues of sexual extortion and offering bribes in exchange for votes. Some 62% felt that corruption had increased in the previous 12 months. Some 45% of Palestinians thought that their government did well in tackling corruption, whereas 51% felt that the government was doing poorly. Three thirds of the Palestinian respondents indicated that government corruption is a big problem and 56% were not satisfied with the level of democracy in their country. Yet 51% of respondents felt that ordinary people can make a difference in the fight against corruption.

The 12th annual report of AMAN-Transparency Palestine[13] issued in October 2020 draws attention to the main challenges facing governance integrity and anti-corruption methods, which include the lack of accurate public information published, the poor transparency of actions and decisions of some government officials, opaque public sector recruitment procedures, the failure to pass certain laws (incl. the Access to Information Law), and the failure to form the Palestinian Telecommunications Regulatory Authority that affects the accountability for telecommunications companies and ensuring fair competition among service providers. As one of the key recommendations, the report notes that "the government must urgently complete tools and procedures needed for the e-government to function".

It should be further noted that in October 2019, the government adopted the country's first whistleblower protection system, which protects both public and private entities reporting corruption and guarantees their anonymity[14].

Maturity level of Palestine: BASIC

BASIC LEVEL

- Legal acts are in place to coordinate citizen participation in decision-making and access to public information
- Continuous efforts to raise the e-literacy level of citizens and public officials
- A suitable institution responsible for e-participation / e-democracy is designated

USEFUL LEVEL

- Strategies and action plans exist in the area of civic participation and transparency
- Online tools are available that allow citizens to provide feedback to the government
- Civil society actors play an active role in promoting (e-)participation and transparency

SUSTAINABLE LEVEL

- Citizens and civil society actors take an active role in developing e-services, proposing policy options, and shaping the policy dialogue
- Open government data is made available for creating new services and providing input to public policy making

Recommendations

Legal acts to coordinate citizen participation. The law on access to public information is a cornerstone of transparent and accountable government, which allows citizens to fully benefit from a digital government. It is important prioritise facilitating access to information to restore citizens' confidence in official and constitutional establishments, which would go well hand in hand with the implementation of electronic archiving systems at ministries and institutions.

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[12] https://www.transparency.org/en/gcb/middle-east-and-north-africa/middle-east-and-north-africa-1 (27 October 2020)
[13] https://www.aman-palestine.org/cached_uploads/download/2020/10/06/12th-annual-report-final-1602000805.pdf (7 December 2020)
[14] https://voices.transparency.org/building-a-whistleblowing-culture-in-palestine-564c935a9fc5 (7 December 2020)

Proactive involvement of citizens. Continue developments related to the open data portal and establish an open data strategy. E-participation possibilities should be taken into account when developing the citizen/e-service portal. Use of crowdsourcing for citizen involvement in policy-making and implementation of accountability mechanisms (e.g. Solve It[15] citizen engagement initiative by the Palestinian Prime Minister's Office and UNDP/PAPP, use of IT tools for awareness-raising and reporting on corruption, IT-tools for state budget transparency, etc.).

2.10.   Information security

The growing cyber threats in the world require public administrations to focus on e-governance security measures. It is important to be aware of the threats posed to e-governance. The coordinating institution is required to organise the development, monitoring and supervision of relevant information security rules and measures. A designated organisation in the form of a CERT/CIRT should be established, proper audit processes established, and all ministries and authorities should be aware of and use adequate security measures. The cybersecurity framework and the system of security measures should be established by legislation.

Current situation in the State of Palestine

The authority responsible for cyber security policy development in the State of Palestine is MTIT, which hosts the Palestinian Computer Emergency Response Team (CERT) since 2015. There is a Cybercrime law in place since 2018, which has attracted some controversy regarding its proportionality. There is no cyber security strategy in place.

According to the ESCWA report, the State of Palestine has an electronic crimes unit and a technical laboratory to investigate and detect electronic crimes[16].

