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Report No: 59591-MD

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF
SDR 12.7 MILLION

(US$20.0 MILLION EQUIVALENT)

TO THE

REPUBLIC OF MOLDOVA

FOR THE

GOVERNANCE E-TRANSFORMATION PROJECT

May 7, 2011

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2011)

| | | |
|---|---|---|
| Currency Unit | = | Moldova Lei (MDL) |
| MDL 11.94 | = | $1 |
| US $1.59 | = | SDR 1 |

FISCAL YEAR

January 1     –     December 31

ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| $ | All dollars are United States' dollars unless otherwise indicated |
| APPS | Applications |
| BIZTAR | The Business Regulatory and Tax Administration Reform Project |
| C/B | Cost benefit ratio |
| CEED2 | Competitiveness Enhancement and Enterprise Development Project 2 |
| CIO | Chief Information Officer |
| CLRA | Cadastre and Land Relations Agency |
| CNAM | National Company of Medical Insurance |
| CNAS | National Office of Social Insurance |
| CoA | Court of Accounts |
| CPS | Country Partnership Strategy |
| CQ | Consultant's qualifications |
| CTS | Center of Special Telecommunications |
| eGC | e-Government Center |
| EOI | Expression of interest |
| FM | Financial management |
| GeT | Governance e-Transformation |
| GoM | Government of Moldova |
| G2B | Government-to-business |
| G2C | Government-to-citizens |
| G2G | Government-to-government |
| GPN | General procurement notice |
| ICB | International competitive bidding |
| IC | Individual consultant |
| ICT | Information and communications technologies |
| INT | Department of Institutional Integrity |
| IFAC | International Federation of Accountants |
| IFR | Interim financial reports |
| ISA | International standards of accounting |
| IT | Information technology |
| M-Cloud | Moldova Cloud (Government Cloud Computing Infrastructure) |
| MLSPF | Ministry of Labor, Social Protection and Family |
| MoICT | Ministry of Information Technology and Communications |
| MRGSP | Moldova Rapid Governance Support Program |
| NCB | National competitive bidding |
| NPV | Net present value |
| OGDI | Open Government Data Initiative |

| | |
|---|---|
| OPEX | Operational expenditure |
| ORAF | Operational Risk Assessment Framework |
| PC | Personal computer |
| PDO | Project development objective |
| PIU | Project Implementation Unit |
| POM | Project operational manual |
| PPF | Project preparation facility |
| PPP | Public-private partnership |
| QCBS | Quality- and cost-based selection |
| ROI | Return on investment |
| SBD | Standard bidding document |
| SC | State Chancellery |
| SME | Small and medium enterprises |
| SOA | Service-oriented architecture |
| SOEs | State owned enterprises |
| SPN | Special procurement notice |
| TA | Technical assistance |
| TCO | Total cost of ownership |
| TORs | Terms of reference |
| UNDB | United Nations Development Business |
| UNIFEM | United Nations Development Fund for Women |
| VDI | Virtual Desktop Infrastructure |

| | |
|---|---|
| Regional Vice President: | Philippe H. Le Houerou |
| Country Director: | Martin Raiser |
| Sector Director: | Jose Luis Irigoyen |
| Sector Manager: | Philippe Dongier |
| Task Team Leader: | Oleg Petrov |

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**Moldova**

**Governance e-Transformation Project**

**PROJECT APPRAISAL DOCUMENT**

*Europe and Central Asia Region*
*Transport, Water and ICT (TWICT)*

| | |
|---|---|
| Date: May 7, 2011<br>Country Director: Martin Raiser<br>Sector Manager: Philippe Dongier<br>Team Leader: Oleg Petrov<br>Project ID: P121231<br>Lending Instrument: IDA Specific Investment Credit | Sector(s): Public administration- Information and communications (80%); Information technology (10%); Telecommunications (10%).<br>Theme(s): e-Government<br>EA Category: C |

| **Project Financing Data:** | |
|---|---|
| Proposed terms: IDA Credit, 20 years maturity, 10 years grace period. | |
| [ ] Loan   [X] Credit   [ ] Grant   [ ] Guarantee   [ ] Other: | |
| Source | Total Amount ($M) |
| Total Project Cost:<br>    Borrower:<br>    Total Bank Financing:<br>        IDA | $23.0 million<br>$3.0 million<br>$20.0 million |

Borrower: The Government of Moldova

Responsible Agency: The State Chancellery

> Contact Person: Victor Bodiu, Secretary General of the Government
> Telephone No.: (373 22) 250-104
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Estimated Disbursements (World Bank FY/$million)

| FY | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|
| Annual | 4.9 | 5.6 | 4.6 | 2.6 | 2.3 |
| Cumulative | 4.9 | 10.5 | 15.1 | 17.7 | 20.0 |

Project Implementation Period: Starts: November 1, 2011   Ends: June 30, 2016
Expected effectiveness date: September 30, 2011
Expected closing date: December 31, 2016

| | |
|---|---|
| Does the project depart from the CAS in content or other significant respects? | ○ Yes   x No |
| If yes, please explain: N/A | |

| | |
|---|---|
| Does the project require any exceptions from Bank policies? Have these been approved /endorsed (as appropriate by Bank management? | ○ Yes   x No |
| Is approval for any policy exception sought from the Board? | ○ Yes   x No |
| If yes, please explain: N/A | |

| | |
|---|---|
| Does the project meet the Regional criteria for readiness for implementation? | x Yes   ○ No |
| If no, please explain: N/A | |

**Project Development objective**
The project development objective is to transform delivery of selected public services using ICT

**Project description**

**Component 1:  e-Leadership Capacity and Enabling Environment ($8 million)**
This component will provide support to the E-Government Center that was recently established to drive Government-wide e-Transformation agenda.  Support will also be provided for e-leadership training and civil servants capacity building;   strategic communications and partnerships; development of policy, technical, legal and regulatory frameworks; and project management.

**Component 2:  Shared Infrastructure and e-Services Development ($15 million)**
This component will provide funding for: (a) establishing and implementing the M-Cloud (Government Cloud Computing Infrastructure); and (b) developing a selected number of e-Government services and shared applications to be delivered through multiple channels, including government portals and mobile phones.

| Safeguard policies triggered? | |
|---|---|
| Environmental Assessment (OP/BP 4.01) | ○ Yes   x No |
| Natural Habitats (OP/BP 4.04) | ○ Yes   x No |
| Forests (OP/BP 4.36) | ○ Yes   x No |
| Pest Management (OP 4.09) | ○ Yes   x No |
| Physical Cultural Resources (OP/BP 4.11) | ○ Yes   x No |
| Indigenous Peoples (OP/BP 4.10) | ○ Yes   x No |
| Involuntary Resettlement (OP/BP 4.12) | ○ Yes   x No |
| Safety of Dams (OP/BP 4.37) | ○ Yes   x No |
| Projects on International Waters (OP/BP 7.50) | ○ Yes   x No |
| Projects in Disputed Areas (OP/BP 7.60) | ○ Yes   x No |

| | Conditions and Legal Covenants: | |
|---|---|---|
| Financing Agreement Reference | Description of Condition/Covenant | Date Due |
| s. 4.01. (a) | The Project's Operational Manual shall have been prepared and adopted | By effectiveness (expected between July 1 and November 1, 2011). |
| s. 4.01 (b) | The eTransformation Policy shall have been approved and adopted and published in the "Monitorul Oficial". | By effectiveness (expected between July 1 and November 1, 2011). |
| Schedule 2, I.A. 1 (a) | The Recipient shall ensure coordination among, and linkages with, relevant ministries and agencies as well as with government systems as necessary for Project implementation. | Throughout Project implementation |
| Schedule 2, I. A. (b) | The Recipient shall maintain throughout the duration of the Project, within its State Chancellery, the eGC, with sufficient staff possessing skills, qualifications and experience satisfactory to the Association and in adequate number for Project implementation. | Throughout Project implementation |
| Schedule 2, I. A. (c ) | The Recipient shall ensure that eGC shall coordinate implementation of various ICT and e-government programs with Ministries and State Enterprises, and will assist with the service delivery transformation. | Throughout Project implementation |
| Schedule 2, I.A. (d) | The Recipient shall maintain, within the eGC, the Project Implementation Unit, which will be responsible for day-to-day Project administration and operation. | Throughout Project implementation |
| Schedule 2, I. A.2 | The Recipient, through its State Chancellery, shall at all times implement the Project in accordance with the Project Operational Manual. | Throughout Project implementation |
| Schedule 2. I. A.3 | The Recipient, through its State Chancellery, shall at all times implement the Project in accordance with the eTransformation Policy. | Throughout Project implementation |
| Schedule 2. I. A.4 | Except as the Association shall otherwise agree, the Recipient shall not assign, amend, abrogate, waive or vary the Project Operational Manual. | Throughout Project implementation |

| | | |
|---|---|---|
| Schedule 2. I. A.5 (a) | By no later than October 31 of each year, commencing in 2011, the Recipient shall prepare an annual plan and budget for implementing the Project and in particular for maintaining the e-Government Center (the Annual Plan) for the next financial year; | Throughout Project implementation |
| Schedule 2. I. A.5 (b) | The Recipient shall ensure, without limitation on its obligation under Section 4.03 of the General Conditions, in each year of Project implementation, that adequate financial provision and allocations of resources are made, sufficient to meet the funding requirements for the Project and for the eGovernment Center operation for that year as shown in the Annual Plan. | Throughout Project implementation |
| Schedule 2. I. A. 6 | The Recipient shall ensure that detailed designs for Project activities are prepared in a timely manner and taking into account any feasibility or other studies that have been carried out for the purposes of Project implementation | Throughout Project implementation |
| Schedule 2. I. A. 7 | By no later than September 20, 2011 the State Chancellery shall have adopted internal procedure by order of the Secretary General, designating Center for Special Telecommunications (CTS) as the operational partner for the Project in accordance with the eTransformation Policy. | By September 20, 2011 |

## I.     STRATEGIC CONTEXT

### A.  Country Context

1.     Moldova is one of the poorest countries in Europe with GDP per capita of $1,516 (2009). About half of Moldova's 3.6 million citizens live in rural areas, where poverty rates are about 36 percent (2009). The traditional basis of Moldova's economy has been agriculture. Remittances from migrants working abroad have become increasingly important (about 30 percent of GDP). As Moldova approaches lower-middle income status, the country needs to shift from a consumption-and-remittances-driven growth model to an economy with increased private savings and investments.

2.     The country has a high literacy rate:  98.3 percent.[1] There is a strong tradition of science and technology education.  However, low salaries and incentives have caused the quality of education and government services to deteriorate. Like many other former Soviet Republics, Moldova has a legacy of a vast bureaucracy that enjoys significant discretionary powers. External economic shocks coupled with an unfavorable economic environment and political instability have further reduced the quality of governance and increased the opportunities for corruption.

3.     The new coalition Government is committed to transforming the ways it does business. It has established a good track record of macroeconomic stability.  It has made a promise to fight corruption, to enable open Government, and to integrate with the European Union.  Information and communication technologies (ICT) can enable this transformation by:  (a) improving economic competitiveness to support sustainable economic growth, (b) building human capital, (c) promoting social inclusion, and (d) improving public sector governance.

### B.  Sectoral and Institutional Context

4.     The Government has many employees,[2] but these numbers do not compensate for excessive and redundant procedures that result in delays in the provision of services.  Despite recent advances in ICT, the Government has not re-engineered its service delivery.  With few exceptions, citizens and businesses still have to obtain government services the traditional way: repeating again and again the process of waiting in line to obtain multiple documents from different sources to satisfy the requirements of a specific transaction.  This way of interacting with the Government costs people time and money, causes dissatisfaction, creates opportunities for corruption, and increases costs to the Government itself.  According to the UN E-Government Survey of 2010, in respect to e-Government development Moldova—which came in at 80th place—lags behind many countries in the region, including Belarus (64th), Ukraine (54th), Romania (47th), Latvia (37th) and Estonia (20th).[3]

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[1] UNESCO Institute for Statistics (2008).

[2] The Central Administration had 82,000 staff of which about 12,000 were officials, according to the Ministry of Finance, 2007.

[3] An index from 0 (worst) to 1 (best) that measures E-Government development: United Nations E-Government Survey, 2010.

5.	The ICT sector in Moldova has experienced uneven development. In 2010, access to mobile services was relatively high at 82 percent, but only 38 percent of the population used the Internet. Only 6 percent of the population subscribed to fixed broadband services—which is much lower than other countries in the region.[4] The Government has taken measures to improve access to advanced ICT. Recent policy and regulatory reforms have helped to significantly reduce the price of broadband Internet—and more people are now subscribing to these services. However, geographic disparities persist: only 25 percent of rural residents use the Internet, as compared with 59 percent of urban residents. Because mobile phones cover the rural areas and are broadly used by the majority of both the urban and rural population, they offer a powerful platform for the delivery of e-Services.

6.	Moldova's information technology (IT) sector faces significant constraints. The number of highly-skilled employable IT specialists is low compared to the existing demand. There is very limited IT capacity across the Government. Low compensation of government employees diminishes the Government's capacity to hire from the nation's limited pool of highly skilled IT professionals. State-owned enterprises (SOEs)—such as the Center for Special Telecommunications (CTS) and *Registru*—are able to pay better salaries to IT professionals, because they are not subject to the Central Government remuneration regime. However, despite the IT support provided by these SOEs, the Government still does not have enough specialists and technicians to design and maintain its widespread IT systems and programs.

7.	Also missing is an overarching strategic framework and common infrastructure for e-Government development. Each ministry and agency has its own data center. As a result, there are about 150 data centers of varying sizes throughout the public administration of Moldova—of which 60 percent are on a verge of data loss. This fragmentation of computing resources increases investment and operational costs, creates duplication, and necessitates the employment of more numerous and widely distributed IT staff. The Government now plans to consolidate the number of data centers and increase the development of e-services that people can access through the Internet.

**The Government's Strategy**

8.	The proposed Project aligns with and supports the Government's recently released Program for 2011-2014[5]—which highlights e-governance as a priority area towards economic integration with the European Union. This program proposes the following steps to address the issues described above: (a) implementing a shared platform across Government to consolidate the existing data centers; (b) transforming government processes to increase public administration efficiency through the use of ICT; (c) developing electronic services for citizens and businesses; and (d) adopting an e-Governance regulatory framework according to international best practices; including opening government data to its citizens and businesses. The Government is preparing the e-Transformation Policy, including a "cloud first" IT investment policy to radically improve the use of IT in the public sector. The Government

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[4] Belarus 11 percent, Romania 13 percent, Estonia 25 percent, although higher than Ukraine (4 percent): International Telecommunication Union, 2009.
[5] "European Integration: Liberty, Democracy, Welfare" approved by the Parliament on January 14, 2011.

recognizes the need to use ICT as a crosscutting enabler of sustainable growth, competitiveness and improved governance. It has requested the World Bank's assistance in bringing about the digital transformation of Moldova. The commitment to reform comes from the highest level, the Prime Minister's Office.

**Rationale for World Bank Involvement**

9.      The Bank's experience in countries around the world has shown that developments in e-Government help to increase the use of ICT in areas other than the public sector. It creates the following positive externalities: (a) increased trade, investment and economic integration; (b) reduction of the cost of business transactions; and (c) improved global competitiveness.

10.     Other development partners recognize the important role that the World Bank can play in taking the governance e-transformation agenda to the next level. UNDP and USAID are also engaged in e-Governance reforms. UNDP has supported some pioneering efforts in developing the policy and legal framework, civil servants training and piloting e-services through its e-Governance Project. USAID has supported several business facing e-services such as e-tax declarations through Business Regulatory and Tax Administration Reform Project (BIZTAR) project. However, overall this agenda was not prioritized by the development community and has not been addressed systematically until recently and therefore the World Bank's leadership is welcomed by all key stakeholders.

11.     The World Bank is already engaged in related projects in Moldova. These include: (a) the Central Public Administration Reform Project—to strengthen institutional capacity of the public administration for better policymaking, and implementation; (b) the Public Financial Management Technical Assistance Project—to help the Government to achieve effective and transparent management of public finances; (c) Competitiveness Enhancement Project — to improve the quality of investment climate, including, *inter alia,* the introduction of regulatory impact assessment mechanism for new regulations affecting business operations; (d) the Social Safety Net Project—to improve the efficiency and equity of Moldova's safety net and (e) Health Services and Social Assistance Project — aimed to increase access to quality and efficient health and improve the efficiency of social assistance services for the Moldovan population. The proposed project will closely coordinate with these and other related projects and initiatives (see Annex 8) to assist the Government to streamline processes, develop e-services, and open government data to its citizens and businesses.

### C.  Higher Level Objectives to which the Project Contributes

12.     The proposed project aims to contribute to the following strategic objectives of the Moldovan Government: (a) improving public sector governance, modernizing the public sector and reducing its costs; (b) developing the private sector, improving investment climate and increasing global competitiveness; (c) enhancing social inclusion; and (d) facilitating future integration with the European Union.

13.    The Project is consistent with the strategies outlined in Moldova's CPS FY09-FY12:[6] (a) enhancing the competitiveness of the economy to support economic growth; (b) promoting human resource development and improvement of public services; and (c) strengthening public sector management for more efficient and transparent use of public resources.  It harmonizes well with other World Bank and donor-funded activities in Moldova.  It is based on extensive client consultations to ensure a strong sense of ownership, and is inspired by the lessons learned from previous successful e-Government initiatives.

14.    This operation benefits from lessons learned from many countries on broad e-governance policy and institutional reforms with the goal of improving delivery of services and particularly coordinated management of IT and e-services across sectors and levels of government, and integrating the use of mobile phone networks as outreach mechanism.  These lessons were learned through experience with more than 12 World Bank-financed e-governance operations under implementation and preparation in Armenia, Bangladesh, Ethiopia, Ghana, Kenya, Morocco, Rwanda, Sri Lanka, Tunisia, Vietnam, and Eastern Caribbean.  Lessons were also drawn from World Bank-supported knowledge exchange with a group of leading government Chief Information Officers from the governments of Australia, Canada, Estonia, India, Singapore, the United Kingdom, the United States, and the European Union.

15.    This project is not primarily directed at private sector development—but it does seek to strengthen small- and medium-sized IT companies by creating new opportunities for them to deliver their products to the Government.  The project will also simplify interactions between businesses and Government by allowing online transactions that reduce the time and effort involved in carrying out processes such as registering companies, complying with labor and business regulations, and obtaining licenses and permits.

## II.    Project Development Objectives

### A.  PDO

16.    The project development objective (PDO) is to transform delivery of selected public services using ICT.  This objective will be achieved by:  (a) improving leadership capacity, enabling environment and management of ICT in the public sector; (b) using a modern service delivery platform to improve access to public services, and (c) increasing transparency in the public sector.

#### 1.  Project Beneficiaries

17.    The direct beneficiaries of the project will be citizens and businesses that access public services via multiple channels, including government portals and mobile phones.

18.    There is a large digital divide in Moldova:
- 59 percent of the urban population use the Internet, compared with 25 percent of the rural population;

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[6] "Country Partnership Strategy for the Republic of Moldova FY09-FY12" Report 46822-MD, December 23, 2008.

- 79 percent of citizens aged 16-25 use the Internet, compared with 10 percent of citizens aged 56-65;
- 83 percent of citizens with a monthly household income of more than 5,000 *lei* use the Internet, compared with 15 percent of citizens with a monthly household income of less than 1,000 *lei;*
- 42 percent of Moldovan men use the internet, compared with 35 percent of women[7].

19.      Digital inclusion efforts will include intensive training and public awareness raising activities, partnering with UNIFEM on rural information centers and policy reforms to ensure lower cost of the ICT access.   More details on partnership with UNIFEM are in Annex 8.

### 2. PDO Level Results Indicators

20.      Key indicators and the process to monitor project performance are detailed in Annex 1 and summarized in Table 1 below.

**Table 1:  Project Outcome Indicators**

| Development Objective | PDO Level Results Indicators | Target values |
|---|---|---|
| To transform delivery of selected public services using ICT | Direct project beneficiaries (number), of which female (percentage) | 300,000 people 50% |
| | Citizen perception of quality of public services (% of satisfied users) | 60% |
| | Citizen uptake of e-services (Percentage of population who accessed a public website at least once over previous 12 months) | 25% |

### III.     PROJECT DESCRIPTION

21.      The size of the proposed project is $23.0 million with IDA financing of $20.0 million and government counterpart financing of the remaining $3.0 million.  The project will have two components, as explained below and described in greater detail in Annex 2.

22.      This project aims to transform[8] delivery of a selected number of public services using modern ICT platforms thereby contributing to overall transformation of public sector governance.  Transformational impact will be achieved through creating an opportunity for citizens and businesses to interact with government without the need for a face-to-face contact, but using ICT technologies, undertaking legal and regulatory reforms, and changing the mindsets of public servants and broader population through large scale strategic communications, training and awareness-raising activities.

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[7] "Citizen Report Cards", Institute for Public Policy and Magenta Consulting (2011).
[8] Transformation is defined here as radical improving of service delivery mechanisms by taking services online and mobile

23.     Specific objectives of this project are to ensure that by June 2016: (a) at least 300,000 citizens will have accessed government services through e-Government portal and mobile phones, (b) at least 60 percent of them will be satisfied with the overall quality of these interactions; and (c) at least one-quarter of all citizens will be accessing public services online at least once a year, which will reduce the need for face-to-face interactions, and thus, reduce the opportunities for corruption.

