Centrul de Guvernare Electronică

Concept
"Development of the Private Cloud Platform (MCloud) for Government of Moldova"

DRAFT

Version 1.0

November 2014

Introduction

The Draft Concept "Development of the Private Cloud Platform (MCloud) for Government of Moldova" was developed by the e-Government Center, in the context of the Governance e-Transformation Agenda, as provided by the Government Decision Nr. 710 from 20.09.2011 and Government Decision Nr. 128 from 20.02.2014.

The Draft Concept was presented and launched for public consultation during the Seminar "MCloud Platform: Status-quo and Development Priorities", organized by the e-Government Center and Center for Special Telecommunications for government coordinators for e-Transformation, IT managers from public and private sectors, on November 28th, 2014.

The Draft Concept can be accessed online on e-Government Center's website www.egov.md and MCloud portal www.mcloud.gov.md.

e-Government Center will hold public consultations with representatives of the public, private sectors and academic institutions during December 2014-February 2015. We would like to kindly ask you to send us your comments and suggestions, or address your requests for clarifications to Veaceslav Puscasu, MCloud Operations and Security Manager (e-Government Center) to the email address veaceslav.puscasu@egov.md

We count a lot on your contributions to improve the quality and finalize the Draft Concept "Development of the Private Cloud Platform (MCloud) for Government of Moldova".

We would like to thank you for your contributions and collaboration.

e-Government Center Team!

Executive Summary

Governments across the world are adopting Cloud Computing at the heart of their ICT strategy to secure the benefits of lower cost, faster service and increased innovation; this is particularly true for eGovernment leaders - countries that are advanced in their implementation of online government services.

The Government of the Republic of Moldova has invested in Cloud Computing to support government reform agenda with specific focus on improving public service delivery, government efficiency and performance. The eGovernment Center (eGC), working with the State Enterprise Center for Special Telecommunications (CTS), have established an operational MCloud platform (MCloud Phase 1) that provides innovative services to ministries and government agencies. Using the MCloud enables government entities to secure a wide range of benefits including:

- Better security and resilience for information systems;
- Lower total ICT cost;
- Flexible computing that can be scaled to meet changing demands;
- Access to high quality 24/7 services;
- The opportunity to focus on agency services, rather than ICT infrastructure and integration;
- Use of proven software services;

The MCloud platform also makes a significant impact on the costs of ICT across government as a whole, by gaining benefits of bulk purchasing and capacity sharing.

The adoption of a private cloud model, managed and hosted in secure government facilities within the Republic of Moldova enables the government to maintain the highest levels of security over public information, an issue that continues to be important for trust in government online service delivery.

This document outlines what was achieved so far in implementation of MCloud platform and what is expected to be done in the future to achieve the objectives defined in the Strategic Program for Governance Technological Modernization – Governance e-Transformation Agenda[1].

[1] The Strategic Program for Governance Technological Modernization, described as Governance e-Transformation was approved via Government Decision No. 710, dated September 20, 2011. The Strategic Program identifies a range of problems that the Governance e-Transformation Agenda will address: poor quality in public service delivery, corruption, bureaucracy, inefficiency of public institutions, data centers that are vulnerable to security, high operating costs and reduced quality, and limited use of innovative models of service. Cloud Computing was identified as central to achieving these results.

Contents

1. Why governments worldwide are adopting Cloud Computing

Many leading governments have adopted Cloud Computing as the foundation for their digitization of public services and internal processes and operations. The use of ICT (Information and Communication Technology) is essential for delivery of government services in the 21st century, and cloud computing provides benefits of cost-effectiveness, responsiveness and innovation that are simply not achievable with any other technical foundation.

> *"Cloud computing has brought about a step change in the economics and sustainability of Information and Communication Technology (ICT) enabled service provision. Government is committed to the adoption of cloud computing and delivering computing resources to users as needed (an on-demand delivery model). By exploiting innovations in cloud computing we will transform the public sector ICT estate into one that is agile, cost effective and environmentally sustainable".* UK government 2011

> *"Use of the Cloud Computing business model will reduce public sector ICT investment costs, enable enhanced public sector productivity and innovation and will ultimately contribute to improved service delivery and strategic organizational change".* New Zealand government 2012

> *"The Australian Government will be a leader in the use of cloud services to achieve greater efficiency, generate greater value from ICT investment, deliver better services and support a more agile public sector".* Australian government 2013

Cloud Computing offers the opportunity to increase the value that the public enjoys from the more extensive use of ICT in government, and also addresses the rising expectations of different stakeholders (including citizens and government employees) for better public service delivery.