The national CERT is the national center for information security, the first point of response for computer emergencies, a contributor to drawing up information security strategies and policies. The CERT also contributes to raising awareness in the public sector as well as in the society in general. Some 7 people work at the CERT, cooperating with network and security personnel in other ministries and in the security forces.

In early 2019, the CERT carried out a readiness assessment survey in cybersecurity among 15 ministries and 20 government institutions in Palestine. The survey showed a shortage of qualified workers in the field of cyber security and a lack of financial resources allocated to support and develop the cyber security sector (e.g. lack of hardware and software to secure computer networks, inability to attract competent staff, lack of awareness among public officials).

It should be noted that the CERT website and social media channels have not been updated since November 2019. Based on the overview of activities provided by MTIT, the CERT had dealt with two security events (related to geomolg.ps and courts.gov.ps) and published two security reports in January-September 2020. However, the Ministry of Interior pointed out in their interview that the CERT had done a thorough review of their security practices in 2019, and there are concrete plans to expand the capacity of the CERT by hiring new personnel, purchasing new hardware and software and organising additional training in the coming years.

Based on the interviews with ministries, the main security controls applied include firewalls (several note having next generation firewalls in place) and ministry-specific security policies. However, there are no nation-wide standards for public authorities or digital service providers on information security issues. Guidelines and training for staff on cyber hygiene do not seem to be common.

According to MTIT, the CERT is periodically reviewing the information security of specific authorities (e.g. Ministry of Interior in 2019), but as information security remains a challenge for Palestinian public authorities,
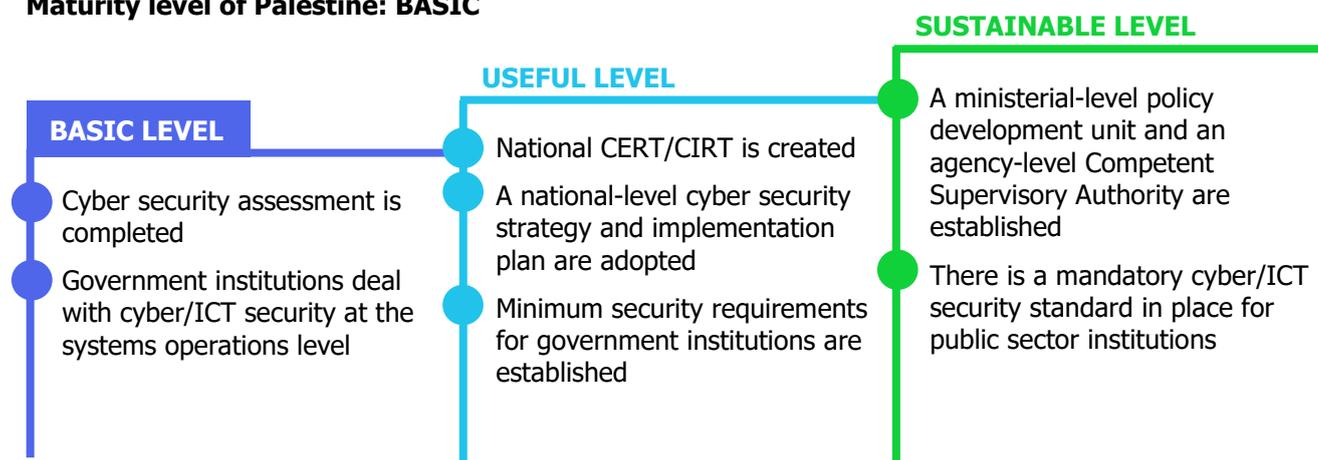
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[15] https://www.solveit.ps
[16] https://www.unescwa.org/publications/arab-digital-development-report-2019, page 52 (2 October 2020)

further funding has been set aside for security testing. In parallel, MTIT is working on establishing an Information Security Management System and has proposed a Security Policy based on international standards to the Cabinet for approval.

Although there is a cybersecurity committee formed at MTIT, ministries interviewed see the need for more cooperation on cyber security issues, including on standardisation.