24.     This project aims to benefit from some of the new and innovative approaches in e-Government, e.g., government clouds, government apps store, open data initiatives and government as a platform.  It is also the first in-country implementation of the World Bank's eTransform Initiative, which was launched in April 2010.  Therefore, the project design has benefitted from consultations with the world's leading experts on governance e-transformation.[9] The eTransform Knowledge Platform[10] on "Using ICT to Enable Transformation of Service Delivery and Accountability" was approved by the World Bank Knowledge Council in January 2011.  This project is seen as one of the first beneficiaries of this new initiative and as a leading edge operation in the e-transformation space in terms of incorporating latest concepts, accessing cutting edge expertise and adopting innovative mechanisms for implementation.

### A.  Project Components

25.     There are two complementary Project components involved in carrying out this transformation:  (a) changing the processes and the mindsets of the civil servants who are tasked with providing public services; and (b) providing for the hardware and systems that will actually deliver the electronic services.

**Component 1:  e-Leadership Capacity and Enabling Environment ($8.0 million of which IDA financing is $7.0 million)**

26.     The main objective of this component is to carry out the changes in processes needed to transform the way Government delivers its services to citizens and businesses.  Because civil servants in ministries and agencies are in charge of these processes, a large training program is included to catalyze mindset changes in the ministries involved in delivering the services electronically.  As a result of this component, by the end of this project:  (a) at least 2,000 government employees and other staff will be trained in different aspects of implementing e-Government services; (b)  the Government will become more transparent:  there will be at least 700 data sets[11] made available to the public through the Open Government Data initiative and in a freely downloadable, user-friendly, and machine readable format, which will empower civil society and small- and medium-sized companies (SMEs) to demand and improve public governance, accountability and service delivery; and (c) as a result of effective outreach and strategic communications, at least 70 percent of the population will be interested in accessing e-services.

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[9] For example, eTransform Initiative engaged a group of High Level Experts for Leaders and Practitioners (HELP), which includes Government Chief Information Officers from Canada, Singapore, the United States, the United Kingdom, India and other leading countries.

[10] The name of this knowledge platform is likely to be changed.

[11] The project will focus on identifying and opening high value data sets rather than merely targeting 1000 data sets.

**Subcomponent 1.1: Support for the e-Government Center and e-Leadership Development ($6.455 million).** This subcomponent will finance:

(a) *The initial setup and operation of the e-Government Center (eGC).* The Government created the eGC in August of 2010, to be the entity in charge of the daily activities of the transformation, supporting the State Chancellery. The role of the Center is to work with the ministries and agencies of the Government to deliver their services online and to contract e-services design and implementation. The aim is for the Government to provide citizens and businesses with the option of receiving government services electronically. This would reduce the workload on ministries, which could refocus on improving their procedures. The project will initially finance operations costs and the core team of the eGC, including change management, project management and technical specialists to coordinate different aspects of implementing the e-transformation program. The operational budget of the eGC will progressively be drawn from Government of Moldova (GoM) budgetary resources in order to ensure sustainability, and to reduce dependency on IDA's financing. The details are presented in Annex 3.

(b) *e-Leaders, Civil Servants and IT Specialists Training Program.* The governance transformation program supported by this Project entails changing the mindsets of civil servants. A broad change management program will be implemented to bring about this change. It is comprised of three parts: (i) *training the leaders* (i.e., ministers, vice-ministers, department heads, agency managers and key staff) through leadership seminars, study visits, and twinning arrangements with countries that are leaders in e-Transformation; (ii) *training the civil servants* who are involved in the provision of services in the participating agencies. The focus will be on change management to motivate and engage each one of the individuals and obtain their buy-in into the e-Transformation program; (iii) *technical training* for: (a) engineers; (b) IT specialists; (c) professors in universities with IT programs; and (d) IT developers in new technologies and processes introduced by this project, such as cloud computing and service oriented architecture.

(c) *Strategic Communications and Partnerships.* A transformation of this magnitude needs to be properly communicated to citizens and businesses, to obtain their support for the program in order to put pressure on departments that are reluctant to embrace it. It is also important to alert the population when new e-services become available and explain how to take advantage of them. Therefore, the project will finance: (i) the development and implementation of a strategic communications program; (ii) the creation and management of strategic partnerships with local and foreign government agencies, donors, NGOs and other entities, to raise and manage additional funding and other resources, because the resources needed for the program are larger than what this project can finance; and (iii) the organization of knowledge-sharing seminars, workshops, conferences, innovation contests, and TechCamps.

**Subcomponent 1.2:  Developing an Enabling Environment, including Policy, Legal and Technical Frameworks and Programs ($1.545 million)**

27.     The Government will need to enact a number of changes in the policy, legal and technical regulatory frameworks.  The transformation will mean that more software development will be outsourced to private companies, which will create numerous opportunities for accelerating development of the local IT industry.  Subcomponent 1.2 will finance technical assistance to:

> **(a) Develop the Policy and Strategic Framework for e-Transformation and ICT Competitiveness.**  This includes technical assistance on:
>
> - e-Transformation Roadmap and Policy Development—to help define Government's e-Transformation vision, policies, strategies and programs.
> - Global ICT Competitiveness Program Development—to help define a vision statement and roadmap, to identify opportunities and targets for the ICT-enabled enhancement of competitiveness of the Moldovan economy by 2020, and to identify opportunities to promote the local ICT industry.
>
> **(b) Develop the Legal, Regulatory, and Technical Frameworks**, including support for:
>
> - The e-Transformation Legal and Regulatory Framework—to support drafting changes to legislation and regulations to enable the use of electronic services.
> - The Technical Standards and Open Data Framework—this will include:  (a) drafting Interoperability and e-Security standards for Moldova's e-Government, which will enable the integration and rationalization of all government IT systems; and (b) developing the open government data framework, which is aimed at making government data open and freely downloadable in a user friendly format to empower civil society and SMEs to improve governance and service delivery.

**Component 2:  Shared Infrastructure and E-Services ($15.0 million of which IDA financing is $13.0 million)**

28.     The main objective of this component is to create a common infrastructure and mechanism for rapid deployment of ICT-enabled public services.  It will finance the acquisition of a shared computing infrastructure and development of the systems needed to deliver Government services electronically.  As a result of this component, by the end of this project: (a) at least 25percent of central government agencies will use shared e-Government infrastructure on a regular basis—this will lead to substantial savings for the Government; (b) the government services portal will have at least 400,000 unique visits.

**Subcomponent 2.1:  M-Cloud:  Shared e-Government Infrastructure ($6.0 million)**

29.     The primary focus of this subcomponent is the phased establishment of a government cloud computing infrastructure (M-Cloud) in order to enable government agencies to deliver electronic services faster and more efficiently.  M-Cloud will be eventually shared by all ministries and agencies of the Government.  This will save valuable resources, because

individual ministries will not need to set up multiple data centers—and the cloud infrastructure will provide data back-up for many of these ministries.  The 'M' refers to the fact that the Cloud: (a) will be located in **M**oldova; (b) will initially be a **m**ini-cloud, starting small but gradually expanding to cover the growth in services; and (c) will incorporate a **m**obile delivery system, to enable people that do not have access to the Internet to get services through mobile phones.  The M-Cloud will have several advantages over the traditional systems—it will save resources and enable faster implementation of e-services. (see Annex 2)

30.     Accordingly, the project will finance:
   (a) The preparation of technical specifications for M-Cloud infrastructure, including development of the business model to operate it.
   (b) The M-Cloud shared computing infrastructure, comprising core processing, storage, virtualization and service delivery platforms that include provision of Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). The component will also cater to any power supply, air conditioning and auxiliary systems that are necessary for its implementation.
   (c) Enhancements as needed to connectivity infrastructure for government departments that will initially use the M-Cloud to ensure efficient use.

**Subcomponent 2.2:  e-Services Development ($9.0 million)**

31.     This subcomponent will finance a number of electronic services aimed at improving interface between the government, citizens and businesses.  The main objective of this approach is to achieve significant reduction in time, effort and resources spent by citizens accessing government services.  Two types of e-services are envisioned under the project:  (a) e-Services for citizens and businesses and (b) enabling services.  While e-Services will be Ministry and sector specific, enabling services will be foundational and cross cutting to be used across the government to enable delivery of a broad range of e-Services.

   **(a)  e-Services for Citizens and Businesses**

32.     The Government will select up to five e-services for implementation annually on the basis of criteria and process established by the eGC.  The agreed selection criteria will consist of pre-selection criteria (filters) on the basis of pass/fail and weighted criteria.  The pre-selection criteria will include:    (a) low cost (under $200K) and short implementation timeframe (up to 12-18 months), (b) service should be government to citizen (G2C)  or government to business (G2B), rather than government to government (G2G), (c) there should be existing minimal back end infrastructure, (d) there should be well defined and functioning business processes.  The weighted criteria will include:  (i) urgency and relevance; (ii) outreach; (iii) existence of  key enablers;  (iv) back office readiness; (v) level of complexity; (vi) legal and regulatory framework; (vii) leadership and political will; (viii) user readiness, (ix) sustainability,  (x) external factors (EU compliance, support of other donors, etc.).  The evaluation expert group will present evaluation results and a short list of e-service proposals to the CIO Council and eGC. The final selection will be undertaken by the e-Transformation Council consisting of Ministers, private sector and NGOs and chaired by the Prime Minister.  MoUs will be signed between

participating ministries and eGC outlining division of responsibilities, implementation approach, cost and timeline for the implementation of e-Services.

33.     The eGC—with technical assistance provided by IDA International Singapore, USAID and Estonian experts—conducted a comprehensive e-services prioritization exercise in 2010. As a result, the Center evaluated 73 e-services that could potentially be supported under this project and five of these are being implemented in 2011 as "quick wins" using Project Preparation Advance. The following e-services have been identified for the first year: (a) e-Criminal Record (Ministry of Internal Affairs), (b) e-Licensing (Ministry of Economy), (c) e-Library of Construction Norms (Ministry of Regional Development and Construction), (d) e-Registration for Medical Insurance (National House of Medical Insurance), (e) Emergency SMS alerts (Ministry of Internal Affairs). This initial set of services will rely on existing databases for their delivery. They will not require fundamental process re-engineering. However, their implementation will include employee training, and amend existing internal regulations (procedures, job descriptions, policy) to support a smooth transition from a manual to an electronic mode of service delivery.

34.     e-Services selected for years 2-4 will also be supported by ***back office digitization and integration*** when necessary. Back office integration will consist of (a) upgrading, integration and conversion of existing databases and systems, (b) migration to the M-Cloud infrastructure when it becomes available, and (c) the digitization of paper archives. During the first year of the project a government wide comprehensive study will be undertaken to assess back office readiness. The outcomes of the study will be used for selection of candidate e-Services and serve as one of the determinant factors in the design of e-Services.

### (b) Enabling Services ("Enablers")

35.     These will serve as crosscutting enablers for the development of e-services, and include: (a) the Government services portal; (b) the e-payment and billing system; (c) the e-authentication and identity management system; (d) a mobile applications platform; (e) the applications store/portal; (f) the SMS and email notification system; (g) open government data portal; and (h) a government document management system[12].

36.     Subcomponent 2.2 will finance the following specific activities:
   (a) feasibility studies, including back office assessment;
   (b) limited process re-engineering;
   (c) preparation of technical specifications;
   (d) software development;
   (e) migration of existing systems to the Cloud computing platform if needed;
   (f) digitization of documents and archives for the provision of service as needed;
   (g) conversion of old systems to new software as needed;
   (h) upgrading of existing databases;
   (i) installation, testing and commissioning of the new software;

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[12] This project will fund only development and initial rollout of this system in the agencies located in the main Government building, including the State Chancellery.

(j) training of the staff involved in the provision of the electronic service of the staff involved in the provision of the electronic service.

## B. Project Financing

### 1. Lending Instrument

37.     The proposed project will be funded through an IDA Specific Investment Credit in the amount of $20.0 million.

### 2. Project Costs and Financing

38.  Table 2 summarizes the project costs and proposed financing arrangements. More details are in Annex 2.

**Table 2:  Project Costs and Financing**

| Project Components | Project cost (*$ m*) | IDA financing (*$ m*) | Financing (*%*) |
|---|---|---|---|
| 1. **e-Leadership Capacity and Enabling Environment** (Component 1) | 8 | 7 | 88 |
| 2. **Shared Infrastructure and e-Services** (Component 2) | 15 | 13 | 87 |
| **Total baseline costs** | 23 | 20 | 87 |
| Physical contingencies | | | |
| Price contingencies | | | |
| **Total project costs** | | | |
| **Interest during implementation** | | | |
| **Front-end fees** | | | |
| **Total financing required** | 23 | 20 | 87 |

## IV.     IMPLEMENTATION

### A.  Institutional and Implementation Arrangements

39.     **Oversight arrangements**. Figure 1 shows the organizational arrangements for Project implementation.  The State Chancellery will be responsible for executing the Project.  The SC has a unique central position and convening power in the government structure, as the office that supports the Prime Minister and the Cabinet.  This enables the State Chancellery to oversee effective coordination and enforcement of transformational initiatives across agencies and levels of Government.  The National e-Transformation Commission—which is chaired by the Prime Minister and includes all key Ministers—will approve policies prepared by the State Chancellery and the Ministry of Information and Communication Technologies (MoICT).   The Ministry of ICT will play a particularly key role in driving ICT policy, legal and technical frameworks development and ICT competitiveness activities.  The State Chancellery will play the key role in driving the overall government e-transformation agenda.

40.     **Implementation Arrangements.** The State Chancellery will implement the Project through the e-Government Center (eGC).  The latter was established in August 2010 as a nonprofit organization of public interest, subject to commercial law.   Its responsibilities include:

(a) strategic planning; (b) advisory support to various ministries; (c) project management; and (d) implementation of IT initiatives in the public administration. The eGC management board will serve as the Project's Steering Committee. The Board is chaired by the Secretary General of the Government, with Minister of Finance as Deputy Chair, and composed of several Vice-Ministers.

41.     The eGC team and the State Chancellery will work closely with line Ministries on implementation of the Project components—specifically on the migration of their IT infrastructure to the M-Cloud and the development of e-services. The eGC has already identified focal points at each line Ministry (e-Transformation Coordinators or Chief Information Officers, CIOs), and invited them to a number of capacity-building and knowledge-sharing events. The eGC has also established the inter-agency CIO Council, which will serve as a technical coordination vehicle. The Center for Special Telecommunication (CTS)—under the eGC's oversight—will manage the Cloud Computing platform, and will maintain and operate the shared government IT systems. The eGC will have decision-making authority with respect to the CTS in all aspects of the Project, including the design, development, installation, operation and management of the M-Cloud. The CTS has a long-time experience in providing services to the Government, including maintenance of the fiber-optic network that connects all government buildings in Chisinau. The CTS currently provides disaster recovery solutions for FMIS, tax and other government systems.

**Figure 1:  Proposed Implementation Arrangements**
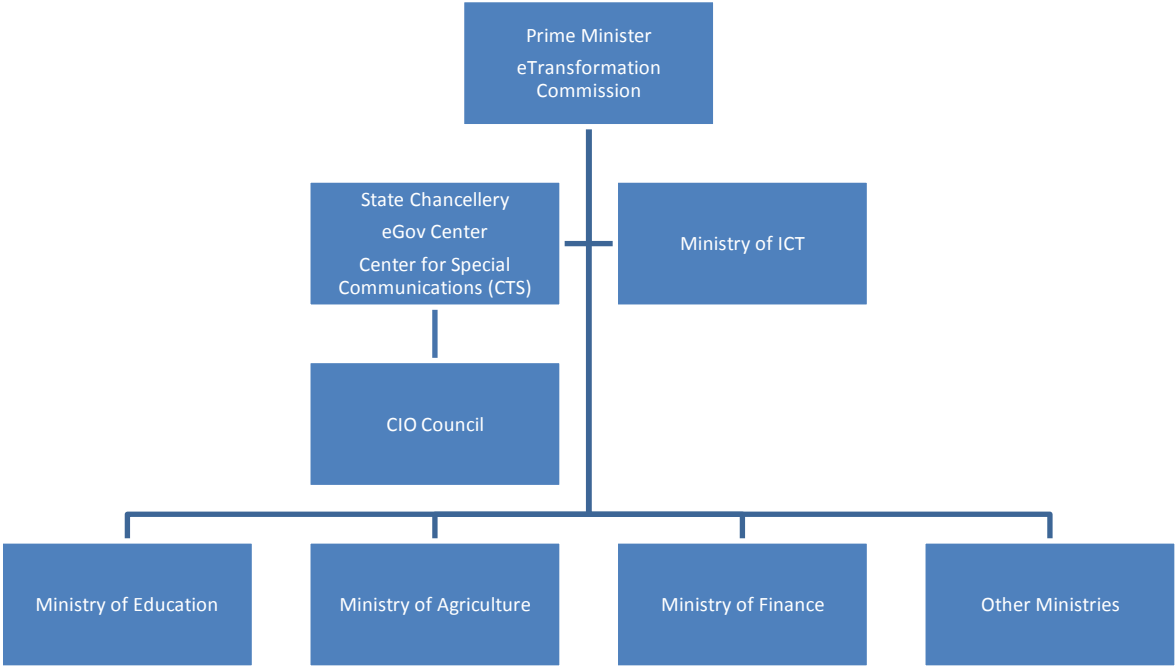


42.     The first project that will be implemented by the eGC is the IDA's Governance eTransformation (GeT) project. The GeT will initially fund the eGC core positions in order to attract the best in-class professionals, who will be tasked with building a solid foundation for e-transformation and global ICT competitiveness programs based on the most innovative concepts.

The eGC will have multiple streams of financing: it will have financing from the Government for supporting its shared ICT infrastructure and managing its ICT projects; and it will have financing from other donors for managing other ICT-related initiatives.

43.     **The project team.** The e-Government Center is managed by the Executive Director. Its core technical team includes: (a) a Chief Technology Officer; (b) an e-Services Coordinator; (c) a Training Coordinator; (d) a Communications Coordinator; (e) a Strategy and Partnerships Coordinator; (f) a Portal Content Manager; (g) an Enterprise Architect; (h) an e-Services Portfolio Manager, (i) an Information Security Manager; and (j) a Lawyer. In addition, the eGC will be supported by an implementation unit consisting of: a Project Management Specialist, a Procurement Specialist, a Financial Management Specialist, and a Project Assistant. These staff members will provide technical and implementation support for the project, and will take care of fiduciary and administrative aspects to ensure compliance with the IDA's rules.

44.     **Procurement.** The procurement will be carried out by the implementing agency in accordance with the World Bank's Procurement of Goods, Works and Non-Consulting Services Guidelines and Consultants Guidelines dated January 2011. The Procurement Specialist will be responsible for: (a) the preparation of all procurement packages; (b) the purchasing of goods; and (c) the selection and hiring of consultants. The procurement capacity of the implementing agency was assessed during a pre-appraisal mission.

45.     A comprehensive plan to mitigate the procurement risks and strengthen implementation capacity has been agreed upon with the eGC and the State Chancellery. If necessary, an international senior procurement consultant will be hired for several weeks to assist the eGC Procurement Specialist in drafting the bidding documents for M-Cloud and other specialized procurements and to assist the Evaluation Committee members. The World Bank project team—including technical staff, Financial Management Specialists (FMSs) and Procurement Accredited Staff (PAS)—will conduct regular supervision. In addition, civil society organizations that have expertise in IT will be encouraged to monitor the progress of the project. These and other aspects of enhancing institutional integrity are described in Annex 3.

46.     **Financial management (FM).** Some of the financial management arrangements have been already established under the ongoing Project Preparation Advance (PPA, $2 million) and the eGC will continue to strengthen them further. Thus, the eGC will undertake the preparation of the annual budgets based on the procurement plan and the implementation plan. Budgets will initially be approved by the Management Board (Administrative Council) of the e-Government Center, before being submitted to the Ministry of Finance and the Treasury. The annual budgets will be continuously monitored through interim reporting to the World Bank and the Ministry of Finance. The eGC has in place a computerized accounting system, which allows for an easy audit trail. The accounting policies and procedures of the Project are reflected in the Project Financial Manual, which will be a part of the Project Operational Manual. The eGC has an experienced FM consultant on-board who manages the FM arrangements for ongoing PPA and will handle them for the main project.

47.     The eGC has established an internal control system to cover regular reconciliation of bank accounts, segregation of duties, and regular reconciliation of disbursement summaries of

World Bank funds. The internal control mechanisms are documented in the project Financial Management Manual to ensure that approval and authorization control over the payment is sufficient. The eGC will prepare and submit to the IDA quarterly interim unaudited financial reports (IFRs) within 45 days of the end of each calendar quarter. The annual audit of the project financial statements will be carried out by independent auditors selected from the list of eligible audit firms on a competitive basis. The terms of reference for audit services were agreed upon and attached to the Minutes of Negotiations. The audited financial statements—together with the auditor's opinions and the management letters—will be provided to the IDA within six months of the end of the fiscal year (see Annex 3 for details).