In line with the European Union's Digital Agenda 2020, the European Commission adopted in September 2012, the strategy "Unleashing the Potential of Cloud Computing for Europe", to speed up the use and harness the advantages offered by cloud computing for economic development, public sector productivity and society as a whole. EU Cloud Computing strategy is crucial for enabling the Digital Single Market and "has the potential to create an additional 2.5 million jobs in Europe, and to boost EU GDP by €160 billion (around 1%) by 2020." EU Cloud Computing Strategy 2012

Benefits to the Government

Cloud Computing provides new opportunities for sharing and re-use of IT infrastructures and software, particularly for processes that are common across government agencies, and for further improving the efficiency and effectiveness of the government workforce. It enables agencies to focus on improving public service delivery and innovation that bring real value instead of ICT infrastructure set-up and integration related work.

Governments can achieve significant cost savings in both capital and recurrent expenditures on computing resources, because workload can be allocated flexibly and dynamically to the available computer systems, and less equipment needs to be owned by government.

Additional benefits of Cloud Computing to Government sector includes:

- time saving through streamlined procurement and system implementation, and on-demand service provision;
- enhanced agility in meeting demand for new services and implementing new policies;

- better security by applying best practice to centralized infrastructure specifically designed to meet government standards.

Benefits to the public

For the public, the Cloud Computing can increase overall agility in providing public services and enhance productivity in implementing government policies. In addition, Cloud Computing can ensure convenient customer experience across different service channels, and create the option to support additional joined-up channels in future.

Summary of the benefits of Cloud Computing

	Cloud Benefits
Management	· Reduce the risk of system failure through highly resilient environment · Improve standardization and interoperability · Provide opportunities for agencies to achieve better value, flexibility and reliability, and make sustainable service improvements · Improve security by consolidating expertise and strengthening protection
Efficiency	· Reduce total cost of ICT investment · Improve asset utilization · Aggregate demand and consolidate systems · Use 'off the shelf' solutions to reduce the total cost of ownership. · Develop and test software without the need for capital investment · Remove the need for costly and lengthy upgrade cycles and procurements. · Reduce duplication · Accelerate data center consolidation
Agility	· Use Cloud "as-a-service" when needed · Increase and reduce capacity instantly · Respond to urgent agency needs · Align expenditure to demand through pay-as-you-go pricing · Respond to changing requirements and peak demand. · Simplify IT for better productivity
Innovation	· Shift focus from asset ownership to service management · Tap into private sector innovation to reduce risk and encourage entrepreneurial culture · Respond to new technologies and devices · Innovate through rapid system development. · Enhance service effectiveness

2. Current Situation of Cloud Computing in Government of Moldova

Why Cloud Computing is important for Government of Moldova

The Government of the Republic of Moldova has set a general strategic objective that by 2020 the government will become more transparent, and responsive, and perform better due to intelligent investments in IT and their massive use in the public sector. At the same time two specific objectives was derived for general one[2]:

a) Modernization of public services through business process reengineering and digitization. Citizens and businesses will easily access through a single government portal information and electronic services provided by the Central Public Authorities. These services will be accessible through various channels: Internet, mobile, kiosks, interactive terminals and others

b) Optimization of government operations through data reuse, interoperability and IT asset consolidation. Citizens will benefit from a connected and efficient government. Public institutions will overcome departmental silos and will operate and interact through a shared technology platform in order to offer high quality services. Citizens will be able to offer personal data to government only once, and public institutions will be able to reuse this data for the delivery of services.

Cloud Computing will allow Government of Moldova to set-up a reliable, flexible, scalable, secure and efficient shared technology platform, which will facilitate the sectorial transformations to achieve these objectives. As result the government agencies will be able to focus on their core operational purpose and service innovations that bring real value and not being hampered by challenges in hiring and retaining highly specialized professionals to set-up and maintain of ICT infrastructure needed to provide government-to-public, government-to-business and government-to-government services.