Maturity level of Palestine: BASIC

BASIC LEVEL

- Cyber security assessment is completed
- Government institutions deal with cyber/ICT security at the systems operations level

USEFUL LEVEL

- National CERT/CIRT is created
- A national-level cyber security strategy and implementation plan are adopted
- Minimum security requirements for government institutions are established

SUSTAINABLE LEVEL

- A ministerial-level policy development unit and an agency-level Competent Supervisory Authority are established
- There is a mandatory cyber/ICT security standard in place for public sector institutions

Recommendations

Cyber security strategy. Create the necessary components of cyber security policy development (cyber security assessment, strategy, implementation plan, policy unit, policy coordination format). Establish a regular cycle to review such components in response to changes in the environment and sectors.

Cyber security standards and requirements. Establish a cyber security standard for the public sector that all public sector authorities need to comply with. Identify essential service providers and set cyber security requirements for them to follow.

Training and awareness-raising. Develop cyber security programmes to enhance the skills of public officials and of the general population (e.g. cyber hygiene courses for public officials, information security campaigns for the public, cyber security guidelines for homes and offices, etc.).

2.11. Telecommunications and digital infrastructure

Access to ICT is essential as a basic prerequisite for e-governance. A minimum level of ICT infrastructure capacity is needed to implement e-governance projects. Communications networks are built by commercial companies, while the state's task is to regulate the development of the networks and provide favourable conditions for residents to access the network. For example, electronic communications legislation should be developed and enforced. It is the responsibility of the state to connect all national and local government agencies, schools, libraries, hospitals and other public authorities, using the existing network.

Current situation in the State of Palestine

According to the ICT Household Survey of 2019[17] conducted by the Palestinian Central Bureau of Statistics,

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[17] http://www.pcbs.gov.ps/Downloads/book2510.pdf (26 October 2020)

Palestine had a mobile phone penetration rate of 91% per 100 inhabitants and 93% of the population was covered by the cellular 3G networks. The average internet speed was measured at 11 Mbps. Some 86% of households have a smartphone, 33% own a computer and 80% have access to internet at home. Some 72% of adults use the Internet and 90% own a cellular phone (73% own smartphones).

The Telecommunications Law was adopted in 1996 and is in need of an update. Until now there is no independent sector regulator in place, as the Palestine Telecommunications Regulatory Authority has not yet been set up due to the unstable political situation. A new law on telecommunications was developed in cooperation with ESCWA, which included the establishment of a Telecommunications Regulatory Authority, but the law is still in process of being adopted. According to the World Bank Economic Monitoring report from 2020[18], the outdated law and lack of an independent regulator have resulted in "a lack of responsiveness and transparency to technical and regulatory issues, with a negative impact on consumers in terms of pricing and quality of service".

However, the current telecommunications regulations allow for competition in the market and there are several private companies active in the field: one fixed (landline) provider who also owns the national Internet infrastructure[19] (PalTel) and two mobile companies providing mobile services (voice, text and data) (Jawwal and Ooredoo), with MTIT expecting a third company to enter the market according to the updated ICT Strategy. According to the ESCWA report on Arab Digital Development 2019[20], fibre-optic networks are available for public and private sector institutions, but not for private homes. Currently 2G and 3G standards are used, as Israel does not allow Palestine to use the frequencies and spectrum for 4G and 5G despite e.g. a resolution adopted by the 2019 ITU World Radio Communications Conference calling on Israel to cease obstructing 4G and 5G for Palestine. Moreover, importing the related equipment is very difficult. MTIT recognises this as one of the main challenges to digital transformation.

In particular, this has caused issues during the COVID-19 pandemic, as teaching was organised online and there are still issues with internet connectivity and speed. Indeed, the connections speed is often just 4 Mbps, which does not meet the needs of the households and businesses. Ministry of Finance has held discussions with internet service providers to find solutions to improve access to internet, but this is not the only issue, as many families also do not have laptops or enough devices for all students in the family to attend e-school.