## B. Results Monitoring and Evaluation

48. **Monitoring and evaluation (M&E)**—this will be an integrated aspect of project implementation and management. An NGO was hired in July 2010 under the Governance and Anti-Corruption Program to survey the public perception of public services. [13] The results of the survey have been used as baseline values of some indicators in this project. The e-Government Center will annually hire an NGO, company or consultant to carry out a survey of selected indicators to be measured. The Center will collect and present data for yearly review by the World Bank supervision missions. Progress will be monitored effectively through discussions conducted during supervisions related to institutional capacity-building, financial viability, technical reviews and site visits.

49. **Arrangements for results monitoring.** The eGC identified the following purposes of M&E: (a) measuring performance; (b) evaluating progress towards outcomes; (c) fostering institutional learning—improving the focus and orientation of the project; (d) understanding and negotiating stakeholder perspectives; (e) ensuring public accountability; and (f) measuring impact.

50. **Data collection** will be automated wherever possible, in order to simplify the process and reduce costs. E-services and portal development and cloud-based services for example are components that lend themselves to data collection automation. Embedding monitoring in web applications will simplify data collection and monitoring of results. The eGC has also decided to present the indicators online, to ensure data transparency and accessibility. Additional details are provided in Annex 3.

## C. Sustainability

51. As stated earlier, the ownership of the proposed project by the current Government is very strong and goes to the highest levels. The Government has allocated 12.4 million *lei* (about $1.0 million) in the 2011 budget for supporting the e-Transformation agenda, as the first installment of counterpart funding and is likely to provide funding in the future. It was agreed that these funds would be used for e-services development—and also to fund several new positions at the eGC. The State Chancellery will manage this budget, with the assistance of the eGC. The Government has agreed to a clear sustainability strategy, which entails the gradual phasing out of the World Bank's support for core staff salaries and operating costs, starting in the

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[13] "*Citizen Report Card",* by Institute for Public Policy and Magenta Consulting, Chisinau, January 2010

third year of implementation (January 2014). The draft e-Transformation Policy states that the ministries and public agencies that take part in the project will share in the savings derived from using the M-Cloud in a 60/40 split—wherein the eGC will receive 40 percent (the exact savings sharing ratio is to be confirmed by the e-Transformation Council once the policy is approved). As more services are implemented, the eGC will gradually phase out IDA funding to pay for the salaries of their consultants. Annex 3 gives details of the sustainability calculations.

52.     The project has adopted a modern, low cost and innovative approach, to ensure sustainable technology management through investments in the shared infrastructure of the M-Cloud and its use by ministries and public agencies. The Government will centralize purchase of IT assets to the extent feasible. This will reduce duplication and costs, because the Government will be negotiating with suppliers as a single large entity, as opposed to having the individual ministries and departments negotiate multiple small contracts. It will also make it easier for the Government to pursue a green IT strategy due to reduced energy consumption and carbon emissions. Further the approach is likely to be more sustainable. For instance, there might be potential revenue streams in the case of M-Cloud from maintenance contracts, software rental, application hosting, and storage services. The savings from the new approach will allow the Government to modernize faster and more effectively. Annex 7 covers in detail the economic and financial benefits of the Cloud platform.


## V.  KEY RISKS

53.     The e-Transformation agenda requires a major shift in the way the public administration works. There is a risk that the Moldovan Government might not have the capacity necessary to implement these reforms. There is resistance to change within the public administration. The project's objectives could clash with existing and well-embedded organizational cultures, stereotypes and vested interests. Cooperation between the implementing agencies is crucial. Certain ministries and departments may be resistant to the project's focus on increased public sector transparency and accountability.

54.     The Moldovan Government has adopted a practical "push" and "pull" approach to e-Transformation. The e-Transformation Council established by the Government can actively "push" the IT agenda forward. The Council is a ministerial level body chaired by the Prime Minister that is tasked with approving and enforcing the e-Transformation policy. The Government has in parallel adopted a policy that provides market incentives through the sharing with ministries and agencies of savings derived from the transformation as part of its "pull" strategy. The Government has opted for a gradual, phased-implementation schedule, because these changes take substantial time and effort. Those ministries that participate in the initial phase will be able to partake in the benefits sooner. The expectation is that other ministries, as they learn about the successes of the program, will also choose to participate.

55.     There is a risk that the Moldovan Government may be unable to sustain the program once it is no longer receiving financial support from the project. The policy described above—of sharing the savings derived from using the M-Cloud—should go a long way toward mitigating that risk.

56.      The main risk is that there may be delays in preparing and carrying out the procurement of e-services and migration to the Cloud, which is new to Moldovan agencies.  That risk will be mitigated by two factors:  (a) the use of international specialists with vast experience in the preparation of technical specifications for the equipment and software to be procured; and (b) the recruitment of an international procurement expert in the IT field, who will assist the eGC in drafting the Bidding Documents for the Cloud and the Requests for Proposals for major e-Services components.

57.      The political situation in Moldova is still uncertain as a result of political polarization and the failure to elect a President.  The timeframe for project preparation has been adjusted accordingly.  Nevertheless, there is a risk of delays during implementation.  This risk will be mitigated by a continuous dialogue with the governing parties and the opposition, as well as other stakeholders.

## VI. APPRAISAL SUMMARY

### A.  Economic and Financial Analysis

58.      This report includes an economic and financial analysis of the project—the analysis and assumptions used appear in full in Annex 7.  It calculates the main direct benefits to the Government and citizens, in terms of:  (a) the reduction in processing costs related to use of the Cloud Computing platform; (b) increased productivity of government workers; and (c) the savings for the population that will access the e-services.

59.      **Reduction in investment and operation costs due to the use of the Cloud.**  The analysis indicates that the net present value of the yearly savings for a 10-year period will be $13.4 million (based on the assumption that the savings will begin to accrue about one year after the initial implementation of the project).  The discount rate used for these calculations was 10 percent.  The Internal Rate of Return of the Cloud component would be 60 percent.  The Benefit-Cost ratio will be 4.5.

60.      **Increased productivity of the Government.**  The net present value of the e-services provision is $6.1 million, coming from the increased productivity of its workers in the provision of services, as many services will be delivered online.  For these calculations a 10 percent discount rate was used.

61.      **Reduction in costs of accessing government services.**  Finally, the analysis indicates that the net present value of the citizens and businesses savings are $25.9 million in terms of time saved in carrying out transactions with the Government.  These calculations were done for the 10-year period after effectiveness—discounting the benefits at a rate of 10 percent per year.

62.      **Sensitivity analysis**.  The previous analyses assume normal project implementation.  However, we calculated a more conservative scenario:  (a) the project is delayed for two years and only then the benefits of using the Cloud materialize; (b) the Government does not move the civil servants to other positions, or does not reduce the workforce, therefore there will be no

savings here; and (c) finally, the e-Services are introduced at a slower pace, resulting in a delay of two years for the benefits of time saved by citizens and businesses. Table 7.5 (in Annex 7) shows the results, and Table 7.4 the calculations.

**Table 3. Sensitivity Analysis**

| Item | Normal Scenario | Conservative Scenario |
|---|---|---|
| **Internal Rate of Return** | **79%** | **21%** |

63.     There are *other benefits* that were quantified but not included into the analysis:

- **Decreased power consumption**: Virtualization, new cooling technologies and using green servers are expected to result in decreased power consumption and therefore positive economic benefits from savings in electricity, which is one of major component of operating costs of a datacenter. Current cost of electricity used by today's technologies is approximately $3.7 million, while the electricity consumption of the proposed Cloud-based solution will cost approximately $250,000 annually, for the same computing power pursuant to data center consolidation.

- **Reduction in paper consumption**: Additional economic benefits are expected from reduced use of paper due to the introduction of e-services and the document management system for the Government. The current use of paper in Moldova results in approximately 8,000 tons of annual waste/landfill. Decreasing Moldova's paper usage just by transforming the *Monitorul Oficial* to an online publication will save approximately 1,000 trees a year.

## B. Technical

64.     The main areas of potential concern from a technical perspective relate to the design, implementation, operation and maintenance of complex ICT systems. The project will utilize the following measures in order to minimize the risks of potential delays, cost overruns or performance mismatch in the implementation of the systems:
-   Use of international standards for the design and implementation of M-Cloud infrastructure—rationalizing the investments in IT equipment hardware and storage, and ensuring high reliability (99.999 percent) of the data center and the network.
-   Use of a Government Applications Portal for all of the ministries and agencies in order to procure software applications at a lower cost than could be obtained by the individual departments and ministries themselves.
-   Adoption of common security and interoperability standards and methodologies, to ensure coordinated development of services.
-   Use of standardized IT systems procurement methods, bidding documents, and contracts, with embedded service-level agreements.
-   Use of local and international training programs to build capacity on a continuous basis throughout the duration of the project.

### C. Financial Management

65.     The eGC will be accountable for project oversight and financial reporting.  The eGC has hired a financial management specialist who is experienced in World Bank-financed operations.  This specialist is performing the project financial functions, including project budgeting, accounting, financial reporting, funds flow, auditing and internal control.   The assessment of the financial management capacity of the eGC concluded that minimum World Bank requirements have been met.

### D. Procurement

66.     The project will be implemented by the newly established Project Implementation Unit (PIU) for the GeT project.  The PIU has been set up within the eGC.  It consists of a project management specialist, a procurement specialist, a financial management specialist and a project assistant.  The project management specialist of the PIU will report to the Executive Director of the eGC and provide necessary project management, fiduciary and administrative support.  The environment for conducting procurement under the proposed project was assessed as high risk.  The key procurement-related risks and mitigation measures are identified in Annex 4.  An action plan to mitigate those risks has been agreed upon and will be implemented by eGC.

### E. Social

67.     The project is expected to have substantial positive social impacts. The citizens of Moldova will see both direct and indirect improvements in overall public sector service delivery, because the project will reduce the costs of interacting with the Government and improve the efficiency of government operations. There will be an increased opportunity for the civil society to review government activities, as more data is posted on government websites. This will create greater transparency and accountability—improving governance. Private IT companies—in particular, small- and medium-sized enterprises—will enlarge their participation in the development of applications for the Government.  This will enable them to increase their production and hire more staff.  The number of available e-services will be expanded—the growth in competition will reduce the cost of access to the Internet.  This will translate into higher productivity and better communications, with increasing economic and social benefits for businesses and citizens in general.  Due to increased efficiencies, some public sector employees may be redeployed to higher value-adding roles within the public sector.

### F. Environment

68.     The project will not finance the construction of any new buildings.  All new equipment will be installed in existing offices and buildings.  Hence, there are no adverse environmental impacts from the project.  The Project is classified as Category C.

### G. Other Safeguard Policies

69.     The Project will not trigger safeguard policies.
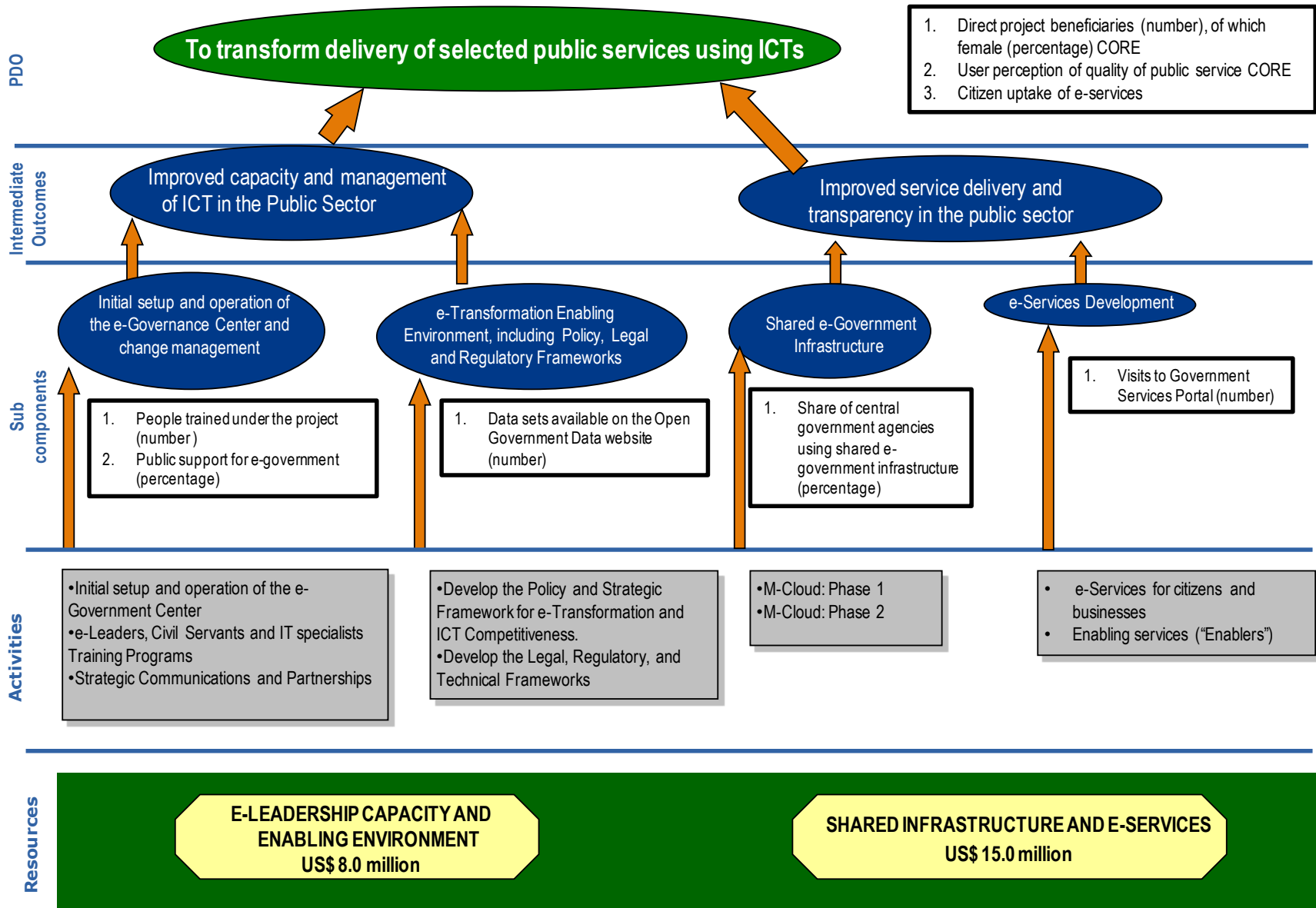
# Annex 1: Results Framework and Monitoring

## COUNTRY: MOLDOVA GOVERNANCE E-TRANSFORMATION PROJECT

### Results Framework

| Project Development Objective (PDO): To transform delivery of selected public services using ICT. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PDO Level Results Indicators*** | **Core** | **Unit of Measure** | **Base line** | **Cumulative Target Values** | | | | | **Frequency** | **Data Source/ Methodology** | **Responsibility for Data Collection** | **Description (indicator definition etc.)** |
| | | | | **YR 1** | **YR 2** | **YR 3** | **YR 4** | **YR 5** | | | | |
| Direct project beneficiaries (number), of which female (percentage) | X | Number Percentage | 0 | 10,000 38% | 20,000 40% | 80,000 42% | 180,000 46% | 300,000 50% | Annual | Government statistics | eGC | Direct project beneficiaries are people who directly derive benefits from an intervention. In this project it is citizens that access public services via the government portal and mobile phones. |
| Citizen perception of quality of public service | X | Percentage | N/A | 40% | 45% | 50% | 55% | 60% | Annual | Survey | eGC | This indicator measures the degree of users' satisfaction with the overall quality of transaction processing for the main public service (citizens portal) targeted by the project. |
| Citizen uptake of e-government | | Percentage | 7% | 8% | 11% | 15% | 20% | 25% | Annual | Survey | eGC | This indicator measures percentage of population who accessed a government website at least once over the previous 12 months. Measured by a citizen survey. |
| **INTERMEDIATE RESULTS** | | | | | | | | | | | | |
| **Intermediate Result (Component One):** | | | | | | | | | | | | |
| *Subcomponent 1.1.* | | | | | | | | | | | | |
| People trained under the project | | Number | 0 | 200 | 500 | 1,000 | 1,500 | 2,000 | Annual | Government statistics | eGC | This indicator measures the total number of people trained under the project. |
| Public support for e-Government | | Percentage | 53% | 53% | 55% | 59% | 64% | 70% | Annual | Survey | eGC | Percentage of population who would like to access public services through the internet or mobile phone measured by citizen survey. |
| *Subcomponent 1.2.* | | | | | | | | | | | | |
| Data sets available on the Open Government Data website | | Number | 50 | 100 | 200 | 300 | 500 | 600 | Annual | Government statistics | eGC | This indicator measures how many machine readable data sets will be available on the OGD website. In addition to measuring the total number, eGC will ensure that all high value datasets in real demand by citizens and businesses are included. |

| **Intermediate Result (Component Two):** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Subcomponent 2.1.*** | | | | | | | | | | | |
| Uptake of shared e-Government infrastructure (M-Cloud) | Percentage | 0 | 0% | 5% | 10% | 15% | 25% | Annual | Government statistics | eGC | This indicator measures the percentage of central government agencies that have migrated one or more of their services/applications onto M-Cloud |
| ***Subcomponent 2.2.*** | | | | | | | | | | | |
| Visits to Government Services Portal | Number | 0 | 25,000 | 100,000 | 250,000 | 350,000 | 400,000 | Annual | Web statistics | eGC | This indicator measures the number of unique visits to the government services portal. |

## Results Chain for the Moldova Governance e-Transformation project

**PDO**

To transform delivery of selected public services using ICTs

1. Direct project beneficiaries (number), of which female (percentage) CORE
2. User perception of quality of public service CORE
3. Citizen uptake of e-services

**Intermediate Outcomes**

Improved capacity and management of ICT in the Public Sector

Improved service delivery and transparency in the public sector

**Sub components**

Initial setup and operation of the e-Governance Center and change management

e-Transformation Enabling Environment, including Policy, Legal and Regulatory Frameworks

Shared e-Government Infrastructure

e-Services Development

1. People trained under the project (number)
2. Public support for e-government (percentage)

1. Data sets available on the Open Government Data website (number)

1. Share of central government agencies using shared e-government infrastructure (percentage)

1. Visits to Government Services Portal (number)

**Activities**

- Initial setup and operation of the e-Government Center
- e-Leaders, Civil Servants and IT specialists Training Programs
- Strategic Communications and Partnerships

- Develop the Policy and Strategic Framework for e-Transformation and ICT Competitiveness.
- Develop the Legal, Regulatory, and Technical Frameworks

- M-Cloud: Phase 1
- M-Cloud: Phase 2

- e-Services for citizens and businesses
- Enabling services ("Enablers")

**Resources**

E-LEADERSHIP CAPACITY AND ENABLING ENVIRONMENT
US$ 8.0 million

SHARED INFRASTRUCTURE AND E-SERVICES
US$ 15.0 million

21

## Annex 2:   Detailed Project Description

1.      The proposed project (in the form of an IDA specific investment credit of $20.0 million) will have two components, as presented in Table 2.1 below:

**Table 2.1:  Components and Costs of the Proposed Project**

|  | Project Components | Total Project Cost | IDA financing | Government's contribution[14] |
|---|---|---|---|---|
| Component 1 | **e-Leadership Capacity and Enabling Environment** | **$8,000,000** | **$7,000,000** | **$1,000,000** |
| 1.1 | Support for the e-Government Center and e-Leadership Development | **$6,455,000** | **$5,455,000** | $1,000,000 |
| 1.1.1 | *The initial setup and operation of the e-Government Center* | $4,235,000 | $3,510,000 | $725,00 |
| 1.1.2 | *e-Leaders and Civil Servants Training* | $1,520,000 | $1,245,000 | $275,000 |
| 1.1.3 | *Communications and Partnerships* | $700,000 | $700,000 | $0 |
| 1.2 | Developing Enabling Environment, including Policy, Legal and Technical Frameworks and Programs | **$1,545,000** | **$1,545,000** |  |
| 1.2.1 | Develop Policy and Strategic Frameworks | $1,190,000 | $1,190,000 | $0 |
| 1.2.2 | Develop the legal, regulatory, technical and Open Data Frameworks | $355,000 | $355,000 | $0 |
| Component 2 | **Shared Infrastructure and e-Services** | **$15,000,000** | **$13,000,000** | **$2,000,000** |
| 2.1 | M-Cloud  shared e-Government infrastructure | $6,000,000 | $5,000,000 | $1,000,000 |
| 2.1.1 | M-Cloud Phase 1 | $1,550,000 | $1,550,000 | $0 |
| 2.1.2 | M-Cloud Phase 2 | $4,450,000 | $3,450,000 | $1,000,000 |
| 2.2 | e-Services Development | $9,000,000 | $8,000,000 | $1,000,000 |
| 2.2.1 | e-Services | $7,000,000 | $6,000,000 | $1,000,000 |
| 2.2.2 | Enabling services ("enablers") | $2,000,000 | $2,000,000 |  |
|  | **TOTAL BASELINE COST** | **$23,000,000** | **$20,000,000** |  |
|  | *Front-end fee* | $0 | $0 | $0 |
|  | **Total Financing Required** | **$23,000,000** | **$20,000,000** | **$3,000,000** |

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[14] The Government's contribution to the Project will be composed of: (a) $725,000 to pay for the gradually increasing share of the e-Government Center salaries and operating costs for the years 2014-2016; (b) $275,000 as in kind contribution for staff time of civil servants and employees of the public agencies that will participate in training activities under the Project; (c) $1,000,000 for the existing building and other resources for the installation of the M-Cloud; (d)  $1,000,000 for the development of e-Services.