Cloud Computing will offer the opportunity to increase the value that the public enjoys from more extensive use of ICT in the Government, and addresses the rising expectations of different stakeholders (including citizens and Government's internal users) for better delivery of public services. The public expectations of service and responsiveness from government agencies will be by their experience of using electronic online services from private sector providers. As result the Government will nee to change the way that ICT is used to respond to these expectations:

- Use of complete solutions that are already assured for security, performance and service management.
- Ready access to secure, dedicated private cloud solutions based on a consolidated data center built to meet government requirements
- A range of the best industry ICT services and solutions available off the shelf so that government can use what they need when they need it and avoid duplication of services.

[2] The Strategic Program for Governance Technological Modernization, described as Governance e-Transformation was approved via Government Decision No. 710, dated September 20 2011. The Strategic Program identifies a range of problems that the Governance e-Transformation Agenda will address: poor quality in public service delivery, corruption, bureaucracy, inefficiency of public institutions, data centers that are vulnerable to security, high operating costs and reduced quality, and limited use of innovative models of service. Cloud Computing is central to achieving these results.

What is current state of Cloud Computing in Government of Moldova

Recognizing the main benefits of Cloud Computing technology, the Government of Moldova took the decision to implement a Cloud platform in September 2011 by approving the Strategic Program for Governance Technological Modernization (e-Transformation). As result in February 2013 the first phase of Shared Government Technology Platform (MCloud) based on Cloud Computing technology was lunched.

MCloud, a Government private Cloud, currently provides the following services to government entities:

Infrastructure as a service (IaaS) – is a cloud based service where compute resources (CPU, RAM Storage, networking), in form of virtual data centers, are owned and operated by a government service providers and offered to customer's on-demand. Government agencies are able to self-provision this infrastructure, using a Web-based graphical user interface that serves as an IT operations management console for the overall environment.

IaaS is the most widely-used product on MCloud. More than 70% of the 26 Central Public Authorities (see figure 1) have already chosen to use IaaS as an infrastructure platform for their information systems used to provide government-to-public, government-to-business and government-to-government services.

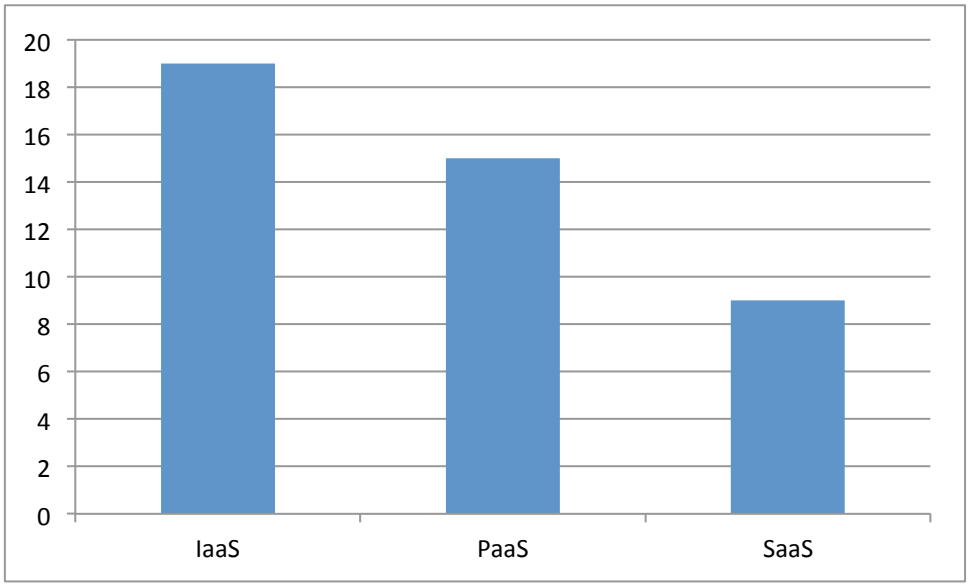

Figure 1. MCloud uptake by Central Public Authorities (for detail see Appendix 1)

Platform as a Service (PaaS) - is a cloud based service where a broad collection of software components (including application platform and database services) are delivered by MCloud provider to be integrated in Central Public Authorities' information systems in order to provide government-to-public, government-to-business and government-to-government service. The following software components and tools are provided from MCloud platform as part of PaaS:

- **MPay** - is a centralized electronic service which provides payment services to sectorial e-services. It integrates payment service providers (including commercial banks, post offices, cash-in terminals), and government entities to enable easy payment by the public for government services. The service is mandated under Government Decisions Nr. 329 from 28.05.2012 and Nr. 280 from 24.04.2013.