The Ministry of Telecommunications and Information Technology through the Government Computer Centre hosts the secure government network (VPN), which is compulsory for all public authorities to use. The ministry also provides other infrastructure for other ministries to use, such as central anti-virus programs and firewalls together with services such as developing websites for other ministries and helping with programming. The capacities of the government computer centre will soon be expanded with 1.3 million USD foreseen for cloud computing and disaster recovery (a back-up location outside Palestine).
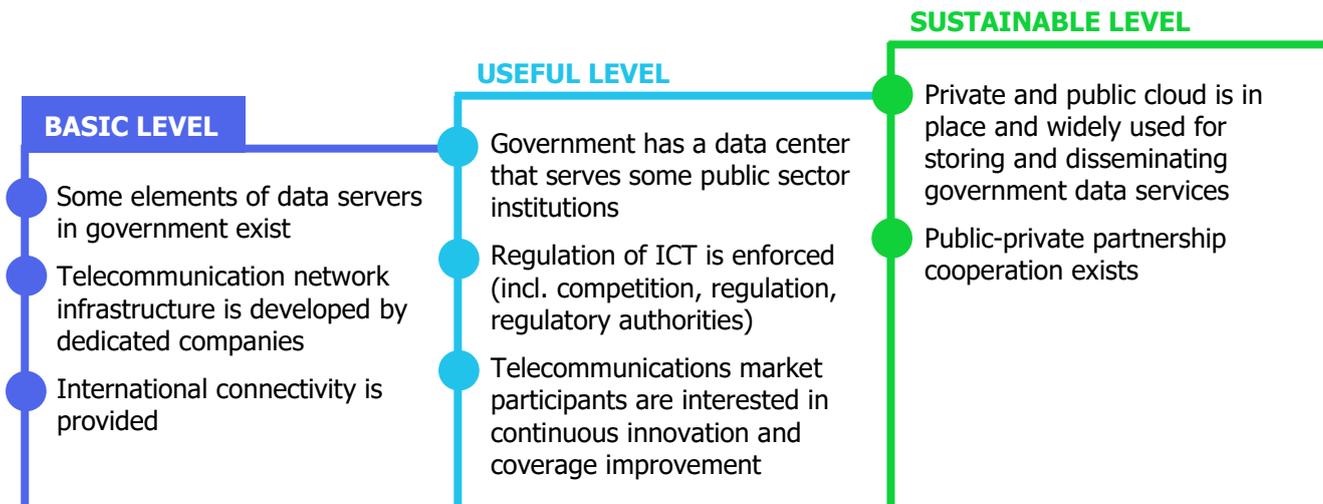
Most ministries use local hosting for all of their systems, some ministries also have back-up sides and have high-availability instances available. Although MTIT provides cloud services on request, most interviewees stated that their organisation does not use cloud services.

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[18] http://documents1.worldbank.org/curated/en/844141590600764047/pdf/Economic-Monitoring-Report-to-the-Ad-Hoc-Liaison-Committee.pdf (8 October 2020)
[19] https://www.unescwa.org/publications/arab-digital-development-report-2019, page 41 (2 October 2020)
[20] Ibid.

Maturity level of Palestine: BASIC

BASIC LEVEL

- Some elements of data servers in government exist
- Telecommunication network infrastructure is developed by dedicated companies
- International connectivity is provided

USEFUL LEVEL

- Government has a data center that serves some public sector institutions
- Regulation of ICT is enforced (incl. competition, regulation, regulatory authorities)
- Telecommunications market participants are interested in continuous innovation and coverage improvement

SUSTAINABLE LEVEL

- Private and public cloud is in place and widely used for storing and disseminating government data services
- Public-private partnership cooperation exists

Recommendations

<u>Wider WiFi access.</u> As an alternative to the existing limitations on new mobile network generations rollout, focus can be turned to wider access to WiFi. The importance of lightweight multimedia design for public services should be kept in mind.

<u>Free mobile access to government websites</u>. Access to government websites from mobile operators' data networks should be free, i.e. not affect users' data allowances.

<u>Development of government network.</u> Continue the joint data network initiative involving all public authorities to ensure connectivity and the general functioning of the e-government system.