2.      This Project aims to benefit from some of the latest and most innovative approaches in e-Government. It is also the first in-country implementation of the World Bank's eTransform Initiative, which was launched in April 2010 to leverage world's best expertise in e-Government for developing country clients. Therefore, the project design has benefitted from consultations with the world's leading experts on governance e-transformation.

3.      There are many examples of where the current service delivery is cumbersome, expensive, inaccurate and inefficient.  This project is about transformation of the current service delivery processes to new, streamlined, electronic, efficient processes, called "E-Services".  There are two complementary project components involved in carrying out this transformation: (a) changing the processes and the mindsets of the civil servants who are tasked with providing these services; and (b) providing for the hardware and software that will actually deliver the electronic services.  It is not possible to do one of these components without also doing the other.

4.      The Government has made a good use of the Project Preparation Advance that was made available in August 2010.   Specifically, five e-services and a government portal are being procured, eTransformation Policy has been drafted, key staff of the eGC and PIU have been hired, computer equipment for the eGC has been procured as well as the required financial management system.  Additionally, strategic partnerships have been initiated and multiple capacity building events and study visits were organized throughout the year (in Estonia, India, Singapore and USA).  The concept for Open Government Initiative has been developed, and Open Data Portal (data.gov.md) has been launched with first 50 datasets and the first Apps Competition is being launched in spring 2011.

## Component 1:  e-Leadership Capacity and Enabling Environment ($8.0 million, of which IDA financing is $7.0 million)

5.      The main objective of this component is to carry out the changes in processes needed to transform the way Government provides its services to citizens.  Because civil servants in ministries and agencies are in charge of these processes, a large training program is included to catalyze mindset change in the ministries involved in delivering the services electronically.

**Subcomponent 1.1:   Support for e-Government Center and e-Leadership Development ($6.455 million).** The subcomponent will finance:

6.      ***The initial setup and operation of the e-Government Center("eGC")***.  The Government established the e-Government Center in August 2010, to be the entity in charge of the daily e-transformation activities, supporting the State Chancellery.  The role of the eGC is to work with ministries and agencies of the Government to review and re-design the processes that are required to provide the services, with the aim to converting to electronic services, and to contract their design and implementation.  The idea is that the majority of the customers, as they experience how fast and easy it is to get services online, will opt for this method over the traditional method.  This would reduce the workload on ministries, which would now focus on improving their procedures.  The Center will employ change management, project management and technical specialists to coordinate different aspects of implementing the e-transformation program.

7.      Funds will be provided for:  (i) effective project management; (ii) development of the monitoring and evaluation system; (iii) tracking and reporting results on a regular basis; and auditing the project.  The operational budget of the eGC will progressively be drawn from GoM budgetary resources in order to ensure sustainability and reduce dependency on the World Bank financing (for more on sustainability issues, see Annex 3).

8.      This subcomponent will also finance operating costs related to the eGC and the GeT PIU. The latter will be responsible for project management, procurement, and financial management during implementation of the project.   The project will cover the costs of consultants, equipment, training, other operational and maintenance expenditures and audits.

9.      The project will initially finance the staff of the eGC, including:  (a) the Executive Director—who will manage the Center; (b) Technical Program Coordinators—who will be in charge of managing specific project activities (or programs); (c) the Project Implementation Unit (PIU) staff; and (d) other consultants.   These professionals will coordinate implementation of various ICT and e-Government programs of the e-Government Center with Ministries and State Enterprises, and will eventually become the drivers of a broader e-Transformation agenda. Additional staff will be seconded from other government agencies and state enterprises on as needed basis.

10.      *e-Leaders,  Civil Servants and IT Specialists Training Program.*  The governance transformation program supported by this Project entails changing the mindsets of civil servants. A broad change management program will be implemented to bring about this change.  It is comprised of three parts:   (a) *training the leaders* (i.e., ministers, vice-ministers, department heads, agency managers and key staff) through leadership seminars, study visits, and twinning arrangements with countries that are leaders in the e-Transformation agenda; (b) *training the civil servants* who are involved in the provision of services in the participating agencies.  The focus will be on change management to motivate and engage each one of the individuals and obtain their buy-in to the e-Transformation program; (c) *technical training* for: (i) engineers; (ii) IT specialists; (iii) professors in universities with IT programs; and (iv) IT developers in new technologies and processes introduced by this project, such as Cloud Computing and Service Oriented Architecture.

11.      *Strategic Communications and Partnerships.*   A transformation of this magnitude needs to be properly communicated to citizens and businesses, to obtain their support for the program in order to put pressure on departments that are reluctant to embrace it. It is also important to alert the population when new e-Services become available and explain how to take advantage of them.  Therefore, the project will finance: (a) the development and implementation of a Strategic Communications program; (b) the creation and management of Strategic Partnerships with foreign Governments, donors, NGOs and other entities, to raise and manage funding and other resources, because the resources needed for the program are larger than what this project can finance; and (c) the organization of knowledge-sharing seminars, workshops, conferences, innovation contests and TechCamps.  The eGC has already established a number of partnerships with Singapore and Estonia (through MoUs), India (through South-South Exchange

program), and others (initial discussions took place with counterparts from the EC, Netherlands, Austria, Finland, Malta, South Korea and Japan.

**Subcomponent 1.2: Developing an Enabling Environment, including Policy, Legal and Technical Frameworks and Programs ($1.545 million)**

12.     The Government will need to enact a number of changes in the policy, legal and technical regulatory frameworks.  The transformation will entail more software development to be outsourced to private companies, which will create numerous opportunities for accelerating development of the local IT industry.  This will require the Government to revisit the overall IT competitiveness program, to foster the development of the Moldovan IT industry. Subcomponent 1.2 will finance technical assistance to:

(a) **Develop the Policy and Strategic Framework for e-Transformation and ICT Competitiveness.** This includes support for:

- e-Transformation Roadmap and Policy Development—to help define Government's e-Transformation vision, policies, strategies and programs.

- Global  ICT Competitiveness Program Development—to help define a vision statement and roadmap, to identify opportunities and targets for the ICT-enabled enhancement of competitiveness of the Moldovan economy by 2020, and to identify opportunities to promote the local ICT industry.

(b)     **Develop the Legal, Regulatory, and Technical Frameworks**, including support for:

- e-Transformation Legal and Regulatory Framework—to support drafting changes to legislation and regulations to enable the use of electronic services.

- Technical Standards and Open Data Framework—this will include:  (a) drafting Interoperability and e-Security standards for Moldova's e-Government, to enable the integration and rationalization of all government IT systems; and (b) developing the Open Government Data Framework, which is aimed at making government data open and freely downloadable in a user friendly format to empower civil society and SMEs to improve governance and service delivery.

    o The Open Data portal data.gov.md  was launched in April 2011 with first 50 datasets mostly in the area of education and health.  Besides Ministries of Education and Health, other champions of OGD include Ministry of Finance, Ministry of Agriculture and Food Industry, National House of Social Insurance and Ministry of Economy.  Open Government Data directive was issued by the Moldovan Prime Minister on April 29, 2011 mandating every ministry to open 3 new datasets every month. Public expenditure data are expected to be published by the Ministry of Finance on the Open Data portal in late May 2011.

**COMPONENT 2:  SHARED INFRASTRUCTURE AND E-SERVICES ($15.0 million, of which IDA financing is $13.0 million)**

13.     This component will finance the acquisition of shared computer infrastructure and development of the systems to deliver government services electronically.

**Subcomponent 2.1:  M-Cloud:  Shared e-Government Infrastructure ($6.0 million)**

14.     The primary focus of this subcomponent is the phased establishment of a government cloud computing infrastructure in order to enable government agencies to deliver electronic services faster and more efficiently.  M-Cloud will be eventually shared by all ministries and agencies of the Government.  The '**M**' refers to the fact that the Cloud:  (a) will be located in **M**oldova; (b) will initially be a **m**ini-Cloud, starting small but will gradually expand to cover the growth in services; and (c) will incorporate a **m**obile delivery system, to enable people that do not have access to the Internet to get services through mobile phones.

15.     The M-Cloud is envisaged as an internal government cloud, defined as a multitenant, dynamically provisioned and optimized infrastructure with self-service developer deployment, hosted within the safe confines of a government data center[15].  It is proposed to be anchored in the Center of Special Communications (CTS).

**Characteristics of M-Cloud[16]**

16.     Consistent with the concept of cloud computing[17], M-Cloud will have the following characteristics[18]:

17.     *On-demand self-service.*  A government agency can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with the M-Cloud provider – CTS in this case.

18.     *Broad network access.*  Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs).

19.     *Resource pooling.* The M-Cloud will pool computing resources to serve multiple government agencies using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to user demand.

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[15] Forrester, 2009.

[16] In the interest of accuracy and completeness, the description in this section is necessarily full of technical details which may not be easy to follow for less technology-savvy audience.

[17] According to the US National Institute of Standards and Technology (NIST), Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

[18] Adapted from NIST definition of Cloud Computing version 15.

20.     *Rapid elasticity*. Capabilities can be rapidly and elastically provisioned, in some cases automatically, to quickly scale out and rapidly released to quickly scale in.

21.     *Measured Service*.  The M-Cloud will automatically control and optimize resource use by leveraging a metering capability for services like storage, processing, bandwidth, and active user accounts.  Resource usage can be monitored, controlled, and reported providing transparency for both the M-Cloud provider and user of the utilized service.


**M-Cloud Services**

22.     The M-Cloud will offer three types of services[19]:

23.     *Infrastructure as a Service (IaaS)*.  The capability provided to government agencies to provision processing, storage, networks, and other fundamental computing resources where the agencies will be able to deploy and run arbitrary software, which can include operating systems and applications.  The agencies will not manage or control the underlying cloud infrastructure but will have control over operating systems, storage, deployed applications, and possibly limited control of select networking components (e.g., host firewalls).

24.     *Platform as a Service (PaaS)*.  The capability provided to the government agencies will be to deploy onto the cloud infrastructure agency-created or acquired applications created using programming languages and tools supported by M-Cloud (e.g., Application Program Interfaces for authentication, e-payment  etc.) The agencies will not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but will have control over the deployed applications and possibly application hosting environment configurations.

25.     *Software as a Service (SaaS)*. The capability provided to the agencies is to use applications running on the M-Cloud infrastructure (e.g., email, document management system, base maps etc.) The applications will be accessible from various client devices through a thin client interface such as a web browser (e.g., web-based email).  The agencies will not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

**Decentralized Approach**

26.     The primary differences between M-Cloud and a traditional data center will lie in the scalability and elasticity of M-Cloud as also in the provision of metered usage.  As a result, M-Cloud will help transfer decision making authority on use of hardware and software assets largely to the user on a self service model as compared to the traditional model that requires such assets to be more centrally controlled.  Self-service will mean a more decentralized approach to accessing computing resources, and will also make it easier to integrate monitoring and evaluation of Cloud usage, by virtue of the metering capabilities of M-Cloud.

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[19] Adapted from NIST definition of Cloud Computing version 15.

27.    The M-Cloud concept is depicted in the graphic below[20].

## THE M-CLOUD CONCEPT
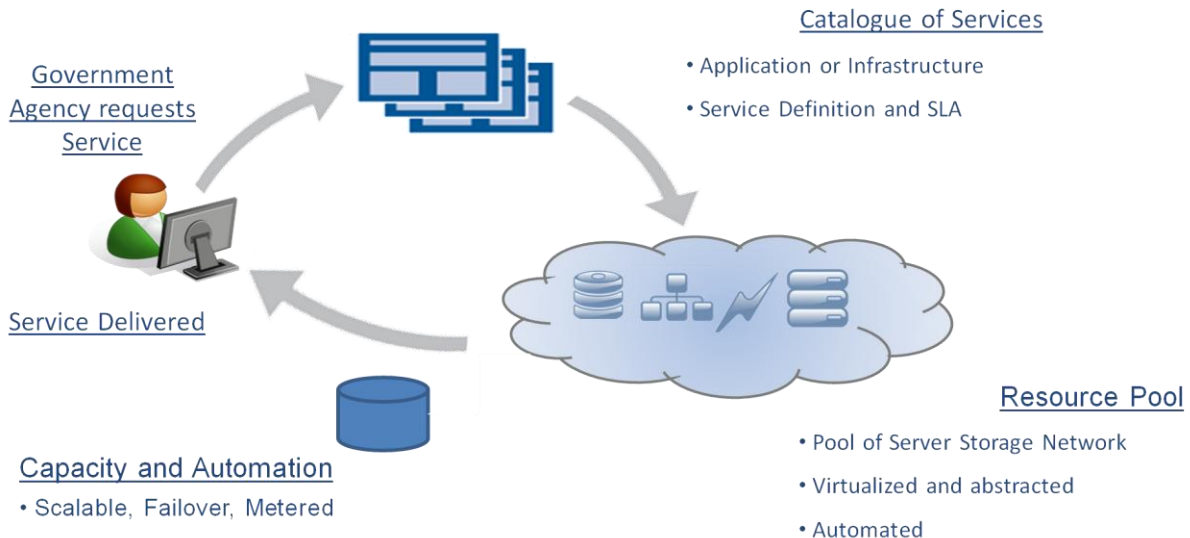


**Key Challenges for M-Cloud**

28.    The M-Cloud computing initiative will need to focus on the more difficult organizational, cultural, political and process issues first, before focusing on technologies.  Keeping in view these issues, it will be important to adopt a strategy of stepwise evolution.  For successful M-Cloud deployment it will be necessary not to try to "boil the ocean" in a major rollout, but to first deploy a small, first phase of M-Cloud with very limited capabilities.  In addition to proactively working with government agencies to understand what should be in the service catalog and how users might use M-Cloud, the strategy will allow "learning by doing" by putting a small government cloud in place, and crossing the river by feeling the stones.

**Phased Deployment**

29.    The proposed timeline for M-Cloud  implementation is as follows:



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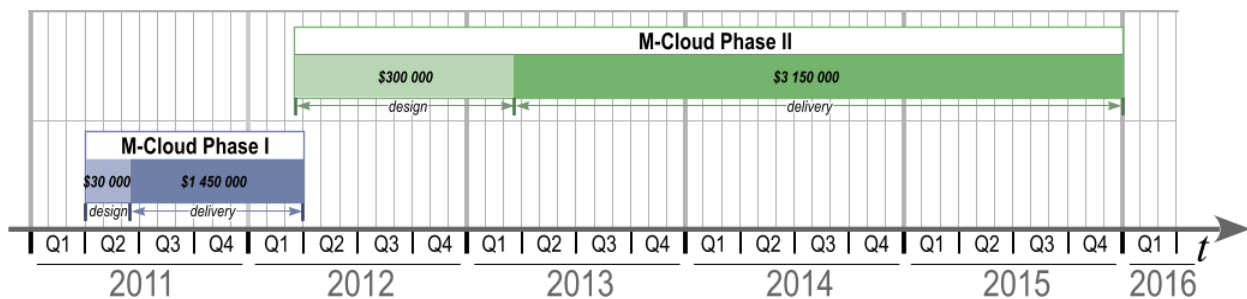
[20] Adapted from Microsoft

30.      Given the challenges for successfully rolling out M-Cloud, it is proposed to go about the deployment in a phased manner.  The deployment will be done in two phases.  In the first phase (planned for deployment in 2012), a small private cloud is proposed to be put in place (with possibly 1 cloud management blade and a series of virtualization blades with up to 50 TB storage).  Phase 1 of M-Cloud will aim to pilot and systematically demonstrate the advantages of the cloud approach by building on relatively easy deployments.  Such deployments will include using the cloud for data backups, web hosting, application development/testing, development of enabling services (such as Authentication, e-Payment) and very simple applications.

31.      The M-Cloud is proposed to be implemented as a managed service for the first six months of the initial rollout.  The vendor will therefore be responsible not merely for the installation of the first phase of M-Cloud, but will also be responsible for its efficient management, and for the transfer of skills in order to ensure a smooth roll out.  This will help build capacity and develop skills within CTS and participating government agencies, to manage and utilize the infrastructure.

32.      The first stage of cloud deployment will help in managing organizational and legal change, demonstrate the value of M-Cloud, develop necessary skills to manage Cloud infrastructure, and design and deploy cloud based applications.  In order to minimize risks, no mission-critical applications of data are proposed to be deployed exclusively on M-Cloud during the first phase, without proper backup and disaster recovery.

33.      There appears to be existing demand for the first phase of the M-Cloud implementation. The Cadastre and Land Relations Agency (CLRA) has already adopted a cloud architecture for its National Geoportal and has found this approach to be highly promising.  It has co-located its servers with CTS in preparation for migrating to the M-Cloud.  CLRA's requirements of 15TB of storage from out of the 50 TB proposed for Phase 1 of M-Cloud is likely to be a good start. The Ministry of Labor, Social Protection and Family (MLSPF) has begun aligning its application development effort to leverage the M-Cloud.   Registru is keen to use M-Cloud for the development and testing of its applications.  There is also clear demand for virtualization of desktops and for data back up by a number of government agencies that do not have the technical wherewithal or the computing resources for such backups.   In addition there are existing applications administered by CTS e.g., email that can be easily migrated to M-Cloud.  There is also clear demand from both SOEs and from the private sector (expressed through the IT Association) for some of the platform level services proposed on M-Cloud e.g., authentication and e-payment.

34.      During the second phase (planned for full scale deployment in 2014), the infrastructure is proposed to be scaled up to include a disaster recovery capability for mission critical applications.  Further the process of consolidating computing assets will be accelerated.  The scaling up during Phase 2 will be done based on the experience gained, and results achieved, during Phase 1.  It is proposed to establish the second phase of M-Cloud using container based systems that meet European data center construction standards, thus avoiding any new construction of buildings.  Such container modules are increasingly becoming the industry trend.

35.     It has been estimated that the total storage requirements of the Government of Moldova are currently 520 TB and are likely to grow to 650 TB by 2015 (USAID).  This implies that there will be at the very least, an increasing demand for back up storage going forward.  Since the first phase of M-Cloud will have metering systems as an integral part of the solution, it will be possible to continuously monitor and objectively assess the usage of Phase 1 of M-Cloud while making decisions on the second phase.

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**Box 2.2: Cloud Computing as a Global Technology Megatrend**

A number of governments have begun to establish Government Clouds (G-Clouds). Notable examples are China, Japan, Thailand, UNITED KINGDOM and the USA. According to a widely accepted definition by the National Institute of Standards and Technology (NIST), "Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction".

Cloud computing is now widely regarded as a technology megatrend along with social networking and mobile services. For example, it has recently been included in the list of the top-ten tech-enabled business trends by McKinsey & Co.  According to Gartner, "Cloud computing offers… a unique opportunity (for emerging countries) to leapfrog the traditional, expensive IT investments made by enterprises in mature economies in much the same way that rapid deployment of wireless technology enabled consumers to skip landlines, and move directly to mobile devices."

The Chinese government is now pursuing cloud computing as part of its long-term economic strategy. It is aggressively promoting pilot cloud computing innovation centers in Shanghai, Beijing, Shenzhen, Hangzhou and Wuxi. Earlier this year, IBM and Range Technology Development Co. Ltd announced a collaboration to build a state-of-the-art, enterprise-class Cloud Computing Data Center at Langfang to support the development of Hebei Province as a high-end Information Technology and services-based economy. The center—which is expected to be completed in 2016—will be the largest in Asia. It will cover 6.2 million square feet. Among other things, the platform will be used to support Langfang City's development and hosting for smarter transportation, e-government services and administration systems, food and drug safety services and supervision solutions.

The local government in Dongying collaborated with IBM in 2009 to build a cloud computing facility, offering software development and test resources for software startup companies via the web through a self-service user interface. The cloud was also an e-government services platform.

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36.     There are several advantages to using the Cloud approach in Moldova.  Some of the more significant ones include:
  (a) Reduction in time to procure computing capacity for government agencies, allowing more agile application and service development /deployment cycles;
  (b) Clear line of sight to costs of computing resources;
  (c) Reduction in costs of power, cooling and space requirements;
  (d) Better use of skilled IT personnel, as Ministries do not have to maintain expensive staff and support systems to maintain their own data centers and sophisticated terminals;
  (e) Increase in the availability of the IT systems in cases of disasters or failures, because of the use of the Cloud for backup; and

(f) Improved skills and capacity in both the public and private sectors to exploit emerging market opportunities in the area of cloud computing.

37.     See Annex 7, Economic and Financial Analysis, for a detailed calculation of the economic benefits of the introduction of Cloud computing in Moldova.

38.     M-Cloud is envisaged to target three categories of potential users.  These are:  (a) Government ministries, SOEs departments and agencies; (b) small and medium-sized enterprises engaged in the development and delivery of IT services and solutions for government; and (c) universities requiring such infrastructure for research and development, and for integrating Cloud computing skills as part of their curriculum design.

39.     Given the significance of Cloud computing as a game changer (as seen from country examples in Box 2.2), it is important that GoM should begin developing its capabilities to leverage Cloud computing as part of its e-Government and competitiveness strategy going forward.  M-Cloud will help GoM to develop this capability, and to acquire the relevant experience and expertise to deal with matters related to Cloud-based performance, scalability, maturity, portability, security, compliance, risk and contract management and Cloud pricing models.