- **MSign** – is a centralized electronic service, which allows submitting and verifying digital signatures as well as digital signed documents' exchanges. The service offer several signing tools - the mobile signature and the digital certificate. The service is mandated under Government Decision Nr. 405 from 02.06.2014.
- **MPass** – is a centralized electronic service, which allows authentication and access to digital public services. The service offers different authentication mechanisms: mobile signature, digital certificate, user name and password. The service is mandated under Government Decision Nr. 1090 from 31.12.2013.
- **MConnect** – represent electronic centralized services, which allow exchanging data between government entities systems. The MConnect is mandated under Government Decisions Nr. 655 from 5.09.2012 and Nr. 404 from 2.06.2014.
- **ECMP** – is a centralized electronic service, which provides a single platform for content management. ECMP is mandated under Government Decision Nr. 717 from 29.08.2014.
- **MLog** –represents a centralized electronic service, which aims to provide a secure and flexible logging and auditing mechanism, ensuring registration of operations (events), produced in an information system at a given time. MLog is mandated under Government Decision Nr. 708 from 28.08.2014.
- **MNotify** – is a centralized electronic service, to allow sending notifications (e-mail, sms, etc.) within the information systems held by the ministries, administrative authorities and organizational structures that fall within their competence, as well as by service providing public institutions.

PaaS is the second most widely-used product on MCloud Platform. At time of writing more of 57 % of the Central Public Authorities (see Figure 1) have chosen to use PaaS service to be integrated in their information systems.

Software as a Service (SaaS) – is cloud based services where the Government consumer's use the MCloud provider's applications running on a Mcloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based email).

This type of service was started to be provided with the release in piloting phase of governmental document management system (SIGEDIA). Currently SIGEDIA is piloted in 9 Central Public Authorities.

According to the latest data regarding the MCloud service uptake, presented in Appendix 1, over 80% of Central Public Authorities use at least of one MCloud service and more than 57 % of them use two or more services. The MCloud customers have indicated a high level of satisfaction with the service. At the same time the main reasons for adopting the MCloud, indicated by them, include: lack of capacity and skilled people in house, better security, high data volumes, higher availability and reliability than can be achieved in-house.

What are the lessons learned from using the Cloud Computing in Government of Moldova

The MCloud Phase 1 was launched in February 2013. During the twenty-one months of operational time, there are some lessons learned, which have to be taken into consideration for the next phases of the MCloud development:

- **MCloud service uptake**

The data presented in the Appendix 1 is quite promising, but still there is space to improve the uptake and thus efficiency of using the MCloud services. For example in area of IaaS the uptake is around of 70 % of central public authorities, but most of them was migrated only one information system in MCloud. Still the central public authorities are conservative in using the MCloud as a platform for public service delivery. In many cases is due to lack of understanding of the benefits, which bring of the MCloud to them.

As result, in January 2014 the Government approved the MCloud First Policy through the Government Decision Nr. 128 from 20.02.2014 and established a MCloud Working Group with representatives from the State Chancellery (represented by eGovernment Center and Center for Special Telecommunications), the Ministry of Finance, and the Ministry of ICT to:

- Inventor the information system of central public authorities and subordinated agencies;
- Develop an action plan for migration and integration of information system onto the MCloud platform and to present it for Government approval.

The eGC has developed the MCloud portal to provide the necessary information in regard of MCloud services, benefits, usage, etc. A regular customer satisfaction is to be collected in order to have a more detailed understanding of the consumer's perception of the MCloud services and include the feedback in the development of the MCloud Platform (Phase 2).