2.12.   International cooperation

In order to benefit from the advantages that e-governance can provide for international relations (trade, free movement, research and education, etc.), it is important for states to take part in international cooperation (regional or other). Such cooperation helps states to learn from one another and develop joint projects.

Current situation in the State of Palestine

Government authorities are keen on international cooperation in the field of e-government and according to MTIT e-government related issues are being followed up on. However, even if MTIT can be considered as responsible for e-government cooperation, there does not seem to be a strategy and clear process related to coordinating international cooperation in the field of e-government.

All ministries and authorities interviewed provided examples of cooperation with international counterparts, when asked (e.g. General Personnel Council has exchanged experience on organising examinations with Belgium, Ministry of Finance has cooperated on provision of public services by establishing a connection between the customs offices of Palestine and Jordan, etc.).

Other examples of bilateral cooperation include the collaboration with Estonia on the implementation of the X-Road secure data exchange solutions, for which the State of Palestine has also signed a Memorandum of Understanding with Estonia, as well as with the United Arab Emirates.

According to the UN-ESCWA report, the State of Palestine takes part in the Arab Forum for Internet

Governance.

Maturity level of Palestine: BASIC

BASIC LEVEL
- Suitable body/persons responsible for cooperation are designated
- A representative of a country is participating in international cooperation

USEFUL LEVEL
- A cooperation strategy exists
- A representative of a country is regularly taking part in international cooperation
- There are some international projects dedicated to digital transformation

SUSTAINABLE LEVEL
- A country is actively and in a coordinated manner taking part in international projects linked to e-governance
- Cooperation with international academic institutions is established

Recommendations

Digital diplomacy. Ensure that the presence of foreign policy and international relations is well represented in digital channels. A position or a department responsible for representing Palestine and its digital transformation interests should be established as part of Palestine's foreign policy activities. These interests need to be presented towards other countries and international organisations as well as towards technology companies.

It is important that G2G initiatives on international cooperation have clearly articulated aspirations on digital transformation of Palestine and that MoUs between governments include specific action points with a focus on digital initiatives.

Palestine should actively seek digital cooperation models with international organisations that are delivering appropriate competences, reference models and support on digital initiatives (e.g. ITU, OIC-CERT, participation at international e-government events such as the WSIS Forum, etc.). Furthermore, Palestine should actively reach out to technology enterprises for wider and in-depth platform collaboration.

3. Digital maturity of Palestinian municipalities

To look into the digital maturity of larger Palestinian municipalities, 17 of them were invited to take part of a digital maturity assessment survey for municipalities. Six municipalities submitted their responses:
- Beit Jala Municipality (population 17,500)
- Hebron Municipality (population 350,000)
- Al-Bireh Municipality (population 85,000)
- Khan Younis Municipality (population 285,000)
- Ramallah Municipality (population 70,000)
- Gaza Municipality (population 700,000)

A summary of the survey responses is provided below together with recommendations to the municipalities as well as to the central government level to support the digital development of Palestinian municipalities.

3.1. Strategy

In most of the municipalities who responded to the survey, responsibility for digital strategy planning and implementation lies with an IT department. However, in Beit Jala the responsibility is with the planning unit and in Al-Bireh it is divided between all departments of the municipality.

It is noteworthy that the municipalities of Al-Bireh and Khan Younis have both adopted strategic plans to become e-municipalities. Ramallah has an Urban Resilience Strategy, which supports community resilience through investing in smart city approaches. Five out of six municipalities have strategies in place that include priorities related to e-government. These can be largely divided into two: priorities related to public service provision to citizens and development of internal processes. On the one hand, local governments are working on developing their e-service channels (e.g. web portals, mobile applications, social media), specific services (e.g. GIS, transport, housing, ICT in education), and digital infrastructure. On the other hand, attention is turned to digital archiving, financial and human resources management, internal communication, virtual meetings, and efficiency of work.

Main metrics in place to measure progress related to digital development include website activity (6), social media presence and response (6), service request response time (5), digital interactions with the public (5), performance against digital plans (4), digital interactions with businesses (3). Most of the municipalities do not measure energy consumption of ICT operations.