40.     The project will finance:
   (a) The preparation of technical specifications for M-Cloud infrastructure, including development of the business model to operate it.
   (b) The M-Cloud shared computing infrastructure, comprising of core processing, storage, virtualization and service delivery platforms that include provision of Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS).  The component will also cater to any power supply, air conditioning and auxiliary systems that are necessary for its implementation.
   (c)  Enhancements as needed to connectivity infrastructure for government departments that will initially use the M-Cloud to ensure efficient use.

**Subcomponent 2.2:   e-Services Development ($9.0 million)**

41.     This subcomponent will fund a number of e-Services aimed at improving the government to citizen interface.  The main objective of this approach is to achieve significant reduction in time, effort and resources spent by citizens accessing government services.  Two categories of services are envisioned under the project:  (a) Ministry/sector specific electronic services termed as e-Services and (b) Cross-cutting services termed as enabling services.  E-Services will be Ministry and sector specific, and will aim to create improvements in access to, and delivery of selected citizen services.  Enabling Services will be more cross cutting in nature and will help in the efficient delivery of a range of e-Services.  Details of the two categories of services are provided later in this document:

**(a) E-Services for Citizens and Businesses**

**<u>Selection Process</u>**

42.     The process of selection will commence with eGC launching consultations with ministries and agencies on the priority E-Services to be developed and deployed. Ministries and agencies will submit to the eGC through their CIOs e-Service project proposals for funding in a standardized template.  eGC in collaboration with  CIOs will establish an Evaluation Expert Group to evaluate the proposals and develop a short list of E-Services.

43.     The agreed selection criteria will consist of pre-selection criteria/filters on the basis of pass/fail and weighted criteria.  The pre-selection criteria include:  (a) low cost (under $200K) and short implementation timeframe (up to 12-18 months), (b) service should be government to citizen (G2C) or government to business (G2B), (c) there should be existing back end infrastructure, (d) there should be well defined and functioning business processes.  The weighted criteria are:  (i) urgency and relevance; (ii) outreach; (iii) existence of  key enablers; (iv) back office readiness; (v) level of complexity; (vi) legal and regulatory framework; (vii) leadership and political will; (viii) user readiness, (ix) sustainability,  (x) external factors (EU compliance, support of other donors, etc.).  The Evaluation Expert Group will present their evaluation results and a short list to the CIO Council and eGC.  The final selection will be undertaken by the e-Transformation Council consisting of Ministers, private sector and NGOs and chaired by the Prime Minister.

44.     In order to accelerate the roll-out of citizen and business facing services, a study on key databases that need to be put in place will be conducted.  The study will be launched in the first year of the project itself, and will identify (i) data that needs to be digitized from paper documents, (ii) data that needs to be converted from obsolete digital formats, and (iii) data that needs to be adapted for use in a cloud environment.  Addressing these three categories for key registries and data bases will be immensely useful in launching a range of e-services.  The outcomes of the study will therefore be used for digitization of key databases, conversion of outdated formats and their adaptation and migration to M-Cloud.  This will also help in the selection of e-Services during years 2-4 and serve as one of the determinant factors in the design of e-Services.

45.      MoUs will be signed between participating Ministries and eGC outlining division of responsibilities, implementation approach, cost and timeline for the implementation of e-Services.  Upon project launch eGC will recruit specialized consultants to work with the selected ministries on identification of requirements, preparation of technical specifications who will assist them throughout e-service development stage.  The user testing will be completed by the ministries and agencies prior to final sign-off.  The vendor contracts will provision for two years of maintenance assuring continuous support with the roll out and adoption of E-Services.

46.     **E-Services for the first year of implementation:**  The eGC with technical assistance provided by IDA International Singapore, USAID and Estonian experts conducted a comprehensive e-services prioritization exercise in 2010.  On the basis of this prioritization eGC has selected five e-services for implementation in 2011 and developed comprehensive E-Services selection criteria and process described in detail in the Project Operations Manual.  The following e-services have been identified:   e-Criminal Record, e-Licensing, e-Library of Construction Norms, e-Registration for Medical Insurance, Emergency SMS alerts.

47.     This initial set of projects will rely on existing databases and focus on the delivery of the citizen government interfaces. The services identified are not ones that require major business process re-engineering efforts.

**Table 2.2:  e-Services for the first year of implementation**

| e-Service | Ministry | Type | Description |
|---|---|---|---|
| e-Criminal Record | Ministry of Internal Affairs | G2C | Electronic application for issue of criminal records |
| e-Licensing | Ministry of Economy | G2B | Electronic application and processing of requests for issue of business licenses |
| e-Library of Construction Norms | Ministry of Regional Development and Construction | G2C G2B | Digitization and elaboration of an electronic library of construction norms and standards |
| e-Registration for Medical Insurance | National House of Medical Insurance | G2B | Electronic submission of activation and deactivation requests for employee's medical insurance policies by the employers |
| Emergency SMS Alerts | Ministry of Internal Affairs | G2C | Service for emergency notification of citizens via SMS |

48.     The development of e-services will be supported by a strong communications and public awareness campaign and targeted training programs for disadvantaged groups to ensure that more citizens and businesses take full advantage of the newly developed e-services.

49.     All E-Services will be linked to the Government Portal that will serve as a one stop shop for the access to the entire government information.

50.     This will be implemented in coordination with the UNIFEM projects aimed improve access to e-services in the rural areas.  The eGC is partnering with UNIFEM on establishing Information Access Centers in *Rayons* (starting with 3 to 4 in 2011, with the goal to establish at least ten additional Centers by 2016).  Each Information Access Center will be equipped with 10 to 20 computers with broadband Internet access and staffed with specialized personnel who will train and assist citizens in accessing various e-services developed by the eGC in the course of five years of the GeT project operation.  In particular, women, senior citizens and vulnerable groups will be targeted, aiming at reducing the digital divide.  This collaboration will take place within the framework of MOU and there will be no project financing provided to support it.

### (b)  Enabling Services ("Enablers")

51.     These services serve as crosscutting enablers for the delivery of e-services, such as:  (a) the Government services portal, which will be the one-stop gateway for accessing online services provided by all ministries and agencies;  (b) an e-payment system, to allow citizens and businesses to pay for services electronically—initially using debit and credit cards and other online payment tools, and later, mobile phones;  (c) an e-authentication system, to ensure the true identity of citizens who access the services and protect against fraudulent use;  (d) a mobile applications platform, to create access to e-services provided by ministries and agencies through

mobile phones; (e) the applications store/portal, which will serve as a repository of all common applications to be shared by government ministries and agencies; (f) an SMS and email notification system, to communicate with the citizens and businesses, notify them about progress with their requests, and provide emergency alerts; and (g) a government document management system, to file, store and share official documents across ministries and agencies[21]. Technical specifications were developed for the e-Government Services Portal with the help of Singaporean Government experts. The eGC with the assistance of USAID has conducted feasibility studies for e-authentication and e-payment systems. These essential "enablers" are expected to be launched in 2011 using PPF funds.

52.    Subcomponent 2.2 will finance the following specific activities:

   (a) Feasibility studies, including back office assessment and minor process re-engineering;
   (b) Preparation of technical specifications;
   (c) Software development;
   (d) Migration of existing systems to the Cloud computing platform if needed;
   (e) Digitization of documents and archives for the provision of service as needed;
   (f) Conversion of old systems to new software as needed;
   (g) Upgrading of existing databases;
   (h) Installation, testing and commissioning of the new software; and
   (i) Training of the staff involved in the provision of the electronic service.

53.    Proposed timeline for initial implementation of e-services subcomponent is as follows:



e-Services Implementation Timeline

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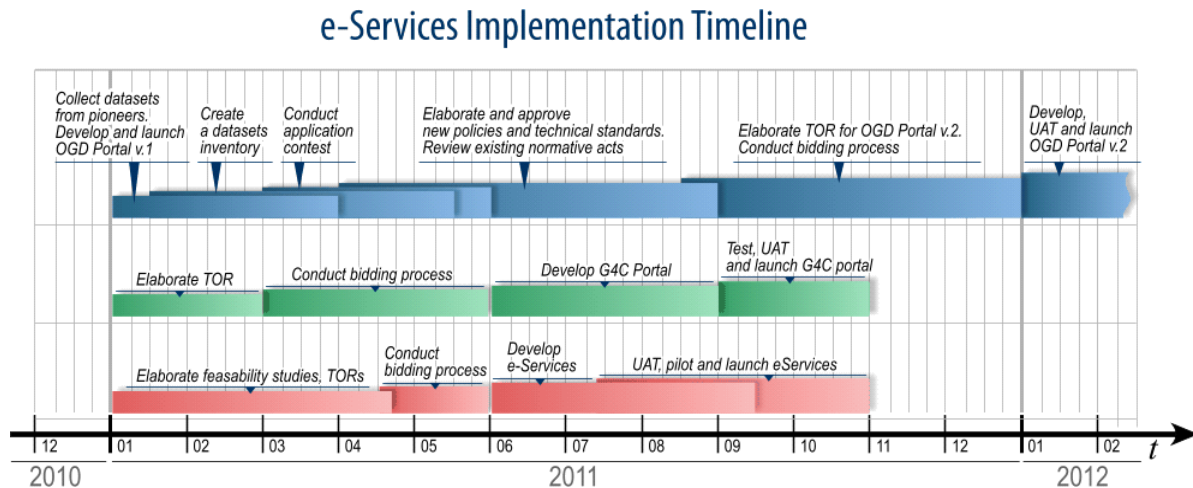
[21] This project will only fund the initial phase of the government document management system limited to the agencies located in the main government building, including the State Chancellery.

**Annex 3: Implementation Arrangements**

### a. Project Administration Mechanism

1.      **Oversight arrangements.**  Figure 1 in the main text shows the organizational arrangements for Project implementation.  The ***State Chancellery*** will be responsible for executing the Project.  The State Chancellery has a unique central position and convening power in the Government structure, as the office that supports the Prime Minister and the Cabinet.  This enables the SC to oversee effective coordination and enforcement of transformational initiatives across agencies and levels of Government.  The ***National e-Transformation Council***—which is chaired by the Prime Minister and includes all key Ministers—will approve policies prepared by the State Chancellery and the Ministry of Information and Communication Technologies (MoICT).  The MoICT will play a particularly key role in driving ICT policy, legal, and technical frameworks development and ICT competitiveness activities.  The State Chancellery will play the key role in driving the overall Government e-transformation agenda.
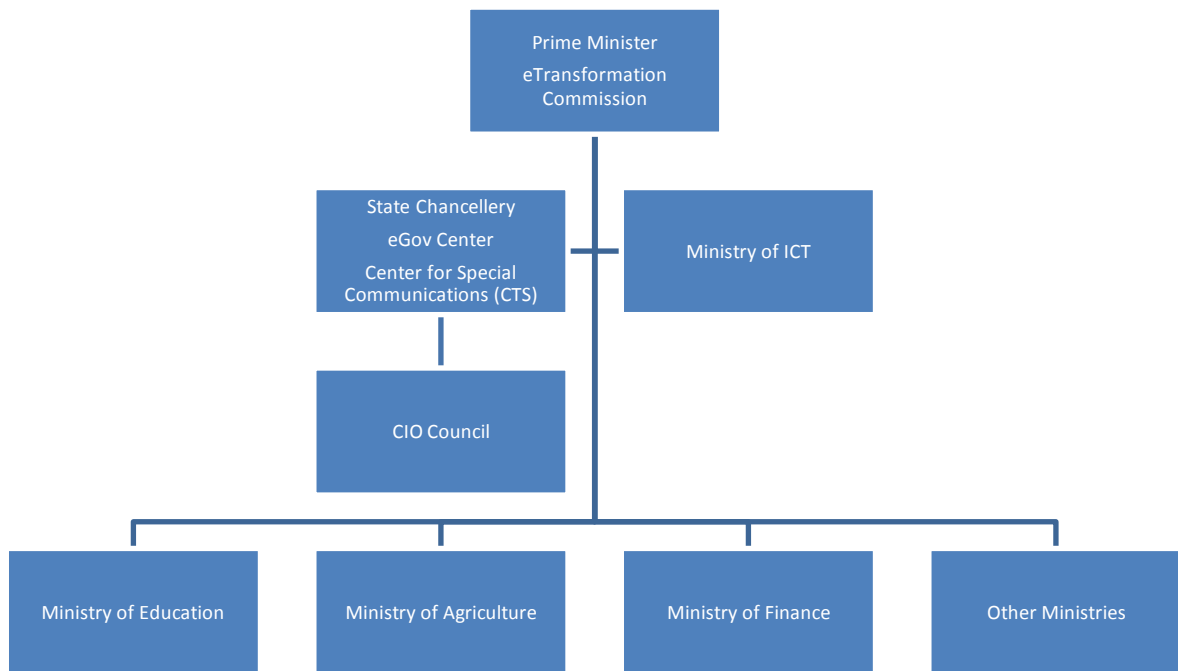


2.      **Implementation arrangements**.  The State Chancellery will implement the Project through the e-Government Center (eGC).  The latter was established in August 2010 as a nonprofit organization of public interest, subject to commercial law.   Its responsibilities include: (a) strategic planning; (b) advisory support to various ministries; (c) project management; and (d) implementation of IT initiatives in the public administration.  The eGC management board will serve as the Project's Steering Committee and will be responsible for all key decisions regarding this Project.  The Board is chaired by the Secretary General of the Government, with Minister of Finance as Vice-Chairman, and composed of several Vice-Ministers.

3.      The eGC team and the State Chancellery will work closely with line ministries on implementation of the Project components—specifically, on migration of IT infrastructure to the

M-Cloud, process re-engineering and development of e-services.  The eGC has already identified focal points at each line Ministry (e-Transformation Coordinator or Chief Information Officer, CIO), and engaged them in a number of capacity-building and knowledge-sharing events and other discussions.  The eGC will establish and support the inter-agency CIO Council, which will serve as a technical coordination vehicle.  The Center for Special Telecommunication (CTS) at the State Chancellery—under the eGC's oversight—will manage the M-Cloud, and will maintain and operate the shared government IT systems.  The eGC will have decision-making authority with respect to the CTS in all aspects of the project, including the design, development, installation, operation and management of the M-Cloud.  The CTS has a long-time experience in providing services to the Government, including maintenance of the fiber-optic network that connects all government buildings in Chisinau.  The CTS currently provides disaster recovery solutions for FMIS, tax and other government systems.

4.      **Sustainability.**  The first project that will be implemented by the eGC is the IDA's GeT project.  The Project will initially fund the core eGC positions in order to attract the best in-class professionals, who will be tasked with building a solid foundation for e-transformation and global ICT competitiveness programs based on the most innovative concepts.  The eGC will have multiple streams of financing:  it will have financing from the Government for increasing public sector efficiency and managing its ICT projects, and financing from other donors for managing other ICT-related initiatives.  The eGC core team will remain small, but the eGC will work very closely with staff from various public agencies and state enterprises through the CIO and CTO Councils (already established in March 2011), joint project teams, working groups and specialized communities of practice.

5.      The transfer of capacity and expertise to the civil servants will take place through continuous and close communication with the CIOs and CTOs from other government agencies, IT experts from state enterprises and representatives from the Public Services Directorate of State Chancellery.  Other special arrangements have been discussed to ensure sustainable ICT capacity enhancement for civil servants and other employees across the public sector, such as secondments and twinning key eGC core team and short-term experts with competent government officials in such a way that each external expert will be working together with one or more dedicated counterparts from the Government side.

6.      The transfer skills and capacity to civil servants will particularly benefit the State Chancellery as the main counterpart and beneficiary agency for the Project.  The State Chancellery is being re-organized and a new Directorate on Public Services is being created, including a small unit on e-government services.  Budget has already been allocated to the new Directorate and staffing selection will proceed soon.  This new Directorate will specifically be directed to work on Public Administration Reform, in close coordination and with the technical support from eGC.  The eGC will work closely with the staff of the new Directorate to ensure a sustainable knowledge, skills and capacity transfer to civil servants and institutional strengthening of State Chancellery in the area of e-government services.

7.      The Government has agreed to a clear sustainability strategy, which entails the gradual phasing out of the World Bank's support for core staff (consultants) salaries and operating costs, starting in the third year of implementation (see below).

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| eGC Consultants Financing from IDA | 100% | 100% | 100% | 80% | 60% | 40% |

8.     The Government has allocated 12.4 million *lei* (about $1.0 million) in the 2011 budget for supporting the e-Transformation agenda, as counterpart funding for the project. The State Chancellery will manage this budget, with the assistance of the eGC.  There is already a precedent of direct budget allocation and fees charged to line ministries for IT services to be delivered by the eGC/CTS:  CTS receives central budget allocation as well as charges ministries for additional services delivered to them.  Justification for direct state budget financing of eGC will be based on expected significant savings due to provision of shared infrastructure.

9.     The project preparation included a detailed analysis of cost recovery for the eGC.  The draft Government e-Transformation Policy states that the ministries and public agencies that take part in the project will share in the savings derived from using the M-Cloud in a 60/40 split—wherein the eGC will receive 40% (the exact savings sharing ratio is to be confirmed by the e-Transformation Council once the policy is approved).  These funds will pay for the overhead salaries for project management of the eGC.  The following table and paragraphs describe the calculations on the eGC sustainability.

| Sustainability Calculations -e-Governance Center | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
| | | | | | | | | | | | |
| Discounted Cash Flow | -$1,597,711 | -$2,244,655 | $1,986,879 | $2,927,344 | $2,661,222 | $1,402,784 | $1,275,259 | $1,999,416 | $1,817,651 | $1,652,410 | $1,502,191 |
| 40% of DCF | -$639,084 | -$897,862 | $794,752 | $1,170,938 | $1,064,489 | $561,114 | $510,103 | $799,766 | $727,060 | $660,964 | $600,876 |
| eGC overheads | $566,000 | $566,000 | $566,000 | $566,000 | $566,000 | $566,000 | $566,000 | $566,000 | $566,000 | $566,000 | $566,000 |
| Cost Recovery, % | | | 140% | 207% | 188% | 99% | 90% | 141% | 128% | 117% | 106% |

10.     The following assumptions were made in this calculation:  The first row lists the discounted cash flow, which comes from the economic benefit Cloud calculation (Annex 7)—this represents the savings accrued from the use of the Cloud, discounted at 10 percent per year. The second row lists the share of the savings—40 percent of the DCF—that will be retained by the eGC. The third row lists the eGC's costs.  The calculations made in row 3 do not account for inflation—meaning that they are all the same as the first year.  However, since the savings are discounted at 10 percent, the comparison with the revenues then assumes that the real costs will increase by 10 percent per year.   The final row shows the percentage of the revenues over the costs.  The table shows negative results for years 1-2, due to investments in the M-Cloud.  Then, there are positive results for years 3-5.  There is a reduction in revenues due to re-investment in Cloud equipment for years 6-7.  This is followed by an increase in revenues in years 8-10.

11.     **The project team.**  The e-Government Center is managed by the Executive Director.  Its core technical staff includes:  (i) a Chief Technology Officer; (ii) an E-Services Coordinator; (iii) a Training Coordinator; (iv) a Communications Coordinator; (v) a Strategy and Partnerships Coordinator; (vi) a Portal Content Manager; (vii) an Information Security Manager; (viii) an Enterprise Architect;  (ix) an e-Services Portfolio Manager; and x) a Lawyer.   In addition, the

eGC will be supported by an implementation unit consisting of (i) a Project Management Specialist; (ii) a Procurement Specialist; (iii) a Financial Management Specialist; and (iv) a Project Assistant.   These staff members will provide technical and implementation support to the Project, and will take care of fiduciary and administrative aspects to ensure compliance with the IDA's procedures and policies.

### b. Financial management

12.     **The assessment of the financial management capacity** of the eGC concluded that minimum World Bank requirements have been met.  To ensure that funds are used effectively, efficiently and for the purposes intended, a number of measures have been designed within the financial management system of this project.

13.     **The eGC will undertake the preparation of the annual budgets**.  This will be based on the five year procurement plan and the Overall Project Implementation Plan.   These budgets will form the basis for allocating funds to project activities and for requesting funds for payments via the Treasury.   Budgets will initially be approved by the Administrative Council of the e-Government Center, before being submitted to the Ministry of Finance and the Treasury.   The annual budgets will be continuously monitored through interim reporting to the World Bank and the Ministry of Finance.

14.     The eGC will be required to maintain an adequate computerized **accounting system,** which allows for an easy audit trail.  It has been already established under the ongoing PPA and it is fully functional and capable of providing accurate and reliable financial statements. The accounting policies and procedures are reflected in the Project Financial Manual, which is a part of the Project Operational Manual

15.     **Staffing** for the financial management (FM) function will be comprised of an experienced FM consultant.  Her experience and qualifications have been assessed by the World Bank and found acceptable.

16.     The eGC has established an **internal control system** to cover regular reconciliation of bank accounts, segregation of duties, and regular reconciliation of disbursement summaries of the World Bank funds.  The internal control mechanisms are documented in the project Financial Management Manual to ensure that approval and authorization control over the payment is sufficient.  The Manual covers all financial management and administrative procedures, including: (i) accounting and record-keeping; (ii) flow of funds; and (iii) reporting procedures. The Manual will reflect the internal structure relevant to the project, administrative arrangements, and internal control procedures.  The latter includes procedures for:  (i) authorization of expenditures; (ii) maintenance of records; (iii) safeguarding of assets; (iv) segregation of duties to avoid conflicts of interest; (v) regular reconciliation of bank account statements; (vi) bank signing mandates (to include at least two signatories) and withdrawal applications signing mandates; (vii) regular reporting—to ensure close monitoring of project activities; and (viii) complaints resolution mechanism.