- **New MCloud services**

Another aspect, which has an impact on the MCloud efficiency and effectiveness, is the number of services delivered from MCloud Platform. As was mentioned currently are provide IaaS, PaaS and SaaS service. In case of IaaS, MCloud deliver virtual data center as a service and in case of PaaS a number of building blocks for e-Service. The number of services is required to be extended in order ensure a large penetration of the MCloud in central public authorities. As result, the following services have be implemented:

- ✓ **Back-up as a Service** to allow the governmental information system to back-up their data on MCloud platform. This service should be available including for mobile devices (smartphones, tablets) which is extensively used in government agencies.
- ✓ **Storage as a Service** to allow the government agencies to store their critical information in a secure and highly available Cloud platform.
- ✓ **Security as a Service** to provide to government agencies tools and mechanism to manage the security of their system and data placed in MCloud
- ✓ **Business Continuity as a Service** to ensure the continuity of government services in case of major disasters which could affect the datacenters, information systems, etc.
- ✓ **Software Development Platform as a Service** to provide to government agencies tools and mechanism to develop a secure and highly available cloud based applications**.**

- **Training of Central Public Administration IT specialist**

The MCloud Platform provides a new way of interaction with provided services, which requires intensive training for adoption in the use of new tools and instruments by central public authorities' IT specialists. This is true both for IaaS services, where the usage of self-service tools is a core for IaaS adoptions, and for PaaS/SaaS services where there are important information, regarding the services

integration and usage, needed to be absorbed in order to ensure that the services will to be used successfully. As result it is required to be implemented a new training approach to:

- ✓ Provide the essential information required to successful usage of MCloud services;
- ✓ Allow customers to decide when they would like to undergo the required trainings;
- ✓ Minimize the interaction between customers and service providers.

In this context in the June 2014, e-Government Center has started the development of the MCloud e-learning platform, reusing an e-learning platform of the Military Academy, Minister of Defense. The MCloud e-learning platform is to provide capacity building and trainings for the MCloud government customers.

3. The future of Cloud Computing in Government of Moldova

Vision MCloud 2020

The vision in regard of government cloud computing platform is that ***all services and functions that can be digitized will consider the government MCloud services as first choice*** for the foundation, as provided in the Strategic Program for Governance Technological Modernization, Government Decision Nr. 710 from 20.09.2011, Prime Minister's Directive Nr. 21-d from 26.03.212 and Government Decision Nr. 128 from 20.02.2014.

Government Vision:

- places Cloud Computing at the heart of the government's ICT Strategy;
- sets the direction for implementing common ICT needs as shared services;
- highlights the need to consider new ICT funding, procurement and governance arrangements by putting in place a Smart ICT Government Investment Framework;
- commits to managing computer and data centers as an integrated pool of computing resources.

To achieve its vision, the Government has invested in modern high availability infrastructure – MCloud Platform. MCloud is the government cloud-computing platform - a resilient and secure ICT shared environment that allows government agencies to use computing resources on-demand, with greater ease and speed. Since 2013, government entities have started to consume resources from MCloud Platform and harness the benefits provided by Cloud Computing, both for digital service delivery and sectorial e-transformation efforts.

As provided in the Government Decision Nr. 128 from 20.02.2014, the MCloud Working Group is currently defining an integrated approach to expand and facilitate the use of MCloud by developing the draft action plan for migration and integration of government information system onto the MCloud platform. The draft action plan will be consulted with government Coordinators for e-Transformation and presented for Government approval in 2015.

The action plan will guide the implementation of the government Cloud Computing Vision for 2015-2018, with short and medium-term milestones to ensure use of MCloud Platform at the sectorial levels. Thus, each government agency will be required to develop a plan for use of the MCloud platform covering:

- implementation of new systems using the MCloud;
- migration of current ICT infrastructure into the MCloud;
- use of common shared services available on the MCloud.

By implementing its Vision, the Government aims to provide leadership in the adoption of Cloud Computing in other sectors such as banking, IT service, etc. to ensure the wider economy is able to take better advantage of the power of technology – using data as a source of fuel for future growth.

Vision Implementation – MCloud Phase 2 (2015)

The implementation of MCloud 1 (2012-2014) ensured the setup of government wide technological platform for Governance e-Transformation. The successful launch and growing uptake by government agencies of MCloud platform have provided insights and lessons learned, to be considered for the implementation of the Cloud Government Vision.

The implementation of MCloud Phase 1 resulted in:

- ✓ the establishment of the MCloud infrastructure;
- ✓ the implementation of IaaS and the migration of systems from 19 government agencies;
- ✓ positive relationships with current government agency customers;
- ✓ responsiveness to new demands, for example in the areas of video storage.