All six municipalities have a specific budget designated for ICT. Apart from one, all municipalities base their ICT budgeting on their long-term digital strategy.

Municipalities see a lot of challenges on their digital transformation journey. Half of the municipalities indicated that process analysis and design constitute a major challenge. Five out of six municipalities stated that the cost of digital development is an issue.
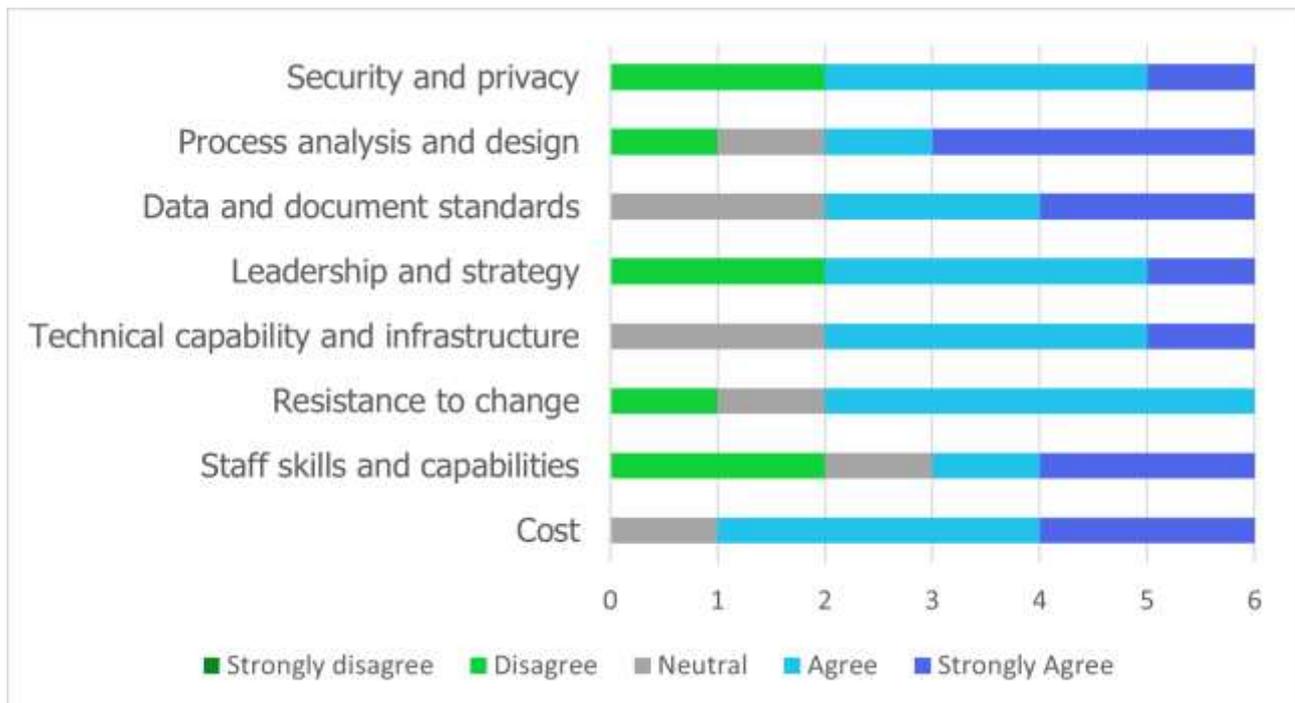

Figure 4: To what extent do you agree that the following items are a challenge for your municipality on the digital transformation journey?

All municipalities agreed that digital delivery of services is the way of the future. Only one out of six municipalities was of the opinion that they currently have too many paper-based forms, whereas five out of six believe that they are doing enough to implement digital technologies.

3.2. Data and internal processes

All six municipalities use electronic records and document management systems (e.g. for financial management and reimbursements, and human resources management). One municipality noted that all of their documents are in electronic form except for documents related to signing of payments, as the law requires these to be on paper.