17. **Reporting.** The eGC will prepare and submit to IDA the quarterly interim unaudited financial reports (IFRs) within 45 days after the end of each calendar quarter. The reports will consist of sources and uses of funds by category and components—cumulatively and for the reporting period—together with variance analysis, statement of designated account, notes to financial statements and reconciliation statements. The format of the reports was agreed upon during pre-appraisal and will be attached to the Minutes of Negotiations. The first quarterly IFRs will be submitted after the end of the first full calendar quarter, following the initial disbursement out of credit (PPA) proceeds.

18. **The annual audit of the project financial statements** will be carried out by independent auditors selected from the list of eligible audit firms on a competitive basis. The terms of reference for audit services will be sent to the World Bank for review prior to starting the selection process—they have been agreed upon and attached to the Minutes of Negotiations. The audit will be conducted in accordance with the International Standards on Auditing (ISA) issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants (IFAC). The audited financial statements together with the auditor's opinions and the management letters will be provided to the IDA within six months of the end of the fiscal year. Following the World Bank's formal receipt of these reports from the eGC, the World Bank will make them available to the public in accordance with the World Bank Policy on Access to Information. In its turn, the eGC makes the audited financial statements publically available within sixty (60) days after receiving the audit report on its web-site. The cost of the audit will be financed from the proceeds of the project.

### c. Disbursements

19. For project needs, a **Designated Account** in United States dollars will be opened in the Treasury, in a commercial bank that is acceptable to the IDA. Based on requests from the State Chancellery, the Ministry of Finance will give authorization to designated eGC officials to transfer funds from the loan account and to the suppliers. The Designated Account will have a ceiling of $500,000. The withdrawal applications submitted by eGC will be required to have two signatures from their list of authorized signatures. The applications documenting funds utilized from the Designated Account will be submitted to the World Bank on a traditional basis, and will include a reconciled bank statement and other appropriate supporting documents.

20. Disbursements from the IDA Loan Account will follow the transaction-based method, i.e., traditional World Bank procedures. This includes advances, direct payments, special commitments and reimbursement (with full documentation and against statements of expenditures (SOEs). For payments above the Minimum Application Size—as specified in the Disbursement Letter—eGC will submit withdrawal applications to the World Bank for payments to suppliers and consultants directly from the Loan Account.

21. Supporting documentation should be provided against payments to contracts for goods and minor civil works equal to $200,000 equivalent or more, for contracts against consulting firms for $100,000 equivalent or more and $50,000 equivalent or more for individual consultant services contracts. Disbursements below these thresholds will be made according to certified SOEs. Full documentation in support of SOEs would be retained by the eGC for at least two

years after the World Bank has received the audit report for the fiscal year in which the last withdrawal from the Loan Account was made. This information will be made available for review during supervision by the Bank staff and for annual audits, which will be required to specifically comment on the appropriateness of SOE disbursements and the quality of the associated record-keeping.

| | Project Components | PPF | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|---|---|
| Component 1 | Development of e-Leadership and Enabling Environment | | | | | | |
| Sub-component 1.1 | Support for the e-Governance Center and e-Leadership Development | | | | | | |
| 1.1.1 | Initial setup and operation of the e-Governance Center | $556,000 | $542,800 | $542,800 | $542,800 | $498,800 | $826,800 |
| 1.1.2 | e-Leaders and Civil Servants Training Programs | $40,000 | $241,000 | $241,000 | $241,000 | $241,000 | $241,000 |
| 1.1.3 | Strategic Communications and Partnerships | $90,000 | $55,000 | $138,750 | $138,750 | $138,750 | $138,750 |
| Sub-component 1.2 | e-Transformation enabling environment, including policy, legal and technical frameworks | | | | | | |
| 1.2.1 | Develop the Policy and Strategic Framework for eTransformation and ICT Competativeness | $90,000 | $120,000 | $620,000 | $120,000 | $120,000 | $120,000 |
| 1.2.2 | Develop the Legal, Regulatory and Technical Frameworks | $25,000 | $66,000 | $66,000 | $66,000 | $66,000 | $66,000 |
| Component 2 | Shared Infrastructure and e-Services | | | | | | |
| Sub-component 2.1 | "M-Cloud" shared e-government infrastructure | | | | | | |
| 2.1.1 | M-Cloud Phase 1 | $100,000 | $0 | $1,450,000 | $0 | $0 | $0 |
| 2.1.2 | M-Cloud Phase 2 | $0 | $300,000 | $315,000 | $2,205,000 | $630,000 | $0 |
| Sub-component 2.2 | e-Services Development | | | | | | |
| 2.2.1 | e-Services | $751,000 | $1,520,200 | $1,370,200 | $920,200 | $920,200 | $920,200 |
| 2.2.2 | Enabling services "enablers" | $348,000 | $0 | $875,000 | $375,000 | $0 | $0 |
| | TOTAL BASELINE COST | | | | | | |
| | *Froint-end fee* | | | | | | |
| | Total Financing Required | $2,000,000 | $2,845,000 | $5,618,750 | $4,608,750 | $2,614,750 | $2,312,750 |

### d. Procurement

22. The GeT project implementation unit staff consists of: (i) a Project Management Specialist; (ii) a Procurement Specialist; (iii) Financial Management Specialist; and (iv) a Project Assistant. The Project Management Specialist of the Project Implementation Unit (PIU) reports to the Executive Director of the E-Government Center, and provides necessary fiduciary and administrative support. The Procurement Specialist is responsible for preparing all procurement packages, procuring goods, and selecting and hiring consultants—following the World Bank's Guidelines for Procurement and Selection of Consultants.

23. **Assessment of the capacity of the implementation unit under eGC.** An assessment of the capacity of the eGC implementation unit to implement procurement actions for the Project was carried out by the World Bank in February 2011. The overall risk for procurement under the project was determined to be "high risk". This determination was based on the February 2011 assessment along with a consideration of the environment for conducting procurement under the proposed project and the findings and recommendations of the Country Procurement Assessment Review (CPAR) dated June 2010. At the end of the first year of implementation, the team will review the procurement capacity of the implementation unit and the functioning of procurement with a view toward making adjustments as necessary. The February 2011 assessment reviewed: (i) the procurement processes being carried out by the implementation unit and the State Chancellery; and (ii) the interaction between the various staff responsible for procurement, financial management and project management. It was noted that the newly established implementation unit has very limited IT procurement experience in World Bank-funded projects.

24.     **Applicable Guidelines.** Procurement for the proposed project would be carried out in accordance with: (i) The World Bank's "Guidelines:  Procurement Under IBRD Loans and IDA Credits", dated  January 2011; (ii) "Guidelines:  Selection and Employment of Consultants by World Bank Borrowers" dated January 2011; and (iii) the provisions stipulated in the Legal Agreement.

25.     **A general procurement notice (GPN)** was published in the United Nations Development Business (UNDB) online edition and dgMarket on January 3, 2010.  The GPN gives a description of the works and consulting services contracts to be procured under the project and invites all potential contractors and consultants to express interest and request additional information from the implementing agency.  The following will be published in UNDB (online), and a national newspaper of broad circulation as the corresponding bid documents become available:  (i) Specific Procurement Notices (SPNs) for International Competitive Bidding (ICB) procurement packages; and (ii) Expression of Interest (EOI) for consulting assignments estimated to cost more than $200,000 equivalent per contract.  In addition, the Procurement Plan (including all formal updates), SPNs and EOIs for all contracts as well as the results of contract awards will be published on the external website of UNDB online.

26.     The PIU will follow the World Bank's **anti-corruption measures**, and will not engage the services of firms and individuals debarred by the World Bank.   The listing of debarred firms and individuals is located at:  http://www.worldbank.org/html/opr/procure/debarr.html

27.     *Anti-Corruption Measures:*  The World Bank team intends to maintain customary oversight and will carry out prior review of all major contracts according to thresholds that will be regularly reviewed and adjusted as needed in the Procurement Plan.  Initial thresholds are provided in this Annex.  The following measures will be carried out to mitigate the risk of corruption:

- *Training of fiduciary staff* starting from the project launch and periodically thereafter customized to procedure and methods that would be required in the next 12-month period.  This will include on-the-job training during supervision missions and regional training provided by the RPM office for the countries in the region;

- *Prior review:* intensive and close supervision by World Bank procurement accredited staff.   In addition, contract amendments will be subject to prior approval by the World Bank;

- *Publication of advertisements and contracts:*  all publications of advertisements and contract awards will be done in accordance with the Guidelines requirements and published in the client connection system, on external websites, i.e., UNDB and dgMarket;

- *Debarred firms*:  Appropriate attention will be given to the need to ensure that debarred firms or individuals are not given opportunities to compete for World Bank-financed contracts;

- *Complaints:*  all complaints by bidders will be diligently addressed and monitored in consultation with the World Bank;

- *Evaluation committee:*  The World Bank will review and comment on the qualifications and experience of proposed members of the Evaluation committee(s) with a view to prevent the nomination of unqualified or biased candidates. All members will be required to sign a disclosure form (a sample will be included in the Operational Manual).

- *Monitoring of contract awards:*  All contracts are required to be signed within the validity of the bids/proposals, and in case of prior review contracts, promptly after the no objection is issued. The Procurement Plan format shall include information on actual dates (of no objections and awards), and will be monitored for cases of delay—which will be looked at on a case-by-case basis to identify the causes.   The eGC and the PIU will maintain up to date procurement records that will be readily available to auditors and all concerned World Bank staff, including INT.

- *Monitoring of payments:*  All contracts shall include bank account information.  The bank account shall be in the name of the same supplier/consultant that submitted the bid and awarded the contract.  Payments to local suppliers/consultants shall be made in local currency only and paid to the accounts of banks located within the country.

28.    **Procurement of Goods**:  Goods procured under the project would include:  (a) ICT Hardware and Software; (b) office equipment; and (c) office furniture through shopping.  Goods to be financed from the Credit would be selected in accordance with the World Bank Guidelines and would include:  (i) International Competitive Bidding, (ii) Limited International Bidding, (iii) National Competitive Bidding, (iv) Shopping, and (v) Direct Contracting.  For large Goods contracts, the procurement will be carried out by using Standard Bidding Documents (SBDs) for Goods or Supply and Installation for all International Competitive Bidding (ICB) (>$200,000) and Regional Sample Bidding Document agreed with the World Bank for National Competitive Bidding (NCB) (<$200,000).   Shopping of goods under the specific threshold (<$100,000) will be carried out by comparing price quotations obtained from at least three suppliers.

29.    **Procurement of Works:**  Minor works could include refurbishing of the existing and new Data Center to accommodate ICT equipment and any small ancillary mechanical, electrical or air conditioning installation.   The procurement will be carried out through minor civil works (Shopping) by comparing at least three quotations.

30.    **Selection of Consultants:**  Consultant services required under this project would support:  (a) the E-Government Center; (b) the M-Cloud shared infrastructure; and (c) the e-services development and associated training.  Consultant services to be financed from the Credit would be selected in accordance with the World Bank Guidelines, and would include:  (i) Quality and Cost Based Selections (QCBS); (ii) Selection based on Consultants Qualifications (CQ); (iii) Fixed Budget Selection (FBS); (iv) Least Cost Selection (LCS);  (v) Individual Consultants (IC), and (vi) Single Source Selection.  Selection over $200,000 should be advertised in:  (i) Development Business; (ii) in local media (one newspaper of national circulation or the official gazette); and (iii) an electronic portal of free access (Moldova PPA website or eGC website) for expressions of interest. A short list of six firms would be drawn from among the qualified interested parties. Individual Consultants would be selected in accordance with Part V of the Consultant Guidelines.

31.     **Prior review**:  intensive and close supervision by World Bank procurement accredited staff.  In addition, contract *amendments* will be subject to prior approval by the World Bank. Prior review requirements (thresholds can be modified after having the capacity assessment of the PIU):

(a)  Contracts with consulting firms ($\geq$\$100,000), and contracts with individual consultants estimated to cost \$50,000 or more; each and all TORs; and

(b)  All single source, sole source, amendments and direct contracts.

(c)  Goods:  Shopping ($<$ \$100,000). Works:  Shopping ($<$\$200,000).  Prior review for the first shopping, including for minor civil works and for all ICBs.

32.     **Procurement under National Competitive Bidding** is subject to the following additional procedures:

(a) *Eligibility*:  The eligibility of bidders shall be as defined under Section I of the Guidelines; accordingly, no bidder or potential bidder shall be declared ineligible for contracts financed by the World Bank for reasons other than those provided in Section I of the Guidelines. Foreign bidders shall be eligible to participate in bidding under the same conditions as national bidders. In particular, no domestic preference over foreign bidders shall be granted to national bidders in bid evaluation. The bidding shall not be limited to domestic goods or services. Government-owned enterprises are eligible to bid only if they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are independent from Borrower and its purchasing/contracting authority.

(b) *Registration*:  Registration shall not be used to assess bidders' qualifications. A foreign bidder shall not be required to register as a condition for submitting its bid and, if determined to be the lowest evaluated responsive bidder, shall be given reasonable opportunity of registering, without any hindrance. Bidding shall not be restricted to any particular class of contractors, and non-classified contractors shall also be eligible to bid.

(c) *Standard Bidding Documents*:  Bidding Documents, acceptable to the World Bank, shall be used.

(d) *Qualification Criteria*:  Qualification criteria shall be clearly specified in the bidding documents, and all criteria so specified, and only such specified criteria, shall be used to determine whether a bidder is qualified. Qualification shall be assessed on a pass or fail basis and merits points shall not be used. Such assessment shall only take into account the bidder's capacity and resources to perform the contract, specifically its experience and past performance on similar contracts, capabilities with respect to personnel, equipment and construction and manufacturing facilities, and financial capacity.

(e) *Bid Submission*:  A minimum of 30 days shall be given for preparation and submission of bids after the publication of invitation to bid or the availability of bidding documents whichever is later.

(f) *Bid Opening*:  Bids shall be opened in public, immediately after the deadline for submission of bids. Bids received after the deadline for bid submission shall be rejected and

returned to the bidders unopened. A copy of the minutes of the public bid opening shall be promptly provided to all bidders who submitted bids, and to the World Bank with respect to contracts subject to prior review.

(g) *Bid Evaluation*:  Evaluation of bids shall be made in strict adherence to the criteria that shall be clearly specified in the bidding documents and quantified in monetary terms for evaluation criteria other than price; merit points shall not be used in bid evaluation. Contract shall be awarded to the technically responsive bid that offers the lowest evaluated price and no negotiations shall be permitted. A bidder shall not be required, as a condition for award, to undertake obligations not specified in the bidding documents or otherwise to modify the bid as originally submitted. A bidder shall not be eliminated from detailed evaluation on the basis of minor, non-substantial deviations. No bidder shall be rejected on the basis of a comparison with the employer's estimate or budget allocation ceiling without the World Bank's prior concurrence.

(h) *Rejection of All Bids and Re-bidding*:  All bids shall not be rejected or new bids solicited without the World Bank's prior written concurrence.

(i) *Complaints by Bidders and Handling of Complaints*:  The Borrower shall implement an effective and independent protest mechanism allowing bidders to protest and to have their protests handled in a timely manner.

(j) *Fraud and Corruption*:  The World Bank shall declare a firm or individual ineligible, either indefinitely or for a stated period, to be awarded a contract financed by the Association, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for, or in executing, a contract financed by the World Bank.

(k) *Right to Inspect/Audit*:  Each bidding document and contract financed from the proceeds of the World Bank funds shall include a provision requiring bidders, suppliers, contractors and subcontractors to permit the World Bank, at its request, to inspect their accounts and records relating to the bid submission and performance of the contract and to have said accounts and records audited by auditors appointed by the World Bank. The deliberate and material violation by the bidder, supplier, contractor or subcontractor of such provision may amount to obstructive practice.

33.     **Operating Costs**:  The credit will finance the incremental operating costs of overseeing and managing the project. These expenditures include transportation costs, costs of office rental and maintenance, equipment maintenance and repair, translation, utility and communication costs, bank charges, office supplies, advertisement cost, mail, printing and publications. Operating costs will be incurred according to an annual budget satisfactory to the World Bank, using the procedures described in the Project Operational Manual.

34.     **Training:** Procurement training for PIU staff and consultants will be conducted in accordance with a training program that will be submitted to the World Bank for its agreement before implementation.

35.     **Procurement Plan:**   The Borrower—with support from the World Bank—has developed procurement plans for Project Preparation Advance ($2.0 mln) and for the entire project duration (five years). These procurement plans provide the basis for the procurement methods and timing. These procurement plans have been agreed upon between the Borrower and the Project Team during the preappraisal of the Project.

36.      The Procurement Plan will be updated in agreement with the Project Team, at least annually or by-annually as required to reflect the actual project implementation needs and improvements in institutional capacity. Preparation stage (PPF-funded) and procurement packages planned during project implementation have been discussed with the eGC team and the summary of major procurement packages for the initial implementation phase are listed below.

**Summary Procurement Plan: Major Packages (over $200,000)**

| | Project Components | Type | | Procurement method | Documents to the Bank | Invitation Bid/EOI | Contract Signing | Contract Completion |
|---|---|---|---|---|---|---|---|---|
| **COMPONENT 1. Development of e-Leadership and Enabling Environment** | | | | | | | | |
| 1.1.14 | Communications and PR promotion consultancy | CS | | QCBS | Nov-12 | Jan-13 | Apr-13 | Apr-14 |
| 1.2.1 | ICT competitiveness study | CS | | QCBS | Sep-11 | Nov-11 | Jan-12 | Aug, 2012 |
| **COMPONENT 2. Shared Infrastructure and e-Services** | | | | | | | | |
| 2.1.3 | Hardware and Software for M-Cloud Phase 1 | G | | ICB | Jun-11 | Jul-11 | Nov-11 | Mar-12 |
| 2.1.4. | Design of M-Cloud Phase 2 | CS | | QCBS | Mar-12 | May-12 | Oct-12 | Dec-13 |
| 2.1.5 | Hardware and Software for M-Cloud Phase 2 | G | | ICB | Mar-13 | May-13 | Sep-13 | Dec-15 |
| 2.2.8 | Government document management system | CS | | QCBS | Apr-12 | Jun-12 | Sep-12 | Sep-13 |
| 2.2.9 | Digitization of databases | NCS | | ICB | Dec-11 | Feb-12 | Jun-12 | Jun-13 |
| 2.2.10 | Integration of databases | NCS | | ICB | Jan-12 | Mar-12 | Jul-12 | Jul-13 |
| 2.2.12 | G2C Portal Software Development | CS | | QCBS | Feb-11 | Mar-11 | Jun-11 | Oct-11 |
| 2.2.15 | Authentication, Identity Management and Interoperability | CS | | QCBS | Sep-11 | Jan-12 | May-12 | Dec-12 |
| 2.2.16 | Payment and Billing Service | CS | | QCBS | Nov-11 | Jan-12 | May-12 | Dec-12 |
| 2.2.16 | Notification service | CS | | QCBS | Jan-12 | Mar-12 | Jul-12 | Feb-13 |

**Governance and Anti-Corruption**

37.     Apart from the anti-corruption strategies discussed above, all ICT projects supported by the World Bank (WB) in Moldova are contingent upon the Government completing all necessary measures to comply with the obligations stated in the respective financing agreements. Among these measures is the adoption and implementation of an agreed Anti-corruption Action Plan (ACAP).

38.     The table below presents the Anti-Corruption Action Plan.  It includes specific actions in the following areas:
1.  Enhanced Disclosure;
2.  Improved procurement and implementation oversight;
3.  Mitigation of Collusion Risks;
4.  Mitigation of Forgery and fraud risks; and
5.  Adoption of sanctions and remedies.

39.     The State Chancellery has the overall responsibility for the implementation of the Anti-corruption Action Plan.  Most actions of the Anti-Corruption Action Plan will be implemented at the level of the eGC.