Based on the results achieved with MCloud Phase 1, the Government decided to expand its cloud - computing infrastructure and proceed with the implementation of the MCloud phase 2.

The extended MCloud Platform (Phase 2) is estimated to be delivered in the 4th quarter of 2015 and will provide:

- ✓ Expanded capacity for processing and storage;
- ✓ A second computing site to provide disaster recovery and high availability operations;
- ✓ Enhanced automation and self-service capabilities for government agencies to easily avail of the benefits of Cloud Computing;
- ✓ Expanded range of services including backup, storage, security and software development platform as service.

Additionally, the MCloud Phase 2 will provide a learning platform to facilitate and enable customers' learning and capacity building on:

- ✓ Cloud Computing technology and the benefits it bring to government sector;
- ✓ Usage of MCloud tools and instruments to manage the customers platform;
- ✓ Development of the cloud based applications and integration with MCloud services;
- ✓ Security of MCloud applications and Infrastructure.

Vision Implementation – MCloud Phase 3 (2016-2020)

The next phase of MCloud development will focus on datacenter consolidation process. Some government entities have high quality data centers that support their current operation. These are a critical part of government ICT infrastructure, and have an important position in the future of MCloud Vision 2020 and implementation.

As provided in the Strategic Program for Governance Technological Modernization, the Government will consolidate the existing datacenters in order to ensure a well-managed pool of computing resources all across the government through the MCloud data centers and existing high quality data centers. Management of this pool of computing resources will be distributed to different Government entities based on specific areas of technical expertise: hardware and virtualization, software, storage, security and applications.

The Government will set up the Government Cloud Governance Group to be in charge and lead the development and implementation of the MCloud phase 3. The Government Cloud Governance Group will replace the existing MCloud Working Group and will comprise coordinators of e-Transformation and leading IT managers from the central public administration authorities.

The Government Cloud Governance Group is expected to:

- Develop the government data centers' consolidation roadmap;
- Ensure all government data centers are fully virtualized, and that there is compatibility at the virtualization layer;

- Create a program for skills development and ICT resourcing across government;
- Develop a plan for the inclusion of data centers in a networked cloud environment, and allocation of management of different components of the expanded MCloud;
- Develop new MCloud services;
- Define the Governance Model the MCloud infrastructure

Government Cloud Vision 2020, will provide for the extension of MCloud services to local public authorities to improve public services delivery and ensure smart IT investment in government, both central and local.

As response to growing usage of mobile technology in government, the Virtual Desktop Infrastructure services will be delivered as integrated services for Central Public Authorities as well as for Local Public Authorities. This will allow the optimization and increasing in efficiency of the public authorities' business process by providing a flexible and secure way to perform day to day tasks which will have a positive impact on the public service delivered to the citizens and business.

Draft Roadmap for Implementing Vision MCloud 2020

Activity	Time Framework	Responsible Entity
Develop Government Action Plan for migrating central public authorities' Information Systems to MCloud Platform (2015-2018), in line with the provisions of the Government Decision Nr. 128 from 20.02.2014	March 2015	MCloud Working Group (State Chancellery, e-Government Center, Center for Special Telecommunications, Ministry of ICT, Ministry of Finance)
Develop sectorial Action Plan for migrating Information Systems and e-services to MCloud Platform, in line with the provisions of the Government Decision Nr. 128 from 20.02.2014	Yearly basis	Central public authorities
Launch of the extended MCloud Platform Phase 2	4th quarter 2015	State Chancellery e-Government Center, Center for Special Telecommunications
Conduct capacity building programs for government coordinators for e-Transformation and IT Managers: - Technical training sessions - Launch of MCloud Learning Platform	Monthly May 2015	e-Government Center Center for Special Telecommunications
Set up the Government Cloud Governance Group	4th quarter 2015	State Chancellery

		Ministry of Finance
Develop the VDI Implementation Roadmap in government	May 2016	Government Cloud Governance Group
Develop the government data centers' consolidation roadmap	September 2016	Government Cloud Governance Group
Develop the implementation plan for the government data centers' consolidation roadmap	December 2016	Government Cloud Governance Group
Implementation of government data centers' consolidation roadmap	2017-2020	Ministries and government agencies

Conclusions: Critical Success Factors for achieving Vision MCloud 2020

Moldova has created a solid and cutting-edge ICT-enabled government e-services delivery infrastructure, which builds on the MCloud and MConnect (data exchange and interoperability) platforms, MPass (government authentication and access control service), MSign (government digital signature service), MPay (government electronic payment service), etc. Moldova government is well positioned to reap the benefits in cost effectiveness, agility and innovation for improving public service delivery, government efficiency and productivity.