Internal procedures are archived electronically in 5 of 6 municipalities, with Hebron Municipality noting that all such communication must be in electronic form, otherwise it is not accepted. However, Ramallah Municipality noted the certain documents need to be archived on paper, as required by the law.

All municipalities were asked to estimate what percentage of data in their registers is in digital form. The answers varied from 30% (Beit Jala) to 90% (Gaza, Hebron) with an average of 70%. All municipalities have on-site servers to store data, one municipality has an offline backup and three have data backed up in cloud systems.

Three of the six municipalities have solutions in place to share data between their municipal registers and databases to provide services (e.g. Gaza uses standard database connections through fiber optic connections and web APIs, Ramallah has CRM fully integrated with ERP and linked to e-service channels). Two of the six municipalities also have access to databases and registers at the central government level.

3.3. Digital skills

All municipalities stated that recruitment and retention of ICT staff does not present difficulties for them.

The six municipalities evaluate the skills of their non-ICT staff as "good" when it comes to the use of office software, making internet-based voice and video calls, and use of professional online communities. The results are a bit more varied regarding the use of technologies for teamwork and collaboration, project management using digital tools, planning and conducting ICT procurements, and application of safety and security measures. Non-ICT staff seem to have challenges with understanding and using databases, but no further critical areas were identified, where skills would be assessed as below average. All municipalities claim that their staff's understanding of the benefits of digital tools and digital transformation as well as their willingness to explore new digital development is high or very high.

All municipalities evaluated the skills of their ICT staff in all these categories as "excellent" with very few exceptions.

ICT training is provided to public officials (incl. ICT staff), but not regularly. Despite admitting that there is room for improvement regarding ICT skills, only one municipality claimed to have regular ICT training for non-ICT staff.

3.4. E-services

The municipalities use a variety of digital technologies and channels. All have a website and a Facebook page in place. Five of the six municipalities have developed mobile applications. These provide services to both citizens and businesses, allowing them to access information about the municipality and its news, submit queries and complaints, follow up on applications, pay taxes, access maps, etc. Regarding the different technologies in use, Hebron Municipality also referred to their smart traffic light control room service and smart water metering system.

All municipalities provide wireless connectivity at their local administration and four of the six have established internet access points (e.g. in libraries and public offices).

All of the six municipalities provide the majority of their services online. In all municipalities it is possible to submit complaints and report incidents electronically and apply for commercial registrations and licenses online. In five cases out of six, digital interactions are available for urban planning and development. Four of the six municipalities have e-services related to utilities (electricity, water, waste, etc.). Four municipalities allow electronic payments, which is linked to e-wallets licenses granted by the Palestine Monetary Authority. Only one municipality has a solution for e-health and none of the municipalities provide digital solutions for public transport (e.g. e-tickets, real-time traffic monitoring). However, it should be noted that not all of the services listed above are provided by all municipalities (e.g. Ramallah Municipality does not provide services related to transport, electricity, water and health).

Yet, despite the various online channels in place, citizens still mostly prefer to interact with the municipality in person. The second most popular means of interaction is by phone and electronic communication follows in third place.

According to the municipalities, the main factors preventing them from offering more services online include limited resources (financial and human resources), an outdated legal framework (the need to handle signatures and stamps on paper, missing legislation for e-payment), absence or low quality of central government databases, as well as lack of public awareness and resistance to change.

3.5. Recommendations

Common online platform for municipalities. It should be seriously considered to establish a common e-services platform that could be modified and used by all Palestinian municipalities.

Digital cooperation between municipalities. Ensure stronger cooperation of municipalities on their digital initiatives and roadmaps with the aim to consolidate the scarce financial and human resources and avoid overlapping of similar initiatives.

Legal review. Carry out an audit on the legal limitations and recommendations of simplifying and digitising existing service processes of municipalities.

Joint communication campaign. Establish a joint promotional campaign to increase public awareness of digital services offered and reduce resistance from citizens towards consuming e-services.