### Table 3.2:  Anti-Corruption Action Plan

| 1. | *Enhanced Disclosure* |
|---|---|
| 1.1 | The SC and/or the eGC will publish the following information on their official website, any successor website and in the bidding documents:<br><br>eGC  will use "semi" e-procurement and publishing on its official website for all contracts (works, goods, consultants), providing the following items:<br> o   All Invitations to Bid;<br> o   Bidding Documents and drawings, Requests for Proposals;<br> o   Clarification of bids;<br> o   Bid opening minutes; and<br> o   Information on contract award.<br><br>A manual system will run in parallel for contractors/consultants who wish to use it.   Bidding documents and Requests for Proposals will be available for downloading online.  There will be no charge for electronic documents.<br><br>The contact point for complaints related to the Governance e-Transformation Project will be clearly spelled out as follows:<br><br>"Complaints related to GeT  Project executed by the eGC are to be sent to:<br>**A.**  TBD (Third Party Monitoring Agency)<br>**B.**  To the World Bank Fraud and Corruption Unit<br>Email:    investigationshotline@worldbank.org<br>Website:   http://www.worldbank.org/integrity<br>If you prefer to send an anonymous E-Mail, you may wish to make use of a free email service (such as Hotmail or Yahoo) to create an email account using a pseudonym.  This way, the Unit could correspond with you as necessary, to seek clarification or additional information.  This would be helpful for the Unit |

| | |
|---|---|
| | in pursuing your allegation. |
| | |
| | **C.** Through a Fraud and Corruption Hotline hired by INT for this purpose: |
| | (24 hours/day; translation services are available) |
| | Toll-free:   1-800-831-0463 |
| | Collect Calls:  704-556-7046 |
| | Mail:  PMB 3767, 13950 Ballantyne Corporate Place |
| | Charlotte, NC 28277, United States |
| 1.2 | Each annual Work Program and the corresponding Procurement Plan will be published on the official website of SC/eGC and made available to the public as a part of the public disclosure policy of this project. |
| 1.3 | The eGC will make publicly available promptly after receipt all final audit reports (financial and technical) prepared in accordance with the financing agreements and all formal responses of the Government in relation to such reports, within one month of the report being accepted as final. The eGC will make available to any member of the public promptly upon request all bidding documents and requests for proposal (this provision does not include actual bids and proposals) issued in accordance with the procurement provisions of the financing agreement—subject to payment of a reasonable fee to cover the cost of printing and delivery, or in electronic format free of charge. Each such document will continue to be made available until a year after completion of the contract entered into for the goods, works or services in question. |
| | The eGC will make available to any member of the public promptly upon request all shortlists of consultants. In line with the Procurement Guidelines, within two weeks of the contract award ( World Bank's no objection) the eGC will publish in UNDB online, dgMarket, on the eGC website (and send to those who submitted bids) contract award information identifying the bid and lot numbers and the following information:  (i) the name of each bidder; (ii) the bid prices as read out at the bid opening; (iii) the evaluated prices of each bid that was evaluated; (iv) the name of bidders whose bids were rejected and the reason for their rejection; and (v) the name of the winning bidder, and the price it offered, as well as the duration and summary scope of the contract awarded. The eGC will make available on their website a list of all contracts awarded in the preceding 12 months, including the name of the contractors/suppliers/consultants, the contract amounts, the number of bidders/proposals, the procurement method followed and the purpose of the contract. |
| **2.** | *Improved Implementation and Procurement Oversight* |
| 2.1 | The eGC will state on their website that representatives of civil society groups may attend public bid openings and contract signings. Civil society observers may be invited from local universities or other independent institutions.  Representatives of civil society will be included as observers and sign the attendance list for the Procurement/Selection processes. |
| 2.2 | The eGC will establish a mechanism whereby the media and civil society groups can become involved in monitoring the progress of the project, including the implementation.  This mechanism will include regular press releases concerning program implementation. |
| 2.3 | Clear selection criteria and processes for the nomination of procurement committees (evaluation committees) will be agreed upon and formally adopted by the Program Steering Committee (composed by SC). |
| **3.** | *Mitigation of Collusion Risks* |
| 3.1 | *If required, an international procurement expert will be hired for procurement of large components who will:*<br>• Make sure that the documents are online prior to the issuance of the Invitation to Bid/Request for Proposals, and remain available there through bid opening.<br>• Monitor the bidding process and be an observer of bid opening. |

| | The following standard procurement monitoring will take place: |
|---|---|
| | • All procurement above the thresholds determined in the financing agreement will be subject to prior review by the World Bank. |
| | • Bids/Contracts will be awarded within the original bid-validity period. Any extension of the bid-validity period requires World Bank no objection. |
| | • In the case of consultants' services, the Borrower shall ensure that the technical evaluation report shall be completed within four weeks of proposal submission, and that the proposal for the award of contract made available, along with the draft contract, within four weeks after completion of the technical evaluation report or following the Bank's no-objection on the technical evaluation report—whichever occurs later. |
| 3.2 | *Procurement procedures.*<br>ICB procedure is to be used for all contracts exceeding the threshold |
| 3.3 | *Advertisement of bids.* The eGC will employ a standard format (minimum column size=10) of advertisement, and place it in a nationally circulated newspaper and on the official website. For contracts with a value above exceeding the threshold amounts, publication will also be made on the UNDB online and dgMarket websites. |
| 3.4 | Public openings for ICB and QCBS processes will be attended by civil society representatives who wish to attend. Detailed procedures are to be described in the Program Operational Manual. |
| **4.** | ***Mitigation of Forgery and Fraud Risks*** |
| 4.1 | The eGC/PIU will maintain proper project and procurement filing, including filing of advertisements, bidding documents, evaluation reports, contract award and final contract documents. |
| 4.2 | Timelines for procurement decisions will be agreed upon between the Government and the Bank to establish service standards, avoid procurement delays, and reduce opportunities for corruption. These will be clearly stated and defined in the Program Operations Manual. |
| 4.3 | Timelines for payment of interim payment certificates and invoices will be agreed upon by the SRA and the World Bank to establish service standards, avoid payment delays and reduce opportunities for corruption. |
| **5.** | ***Sanctions and Remedies*** |
| 5.1 | Integrity Pacts<br><br>(a)    Each person serving as a member of a selection committee, or who is otherwise involved in a procurement process, shall disclose to the head of the eGC if they, or any of their immediate family members, are related or otherwise connected to any of the members of the boards of directors or commissioners of the bidders and/or consultants participating in any of the procurement packages (Interested Member). Any Interested Member shall recuse himself or herself from further participation in the evaluation process; and any Interested Member who is an Official shall recuse himself or herself from any decisions relating to the evaluation process or contract award. |
| 5.2 | In all contracts, evidence of fraud, corruption, collusion and coercive practices may result in the termination of the relevant contract—possibly with additional penalties imposed (blacklisting, etc.)—in accordance with World Bank and/or Government regulations. Any entity that is found to have misused funds may be excluded from subsequent funding. |

## Environmental and Social (Including Safeguards)

40.     The project has been classified as Category C—without any negative environmental impact. The project does not need to address any safeguard issues (See PAD data sheet). Mechanisms to supervise and monitor agreed upon plans are not necessary due to the nature of

the project. There are no environmental and social risks or issues that go beyond the coverage of the safeguards policies.

### Project Monitoring & Evaluation

41. Monitoring and Evaluation (M&E) of the e-Transformation reform will be an integrated aspect of project implementation and management.

42. An NGO was hired in July 2010 under the Governance and Anti-Corruption Program to survey the public perception of public services[22]. This survey is similar to the one carried out by UNDP in 2007[23], but it has been modified to obtain relevant information to design and monitor this particular Project. The results of the survey have been used as baseline values of some indicators. The e-Government Center will hire an NGO, company or consultant to carry out a survey of selected main e-services to be measured annually. The Center will collect and present data for yearly review by the World Bank supervision missions. Progress will be monitored effectively through discussions conducted during supervisions related to institutional capacity-building, financial viability, technical reviews and site visits.

### Arrangements for results monitoring

43. The eGC identified the following purposes of M&E: (a) measuring performance; (b) evaluating progress towards outcomes; (c) fostering institutional learning—improving the focus and orientation of the project; (d) understanding and negotiating stakeholder perspectives; (e) ensuring public accountability; and (f) measuring impact. The eGC will implement the following mechanisms to ensure that M&E is an active and ongoing process with results providing critical feedback to decision-making and planning:
- The eGC will prepare Action Plans based on the recommendations provided by stakeholders (including the World Bank) and the National E-Transformation Council.
- The eGC senior management will implement changes in response to the Action Plans.
- The eGC will prepare and circulate among all key stakeholders a performance report summarizing implemented changes.

44. Data collection will be automated wherever possible in order to simplify the process and reduce costs. The e-Government Center has also decided to present the indicators online, to ensure data transparency and accessibility. The following arrangements have been made for this project:
- The full M&E results framework has been finalized. The annual collection of data will be undertaken by a Consultant.
- The project will help to develop sustainable capacity for monitoring and managing results. M&E training will be conducted by international experts for the Implementing Agencies and their M&E delegates at the time of project launch. The training will cover the basics of: (i) results-based monitoring; (ii) various types of indicators—including impact and outcome indicators; (iii) data collection; and (iv) reporting;

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[22] *"Citizen Report Card",* by Institute for Public Policy and Magenta Consulting, Chisinau, January 2010.
[23] *"Estimarea Prioritatilor si Necesitatii Populatiei In Servicii Publice",* by Business Intelligent Services SRL, Chisinau, March, 2007.

- The project manager in the e-Government Center will coordinate the activity related to M&E, and will work in close cooperation with other staff members of the eGC team to provide the World Bank with annual reports showing progress towards target indicators and project objectives;
- Data collection and reporting will be kept as simple as possible, by using existing data or automated processes;
- Survey-based collection of data will be implemented;
- The mid-term project review may offer the opportunity to amend the indicator series, or to target values based on evolving circumstances.

45.     Paramount importance will be given to ensure that results are communicated to the stakeholders, donors and the general public. The Communication Coordinator within the e-Government Center will work closely with the project manager to ensure that results are communicated in a timely fashion through different channels to the target groups.

**Table 3.3:  Inputs and Outputs of M&E Process**

| Inputs | Outputs | Tools and Techniques |
|---|---|---|
| Data collection<br>Baselines<br>Results assessment<br>M&E manual<br>Results framework<br>Capacity-building | Evaluation report<br>Action Plan<br>Change Requests<br>Lessons learned<br>Revised baselines<br>Performance Reports | Qualitative and quantitative analyses<br>International expertise |

46.     The budget for monitoring and evaluation will be $120,000 for five years. In addition, UNDP and USAID have indicated that they are ready to put additional resources into monitoring and evaluation, if needed.

**Table 3.4 :  M&E Budget**

| M&E Allocation | IDA |
|---|---|
| (a) M&E firm<br>(b) M&E consultants<br>(c) External evaluation<br>(d) Dissemination of results | $120,000 |
| Total | $120,000 |

**Role of Partners**

47.     USAID provided valuable assistance (estimated at about $700,000) during project preparation through its "Moldova Rapid Governance Support Program" (MRGSP).  It has financed a number of international and local consultants, who have produced the following studies used to fine tune the design of this project (total of 20 reports):

- A detailed Feasibility Study for the establishment of M-Cloud shared e-Government infrastructure. This included:  (i) a baseline assessment; (ii) a cost benefit for disaster recovery; (iii) technical assessment of networking and computer use in Moldova; (iv) a full-fledged cost-benefit analysis that looked at six various options for M-Cloud; (v) an

overview of e-Government business models that are allowed under Moldova legislation; (vi) recommendations for specific training in the area of Cloud computing; and (vii) a step by step M-Cloud implementation plan.
- Mini-feasibility studies for e-payment and e-authentication shared services.
- Detailed concept of the Open Government Data (OGD) component as well as a Roadmap for OGD development.
- Detailed concepts of the eTransformation Fund, and Innovation Competitions that will be run by the eGC and partially supported by this Project.
- Operations Manual for eTransformation Fund.
- A Public Communications Strategy for eGC.
- Developing Monitoring and Evaluation capacity at the eGC.
- A study on the sustainability of eGC.

48.     Other USAID funded projects—BIZTAR and CEED 2—agreed to partner as well:  eGC will work closely with BIZTAR on joint development of two G2B e-services in 2011 and will partner with CEED 2 on ICT competitiveness, TechCamps and training programs.

49.     The GeT Project will partner with IFC's Advisory Services team on their Investment Climate Reform project and in particular will help automate the new processes which will be re-engineered through this project, especially related to construction permits and inspections. Also, opportunities for collaboration with IFC on engaging private sector investors for delivering e-services and shared datacenter infrastructure have been also discussed.

50.     The Singaporean Government has signed an MOU with the Government of Moldova. During project preparation the Singaporean partners funded:  (i) a study visit by the Moldovan ministerial delegation to Singapore; and (ii) several visits by Singaporeans experts, who spent two months in Moldova in 2011 and produced an e-Government diagnostic assignment. The two Governments are currently discussing a Twinning Arrangement to train Government officials in Singapore and send Singaporean experts to Moldova for short visits to provide technical assistance in specific areas of E-Government that were identified during the diagnostic exercise.

51.     The Estonian Government has signed an MOU with the Moldovan Government to train Moldovan officials in the Estonian e-Government Academy and provide technical assistance in the development of interoperability and standards and e-leadership training. A team of Estonian ICT experts visited Chisinau in February-March 2011, and a study visit to Estonia took place in April 2011.

52.     The eGC is also partnering with UNIFEM on establishing Information Access Centers in Rayons (starting with three-four Centers in 2011, with the goal of establishing an additional 10 Centers by 2016). Each Access Center will be equipped with necessary computer equipment with broadband access, and staffed with personnel trained to assist citizens in accessing various e-services developed by the eGC in the course of the GeT project operation.

53.     UNDP also funded a consulting contract to develop the branding and promotion materials for the eGC. UNDP and SIDA were active partners in conducting e-services baseline assessment.

54.     The eGC has had an on-going dialogue with the Dutch Government. The latter expressed an interest in providing parallel financing of up to 1.5 million Euro for the broader e-transformation agenda in Moldova in 2011. The specific mechanism and amount are still under discussion. The main areas of interest are G2B e-services that can advance the process of Moldova's integration into the EU, such as construction permits, business registries and e-procurement with a focus on local Government services.

55.     The Estonian Government has signed an MOU with the Moldovan Government to train Moldovan officials in the Estonian e-Government Academy and provide technical assistance in the development of interoperability and standards and e-leadership training. A team of Estonian ICT experts visited Chisinau in February-March 2011, and a study visit to Estonia took place in April 2011.

56.     The team has also initiated discussions with the US Trade Development Agency to explore opportunities for study tours and feasibility studies that are complementary to the GeT project.  The first Study Tour to the US will take place in May 2011.

57.     Other partnerships focusing on foreign expert visits to Moldova and study tours of Moldovan e-leaders to the partner countries are under discussion. These partners include India (via South-South Experience Exchange Trust Fund grant of $120,000), Austria, Finland, South Korea and Japan.

# Annex 4: Operational Risk Assessment Framework (ORAF)

*Appraisal and Post Appraisal Package Version*

<table>
<tr><td colspan="2"><strong>Project Development Objective(s)</strong></td></tr>
<tr><td colspan="2"><em>Description: <strong>The project development objective is to transform delivery of selected public services using ICT.</strong></em></td></tr>
<tr><td rowspan="4">PDO Level Results Indicators:</td><td>Direct project beneficiaries (number), of which female (percentage)</td></tr>
<tr><td>Citizen perception of quality of public service</td></tr>
<tr><td>Citizen uptake of e-Services (percentage of population who accessed a public website in least once over the previous 12 months)</td></tr>
<tr><td></td></tr>
</table>

| Risk Category | Risk Rating | Risk Rating[24] Explanation | Risk Description | Proposed Mitigation Measure | Status: C=completed O=ongoing NYD=Not yet Due N/A=Not Applicable |
|---|---|---|---|---|---|
| **1. Project Stakeholder Risks** | | | | | |
| 1.1  Stakeholder | ML | • There is a low level of trust in the Government in general, which might affect the support for the project; a recent poll places the Government as an institution in seventh place after the Church, Mass media, Mayor's office, the Army, Banks and the Police[25]. | The public generally has a low level of confidence in the Government. | • The project will finance the development and implementation of a communications strategy to raise public awareness and support regarding the e-transformation agenda and contribute to broader acceptance of e-services among citizens and businesses. | NYD |
| **2. Operating Environment Risks** | | | | | |

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[24] This section is part of the deliberative process and will be available in the system but not in the final documentation. The document will reflect all other aspects which will be disclosed.

[25] Institute for Public Policy: Barometrul Opiniei Publice, May 2010.

| | | | | |
|---|---|---|---|---|
| 2.1 Country[26] | MI | • Political risks are relatively high as a result of political polarization following parliamentary elections and failure to elect a president. A shift of power to another party might imply a change in policy direction, but this would probably not impact project implementation.<br>• Moldova's corruption index, as measured by Transparency International, has improved from 2.9 in 2008 to 3.3 in 2009—moving Moldova's ranking from 109th to 89th place among 180 countries[27]. Nonetheless, there are significant governance challenges, including corruption in civil courts, health and education, insufficient checks and balances between legislature and executive power, and regulatory barriers to competition.<br>• The Government has strengthened the policy focus of the national public budget through further development of the medium-term expenditure framework and its integration into the regular budget cycle. However, the extraordinary political circumstances during 2009 have complicated this task.<br>• The audit reports of the Court of Accounts are quite comprehensive, but the parliamentary oversight and follow-up on the reports` findings is very weak. | Political instability might continue. This might slow down project preparation and implementation.<br><br>Systemic fraud and corruption.<br><br>Weak link between sectoral policies and budgets.<br><br>Weak parliamentary oversight and follow-up of audit reports. | The project will engage stakeholders from across the political spectrum and build a broad ownership of e-transformation agenda<br><br>The WORLD BANK is helping to strengthen the central public administration, public financial management and procurement systems.<br><br>A multi-donor Trust Fund managed by the World Bank | 0 |

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[26] Please see para. 8 and 27 of the guidance note for details on completing this section.
[27] Transparency International Corruption Perception Index 2009 http://www.transparency.org/policy_research/surveys_indices/cpi/2009/cpi_2009_table

| | | | | | |
|---|---|---|---|---|---|
| | | | | supports capacity-building of the CoA and the Parliament's ability to follow-up on CoA findings. | |
| 2.2 Institutional (sector & multi-sector Level) | MI | • There is resistance to change within the public administration. The resistance is coming from people working in the Government institutions and not willing to admit that change is actually going to happen, and that it is not just another reform initiative. The e-Transformation agenda requires a major shift in the way the Government works and it could 'clash' with existing and well-embedded organizational cultures, stereotypes and vested interests.<br>• The e-Government transformation is not coordinated across all ministries, and many agencies do not have a clear vision of their role in the e-transformation process. The individual efforts of institutions have been sporadic and have lacked a common approach.<br>• To receive a public service in Moldova, the citizens often have to submit many documents, obtain papers from different institutions and overcome other bureaucratic barriers that create inefficiencies and opportunities for corruption. | There is resistance to change. A common vision, delimitation of responsibilities, coordination of actions, and necessary qualified human resources are missing.<br><br>Lack of a citizen-centered culture in the public administration. | • The inter-ministerial Council on e-Transformation, chaired by the Prime Minister, has been established as a political body to define the policies and oversee the e-transformation program.<br>• The GoM has established an e-Government Center (eGC) which will promote and implement e-governance reforms across all state institutions. The government established a CIO Council in March 2011 to ensure coordination between sector ministries and agencies.<br>• The Government will approve the e-Transformation Policy that will, inter-alia, define a split of 60/40 between Ministries and the eGC of the savings from implementation of the M-Cloud. This policy provides a financial incentive for ministries and agencies to participate in the program. | O |
| **3. Implementing Agency Risks (including FM & PR Risks)** | H | FM risks include the following:<br>Since the PIU in the eGC is new, the main risk is the lack of experience of the unit to implement the Project. | Fiduciary risks | In addition to hiring and retaining an experienced Financial Management Specialist, an Internal control system will need to be established within the eGC. They will cover regular reconciliation of bank accounts, adequate segregation of duties, and | O<br><br>O |

| | | | | | |
|---|---|---|---|---|---|
| | | | | regular reconciliation of disbursement summaries of the World Bank funds. The internal control mechanisms are expected to be documented in the project Financial Management Manual to ensure that approval and authorization control over the payment is sufficient. The Manual will cover all financial management and administrative procedures, including accounting and record-keeping, flow of funds, and reporting procedures. | NYD |
| | | Procurement Risks include the following:<br><br>• The public officials who will be involved in project procurement through tender committees, and the Bid evaluation committee members are not familiar with international procurement procedures, and may obstruct or delay the procurement process, especially the evaluation of bids and proposals. The bureaucratic system creates opportunities for informal interference in the procurement process by senior officials. Furthermore, past and current experience shows that the formal involvement of the PIU in the procurement process has resulted, and may result in, some delays in procurement and project implementation;<br>• The PIU procurement specialist and other staff may be overwhelmed by the project's small but voluminous procurement. | | The eGC has hired a procurement specialist, financial specialist and manager for the proposed project. If required, an international procurement expert will be hired. The World Bank will overview the qualifications and experiences of tender committee members. All potential members of tender committees will attend a one-day project procurement launch workshop that will be organized by the World Bank staff immediately after the credit agreement is signed.<br>An Operational Manual will be prepared by the PIU prior to loan effectiveness.<br>The PIU procurement specialist will work closely with the technical staff to foresee and reduce any potential delays in the procurement process by improving sequencing of activities. International experts will assist the eGC to prepare | O<br><br><br><br><br><br>NYD |