In order for this to happen, the Government should undertake the following actions:

- Redesign government institutions, reengineer government operations and process First, and then digitize in order to maximize the benefits of governance e-Transformation.
- Speed up and enforce adoption and reuse of its eservices delivery infrastructure all across the central government and opening up its ICT-enabled infrastructure to local government.
- Ensure full compliance with and implementation by government entities of policy, technical standards and international best practices related to e-service delivery infrastructure and specifically to MCloud platform to ensure security and resilience of government IT systems and eservices.
- Develop and enforce all across the government a Smart IT Investment Framework, to harness the benefits of cloud computing technologies and reuse of e-services delivery infrastructure. The Digital by Default Model in public service delivery and Smart IT procurement approach and practices are to be implemented to eliminate duplication of costs/investments, time and effort, silos operation modus in government, speed up the sectorial e-transformation to ensure high quality public services and government as a platform.
- Address ICT capability gap in government by continuous capacity building, public private collaborative platforms and partnerships with technology companies and adoption of innovative and smart practices in implementing ICT in government.

Appendix 1. MCloud uptake by Central Public Authorities

CPA	IaaS	PaaS							SaaS
		MPay	*MSign*	*MPass*	*MNotify*	*MConnect*	*ECMP*	*MLog*	*SIGEDIA*
State Chancellery	*		*	*			*		*
Ministry of Foreign Affairs and European Integration	*	*		*					
Ministry of Interior	*	*		*					*
Ministry of Agriculture	*	*				*	*		*
Ministry of Defence	*								
Ministry of Culture									
Ministry of Regional Development and Construction	*			*					*
Ministry of Economy	*	*		*					
Ministry of Education	*								*
Ministry of Finance	*		*	*		*			*
Ministry of Justice	*	*	*	*		*			*
Ministry of Environment	*		*	*			*		
Ministry of Labour, Social Protection and Family	*								*
Ministry of Health	*								
Ministry of Information and Communication Technology		*		*		*			
Ministry of Youth and Sports									
Ministry of Transport and Road Infrastructure									
National Bureau of Statistics									
The National House of Social Insurance	*					*			
National Health Insurance Company	*			*					
National Center for Anticorruption						*			
Agency "Moldova's Waters"									
Agency "Moldsilva"									
Cadastre Agency	*	*	*	*		*			

Tourism Agency									
Material Reserves Agency	*			*					

Appendix 2 Resources

Development of this strategy drew on material from Cloud Strategy documents published by other governments.

Australia

http://www.communications.gov.au/digital_economy/cloud_computing/national_cloud_computing_strategy_html Published under a CC BY license. Content used is © Commonwealth of Australia

State of New South Wales

http://finance.nsw.gov.au/ict/sites/default/files/Endorsed%20-%20Cloud%20Services%20Policy%20and%20Guidelines%20final%204%20Oct%20amend.pdf

United Kingdom

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266214/government-cloud-strategy_0.pdf Information used licensed under the Open Government Licence v2.0.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/78970/Total-Cost-of-Ownership-things-to-consider-v1.pdf

Ireland

http://www.per.gov.ie/wp-content/uploads/Cloud-Computing-Strategy.pdf

Hong Kong

http://www.ogcio.gov.hk/en/strategies/government/cloud_strategy/

Singapore

http://www.egov.gov.sg/egov-programmes/programmes-by-government/cloud-computing-for-government

New Zealand

http://ict.govt.nz/programmes-and-initiatives/cloud-programme/

United States Federal Government

https://cio.gov/wp-content/uploads/downloads/2012/09/Federal-Cloud-Computing-Strategy.pdf

http://cloud.cio.gov/

North Carolina State

https://www.scio.nc.gov/library/pdf/Cloud_Computing_Strategy_v1_0.pdf

European adoption of Cloud Computing

http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3522

https://online.tugraz.at/tug_online/voe_main2.getvolltext?pCurrPk=71140