Glossary

Abbreviations

3G	Third generation of wireless mobile telecommunications technology
AMAN	Coalition for Accountability and Integrity, a civil society organization that seeks to combat corruption and promote integrity, transparency and accountability in the Palestinian society
API	Application Programming Interface - a software intermediary that allows two applications to talk to each other
ESCWA	United Nations Economic and Social Commission for West Asia
CERT	Computer Emergency Response Team
CIRT	Cyber Incident Response Team
COVID-19	Novel Coronavirus (2019-nCoV)
CRM	Customer relationship management
ERP	Enterprise resource planning
GDP	Gross domestic product
eGA	e-Governance Academy Foundation
eIDAS	European Union's Electronic Identification and Trust Services Regulation
EU	European Union
GeoMolg	Palestinian government platform for viewing geodata
ICTs	Information and Communication Technologies
ID	Identification
IT	Information Technology
ITU	International Telecommunications Union
MTIT	Ministry of Telecom and Information Technology of Palestine
NGO	Non-governmental organisation
OECD	Organisation for Economic Co-operation and Development
OIC-CERT	Organisation of The Islamic Cooperation – Computer Emergency Response Teams
PITA	Palestinian Information Technology Association of Companies
PKI	Public Key Infrastructure
PMA	Palestine Monetary Authority
SDG	Sustainable Development Goals
SQL	Structured Query Language
SSO	Single Sign-On
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDP/PAPP	UNDP's Programme of Assistance to the Palestinian People
VPN	Virtual private network
WSIS	World Summit on the Information Society

Terms

application	software that is dependent on the services of an operating system
Certification Authority	a trusted entity that manages and issues digital certificates and public keys that are used for secure communication in a public network

cyber security	(a) the security of cyber devices and; (b) security against threats created through the operation of cyber devices. Security usually means a situation where risks are not materialised
data	reinterpretable representation of information in a formalized manner suitable for communication, interpretation, or processing
data exchange	Data exchange storing, accessing, transferring and archiving of data
digital identity	a set of data and software, protected with cryptographic means
digital signature	signature based upon cryptographic methods of originator authentication, computed by using a set of rules and a set of parameters such that the identity of the signer and the integrity of the data can be verified
e-governance	electronic governance, the application of information and communication technology (ICT) for delivering government services, exchange of information, communication transactions, integration of various stand-alone systems and services between government-to-customer (G2C), government-to-business (G2B), government-to-government (G2G) as well as back office processes and interactions within the entire government framework
e-government	using the tools and systems made possible by information and communication technologies (ICTs) to provide better public services to citizens and businesses
e-services	library services delivered via electronic means, whether from local servers or provided via networks
encryption	process of encoding messages (or information) in such a way that only authorized parties can read it
interoperability	ability of two or more systems or components to exchange information and to use the information that has been exchanged
open data	data that can be freely used, re-used and redistributed by anyone without restrictions from copyright, patents or other mechanisms of control
payment gateway	a service that authorises a user's transfer of funds between financial institutions to sellers without direct delivery of either bank or credit card account information
personal identity number	numeric code used to authenticate an identity
Public Key Infrastructure	a set of roles, policies, and procedures needed to create, manage, distribute, use, store, and revoke digital certificates and manage public-key encryption
trust service	an electronic service normally provided for remuneration which consists of: (a) the creation, verification, and validation of electronic signatures, electronic seals or electronic time stamps, electronic registered delivery services and certificates related to those services, or (b) the creation, verification and validation of certificates for website authentication; or
X-Road	A solution for secure data exchange implemented in Palestine, originally developed in Estonia
Zinnar	The Palestinian Interoperability Framework set up to understand and agree on the vocabulary, meaning, structure, codes, and business rules pertaining to the exchange of data.

Annex 1: Questionnaire responses

The main Digital Maturity Assessment questionnaire was filled in by the Ministry of Telecommunications and Information Technology (see Annex 1A)

Responses to the questionnaire targeted at larger municipalities (see Annex 1B) were received from the following 6 municipalities:
1. Municipality of Beit Jala
2. Municipality of Hebron
3. Municipality of Al-Bireh
4. Municipality of Khan Younis
5. Municipality of Ramallah
6. Municipality of Gaza

The annexes are available in separate documents.