57

| | | | | | |
|---|---|---|---|---|---|
| | | | | technical specifications for the M-Cloud and TORs for e-Services to avoid delays. The World Bank staff will review the efficiency of procurement under the project after one year of the credit. | |
| 3.1  Capacity | MI | • The project has a wide scope and the Government might not have enough capacity to implement it.<br>• The implementing agency e-Government Center is a new institution and lacks the institutional structures and staff to deal with monitoring, procurement, financial management and public relations. | The Government will not be able to efficiently implement the project because of limited capacity. | Under the project, training will be provided to e-leaders and civil servants. In addition, the project will contract international and local consultants to provide assistance and guidance for the e-Government Center. The implementation of the Project will be carried out by the Center using the expert resources of CTS and other agencies that have high technical capabilities. | O |
| 3.2  Governance | MI | • Cooperation between the implementing agency and the ministries subject to e-transformation is crucial. However, ministries are independent entities and may not cooperate with the eGC in carrying out these programs. | Lack of cooperation between the ministries and the e-Government Center may delay e-transformation programs.<br><br>The e-Government Center has a unique organizational form and governance structure. | The coordination problem will be mitigated by enforcing coordination through the e-Government Center Board, which includes several ministries and is Chaired by the State Chancellery. In addition, the State Chancellery, which reports directly to the Prime Minister, could use its clout to enforce the cooperation.<br><br>The Government will issue a "Cloud First" policy that requires every ministry and agency of the Government to first consider the option of using the services of the M-Cloud as opposed to purchasing the services outside.<br><br>Budget financing for the eGC has been approved for 2011, and counterpart funds agreed upon | O |

| | | | | |
|---|---|---|---|---|
| | | | for the following 5 years. | |
| 3.3 Fraud & Corruption | MI | • Because the eGC is new, it is difficult to assess the risk of fraud and corruption; but given that large amounts of equipment will be procured and corruption is widespread in the country, the risk is rated as MIMI. | Funds provided by the project might be misused. | Increased transparency and accountability is part of the project design, and will mitigate the risk of fraud and corruption. The eGC will use the Project Funds following World Bank Guidelines for Procurement under World Bank Projects. | O |
| **4. Project Risks** | | | | | |
| 4.1 Design | MI | • The main risks lay with delays in preparing and carrying out the bidding processes for the design and implementation of the M-Cloud scheme, which is new to Moldova and the Government entities participating in these applications. | The design risk consists of inefficient use of technology and resources because of the lack of expertise, ICT knowledge, financial resources and strong e-Government commitment of individual institutions. | • The use of the M-Cloud will concentrate IT investments in the data center of CTS, reducing the investment required by the ministries to a minimum (client PCs). <br> • The project will adopt a phased approach to the implementation of M-Cloud, starting with a small investment in Phase 1. <br><br> • The project will contract international and local consultants that will provide assistance to experts of the eGC to prepare specifications and assist the eGC in the bidding process for the Cloud platform. | O |
| 4.2 Social & Environmental | L | • Due to the fact that the Project will be implemented in existing buildings and there are no civil works involved, there are no expected safeguards issues. | | | N/A |
| 4.3 Program & Donor | ML | • Donors are not coordinated, there is a lack of sector strategy that donors could align their supports to and leadership of the reform. | Coordination of donors is cumbersome | The project includes funds to develop and implement the Partnership Coordination with donors, private sector, NGOs and other external entities involved in ICT activities in Moldova. | |
| 4.4 Delivery Quality | ML | • The main risk is lack of sustainability | Sustainability | The eGC will receive a share of | O |

| | | of activities because the IA staff and equipment will initially be paid by the project, and the Government has difficulties attracting qualified staff due to low salaries.<br>• Implementation delays linked to lengthy implementation of eServices due to slow adoption by civil servants in separate Ministries/Agencies. | Implementation delays | savings from M-Cloud shared infrastructure implementation, , in addition to the Government contribution and IDA funds becoming self-sustainable before the end of the Project. A large training program is included to prepare the civil servants for the e-Transformation. These training programs will create skills for efficient implementation of e-services after the Project closes. | |

A - Proposed Rating <u>before</u> Decision Meeting:

| Project Team | Risk Rating: Preparation | Risk Rating: Implementation | Date | Comments |
|---|---|---|---|---|
| **Overall Risk** | Medium-L | Medium-I | 3/17/2011 | A Medium-I (low impact high likelihood) risk rating is suggested for implementation, because the project supports a fairly ambitious reform that requires good coordination across ministries and agencies that have little experience in working with the World Bank. The country risk is rated MI, as well as the Implementing agency and the design. |

B - Review by IL Risk Team for Decision meeting:

| Risk Team | Risk Rating: Preparation | Risk Rating: Implementation | Date | Comments |
|---|---|---|---|---|
| **Overall Risk** | | | | |

Final Rating:

| Decision Meeting Chair | Risk Rating: Preparation | Risk Rating: Implementation | Processing Track | Date | Comments |
|---|---|---|---|---|---|
| **Overall Risk** | Medium-L | Medium-I | Track 2 | March 24, 2011 | This risk rating was confirmed by ECA Quality |

**Annex 5:  Implementation Support Plan**

**Implementation Strategy**

1.      The IDA has prepared the Strategy to assist the Borrower to mitigate the Risks described in Annex 4. The Strategy consists of the following elements:

(a)      Stakeholder risks:  The Project team will organize a series of conferences, seminars, exchange programs, and World Bank's e-Development Thematic Group videoconferences in Moldova, at the times of our supervision missions and throughout the year. The purpose of these events is two-fold:  (i) first, to bring the best international practices to Moldova and create an opportunity for discussion and dissemination; and (ii) second, to meet and consult with representatives from the private sector, civil society and academia, explain to them the issues the Government is facing, and request their participation in proposing solutions and supporting some initiatives. The frequent interaction and consultations with stakeholders are essential in order to increase the trust in the Government in general and in the Project initiatives in particular and broad ownership of the e-Transformation agenda.

(b)      Implementing agency risks:   The Project team will participate in Project Steering Committee (eGC Board) meetings—both in Chisinau during supervision, and in Washington via Videoconference—to discuss the progress of the implementation, the issues that the Center is facing, and to assist them in finding solutions. For example, one possibility would be to engage the assistance of the High Level Experts for Leaders and Practitioners (HELP), a group of Government CIOs from countries with advanced e-Government programs, including Singapore, Australia, Estonia, The United Kingdom, US and Canada. In addition, IDA International Singapore's team and the Estonian E-Governance Academy team will be in frequent contact with the Center, to help them with their day-to-day issues.

(c)      Design risks:  The Project team will be in constant contact with leaders in the industry in Cloud Computing to provide the Moldovans with the best advice in the implementation of their technical solutions. These multinational corporations have indicated their willingness to help the Government of Moldova and the World Bank with the implementation of the Project, especially in terms of building the Client capacity. These corporations believe that Moldova can set an example for other countries in the Region to implement solutions to address Government IT needs faster and at lower costs.

(d)      Quality risks:  The Project team will review the training program during every supervision mission.  The Government will update the training program every 6 months, and will keep the mission informed about progress, problems, and solutions. The supervision of this project is essential for ensuring long-term sustainability of the reforms that this project will bring.

**Implementation Support Plan**

2.      The Implementation Support Plan to carry out the Strategy is presented in the following Table:

**Table 5.1: Implementation Support Plan**

| Time | Focus | Skills Needed | Resource Estimate | Number of Trips |
|------|-------|---------------|-------------------|-----------------|
| First 12 Months | • Piloting e-services and mobile apps<br>• e-Government strategy development<br>• M-Cloud Rollout (Phase 1)<br>• Governance and institutional reform<br>• Organizational design of eGC<br>• Training and change management<br>• Strategic communications campaign<br>• e-Legislation development<br>• M&E<br>• Open Data Initiative<br>• Crowdsourcing/Apps Contests | • E-Government Specialist<br>• IT Applications/e-Services Specialist<br>• Public Sector Governance Specialist<br>• Change Management/Training Specialist<br>• Organizational Design Specialist<br>• ICT Lawyer<br>• Procurement Specialist<br>• FM Specialist<br>• Communications Specialist<br>• Cloud Computing Specialist | $150 K | 3-4 |
| 12-24 months | • M-Cloud initiation<br>• Procurement of large IT packages and Change Management<br>• e-Services development<br>• ICT Competitiveness TA<br>• Change Management and Training | • e-Gov and e-Services Specialists<br>• Governance Specialist<br>• IT Procurement Specialist<br>• Change Management Specialist<br>• ICT Industry specialist<br>• Procurement Specialist<br>• FM Specialist | $100 K | 2-3 |
| 24-60 months | • e-Services development<br>• Change Management and Training<br>• M-Cloud roll-out (Phase 2)<br>• PPP design and delivery | • e-Gov & IT Applications Specialists<br>• Governance Specialist<br>• Change Management Specialist<br>• M&E Specialist<br>• PPP Specialist<br>• Procurement Specialist<br>• FM Specialist<br>• Cloud Computing Specialist | $100 K/ year | 2/year |

**Table 5.2: Skills Mix Required**

| Skills Needed | Number of Staff Weeks (tentative plan for project period) | Number of Trips (tentative plan for project period) | Comments (tentative plans) |
|---------------|-----------------------------------------------------------|-----------------------------------------------------|----------------------------|
| e-Government Specialists | 80 | 15 | |
| IT Apps/e-Service Specialists | 50 | 10 | |
| Public Governance Specialist | 20 | | To be performed by field-based and HQ staff |
| Financial Management Specialist | 10 | 0 | To be performed by field-based staff |
| Procurement Specialist | 15 | 5 | To be performed by field-based and HQ staff |
| Change Management/Training Specialist | 10 | 4 | |
| ICT Industry Specialist | 5 | 2 | |
| Communication specialist | 5 | 0 | To be performed by field-based staff |
| M&E Specialist | 4 | 2 | To be performed by field-based and HQ staff |
| PPP Specialist | 3 | 1 | |
| ICT Lawyer | 2 | 0 | |
| Organizational Design Specialist | 2 | 1 | |

**Financial Management**

3.       As part of its implementation support, the World Bank will conduct risk-based financial management implementation support and supervisions at appropriate intervals. The World Bank will review the project's financial management arrangements. This will include reviewing:  (a) the quarterly IFRs, the annual audited financial statements and auditor's management letter, and remedial actions recommended in the auditor's Management Letters; (b) the accounting and internal control systems; (c) the budgeting and financial planning arrangements; (d) the disbursement management and financial flows; (e) any incidences of corrupt practices involving project resources. A World Bank-accredited Financial Management Specialist will conduct the implementation support and supervision process.

# Annex 6: Team Composition

World Bank Staff and Consultants who contributed to the project (listed in alphabetical order, core team in bold):

| Name | Title | Unit |
|---|---|---|
| Ana Busuioc | Receptionist | ECCMD |
| Andrea Ruiz-Esparza | Senior Program Assistant | TWICT |
| Arcadii Capcelea | Senior Environmental Specialist | ECSS3 |
| Bjorn Soren Gigler | Senior Governance Specialist (Peer Reviewer) | WBIIN |
| Cem Dener | Senior Public Sector Spec. (Peer Reviewer) | PRMPS |
| Deepak Bhatia | Lead e-Government Specialist | TWICT |
| Elena Nikulina | Senior Public Sector Specialist | ECSP4 |
| Elena Corman | Procurement Assistant | ECCMD |
| **Eloy Eduardo Vidal** | **Consultant** | **TWICT** |
| **Gurcharan Singh** | **Senior Procurement Specialist** | **TWICT** |
| Hiran Herat | Consultant | AFTWR |
| Iuliana Medoni | Team Assistant | ECCMD |
| **Jannina Flores Ramirez** | **Program Assistant** | **TWICT** |
| John Wille | Lead PSD Specialist (Peer Reviewer) | CICSA |
| Juan Navas-Sabater | Lead ICT Policy Specialist (Peer Reviewer) | TWICT |
| **Kristin Sinclair** | **Governance Operations Officer** | **ECCMD** |
| Lilia Razlog | Public Sector Specialist | ECCMD |
| **Lyudmila Bujoreanu** | **Consultant** | **TWICT** |
| Marc Lixi | Senior Operations Officer | TWICT |
| Mariana Dahan | Consultant | TWICT |
| **Nicholay Chistyakov** | **Senior Finance Officer** | **CTRFC** |
| Oleg Petrov | Task Team Leader/KM Officer | TWICT |
| **Oxana Druta** | **FM Specialist** | **ECSO3** |
| Radu Cucos | Consultant | TWICT |
| **Randeep Sudan** | **Lead ICT Policy Specialist** | **TWICT** |
| Roberto Panzardi | Senior Public Sector Spec (Peer Reviewer) | AFTPR |
| Ruxandra Costache | Counsel | LEGEM |
| Samia Melhem | Senior  Operations Officer (Peer Reviewer) | TWICT |
| Sandra Sargent | Senior Operations Officer | TWICT |
| **Sara Gonzalez Flavell** | **Senior Counsel** | **LEGEM** |
| **Sergiu Panaghiu** | **Information Analyst** | **ECCMD** |
| Siddhartha Raja | Consultant | TWICT |
| Tasneem Rais | Transaction Processor | TWICT |
| Victor Neagu | Communications Associate | ECCMD |
| Victoria Siryachenko | Country Officer | ECCUA |

# Annex 7:   Economic Analysis

*Summary*

1.      The economic benefits of this Project come from four sources:

- Savings in investment and operation and maintenance costs derived from the utilization of a centralized shared computer infrastructure (the Cloud computing platform), as opposed to have multiple computer centers;
- Reduction in the number of civil servants required to deliver services, as electronic services replace manual processes. The Project will not include the costs of laying off civil servants in its economic calculations, because there is an assumption that those civil servants will be re-located to other offices in both the national and local Governments. In fact, a significant training and re-training program is included to enable the mobilization of the staff affected by the Project.
- Reduction in time and costs of the citizens and businesses that access Government services electronically, instead of physically visiting the Government offices to receive those services. These savings accrue to the users of the services, and not directly to the Government.
- Savings from reduced use of paper by the Government and citizens.

2.      **Benefits from using a cloud computing infrastructure.** These calculations are based on "Cost Benefit Analysis for Moldova Cloud" conducted by the USAID Moldova Rapid Governance Support Program. The installation of a shared computer infrastructure will provide the following economic benefits:

3.      There will be substantial savings in investment of computer centers (hardware and software), because the shared infrastructure will be used by ministries and agencies across the Government. One of the reasons why the Cloud is more efficient than traditional data centers is because its computers and storage are used more:  traditional data centers use these resources on average 10 percent of the time; the Cloud uses these resources on average 80-90 percent of the time. First, savings were calculated by estimating the investments in computer centers that would have been needed without the Cloud and subtracting the investments needed for the Cloud. Specifically, an estimate of the number of traditional computer centers that would have been needed to be implemented for the next 10 years—and their costs- was made.

**Table 7.1:  Projections on number of Computers and Servers in Public Administration and other sectors of the Moldovan Economy over the next six years under As-Is Scenario**

| Target Group | Existing in 2009* | | Expected in 2015 | |
|---|---|---|---|---|
| | PCs | servers | PCs | servers |
| Public administration | 25,000 | 650 | 38,000 | 1300 |
| Education | 31,000 | 300 | 47,000 | 550 |
| Small business | 13,000 | 400 | 19,000 | 700 |
| Healthcare | 5,000 | 150 | 9,000 | 250 |
| **Total for target groups** | **74,000** | **1500** | **113,000** | **2800** |

4.	The team then made an estimate of the costs of having the Cloud provide the same services. Later, the costs of the Cloud were subtracted from the costs of the traditional computer centers.  The results are shown in the following figure:

**Figure 7.1 Comparison of As-Is and State-of-the-Art Cloud Scenarios**
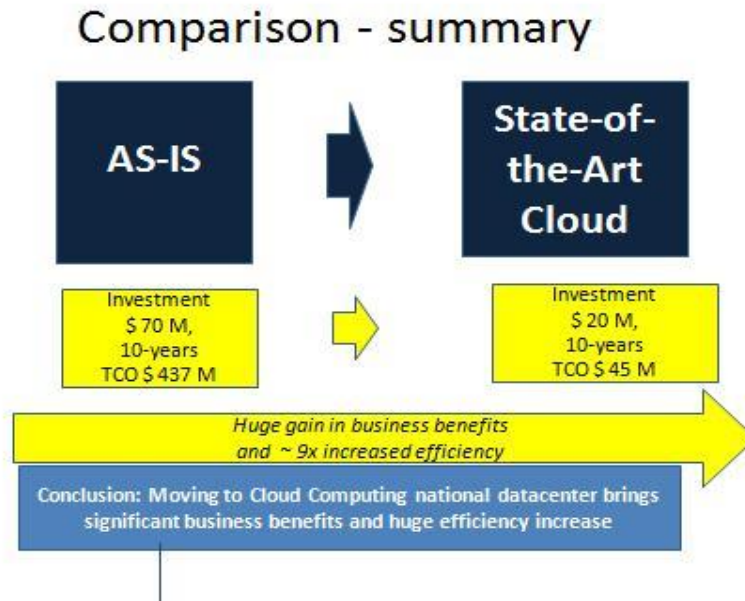


5.	From the above calculations, it is seen that by implementing a Cloud Computing solution in Moldova, the Government could save $50.0 million in investments and nine times in total cost of ownership ("TCO", which includes investment, operation and maintenance, equipment replacement and administration costs), over a period of ten years. The above calculations assumed a large-scale Cloud implementation that would serve all the future needs of the Government with enough resources to provide service to SMEs and the education sector too.

6.	The Cloud infrastructure was designed to provide back-up facilities for every government system, which will protect the Government from losing data in cases of disasters, mismanagement or theft. The current Government systems—with few exceptions—do not have disaster recovery options. This means that the Government has a high risk of losing important data due to fire, earthquakes, flooding, civil unrest, malfunction or theft. A calculation of the costs for the Government to deal with a data center disaster, using international averages was made—and then this number was multiplied by the number of data centers in operation, to assess the total savings.  The disaster recovery solution will prevent losses of data and reduce downtime – this will create a twofold reduction of TCO (about $20.0 M).

7.	 Reduced electricity consumption in the Cloud, as this equipment will consume less electricity than traditional data centers. See the calculation below.

8.	Operating and maintenance costs will be reduced, because fewer staff will be needed to maintain the Cloud infrastructure than the current scheme in which there are many, small, dispersed and single purpose data centers, each requiring an administrator, technical and operational staff. One of the main benefits of centralization is that fewer staff will be needed to manage and keep the systems running.

9.      All software will be stored and processed in the Cloud; therefore, the terminals used to access these systems will not be required to have large memory or storage capacity. Thus, the Government will not need to buy expensive PCs for its staff. Instead, simpler, less expensive "dumb terminals" could be used, potentially reducing the cost per workstation from about $1,000 to $200 or, an 80 percent cost reduction.

10.     The Cloud solution will allow the Government to have centralized procurement of IT hardware and software, as opposed to many small purchases being made by ministries and agencies. This will lead to savings estimated at 15-25 percent in the costs of purchasing equipment and software.

11.     **Alternative Scenarios Considered**. All Governments in the world are interested in introducing Cloud computing due to the benefits stated above (See Annex 2). The issue is how to do so efficiently. If the introduction is fast, investments are higher, and benefits could be larger:  however, this creates a risk that the Cloud will not be fully used by all Government ministries or agencies—delaying the benefits. If the Cloud is introduced at a slower pace in order to reduce this risk, initial investments are lower, but the benefits are also lower. Thus, phased introduction of the Cloud should be tailored to the speed of adoption that the ministries and agencies of the Government are prepared to take. With the assistance of the USAID financed consultants several different scenarios were calculated for a slow, middle and fast introduction of the Cloud. In addition, a pilot project was proposed for training purposes and "proof of concept", to convince several ministries of the benefits of Cloud Computing. An alternative scenario of a combined Government and private sector Cloud was also considered. This scenario was interesting:  the larger investment results in more benefits to the Government, and also in benefits to private companies. However, in the end, a more conservative approach— to reduce the risks—was adopted:  a small, "pilot" Cloud at the beginning, growing to a medium-size Cloud by the end of the Project.

12.     **Benefits from the Cloud.**  Table 7.2 gives the results of the calculations on the benefits of Cloud Computing for the Government under this scenario.  Two time horizons were used: 5 years and 10 years. The initial investment needed for the Cloud will be $6.0 million. An additional investment of $3.2 million to replace computer equipment will be needed in years 6 and 7, for a total investment of $9.2 million.

**Table 7.2:  Economic Results of Introduction of Cloud Computing in Moldova**

| Indicator | 5 years | 10 years |
|---|---|---|
| NPV | 5,135,864 | 13,382,789 |
| IRR | 50.8% | 60.4% |
| MCR | 3,842,366 | 3,842,366 |
| B/C | 2.34 | 4.48 |
| Payback period (years) | 2.50 | 2.5 |
| ROI | 73.3% | 148.1% |

13.     From the table above, the Net Present Value of these investments is $13.4 million, and the internal rate of return is 60 percent. The investment will be paid back in about 2.5 years. The following assumptions were made in these calculations:

| Starting year of operations | 2012 |
|---|---|
| Price per 1 Virtual server – Investment, $ | 5,301 |
| Price per 1 Virtual server - Annual Opex, $ | 860 |
| Number of servers | 1,000 |
| Selling price of 1 virtual server per year, $ | 2,239 |
| Discount rate % | 10.0% |
| Starting year of operations | 2012 |
| Price per 1 Virtual server – Investment, $ | 5,301 |
| Price per 1 Virtual server - Annual Opex, $ | 860 |
| Number of servers | 1,000 |
| Selling price of 1 virtual server per year, $ | 2,239 |
| Discount rate % | 10.0% |
| Starting year of operations | 2012 |
| Price per 1 Virtual server – Investment, $ | 5,301 |
| Price per 1 Virtual server - Annual Opex, $ | 860 |
| Number of servers | 1,000 |
| Selling price of 1 virtual server per year, $ | 2,239 |
| Discount rate % | 10.0% |

14.    These assumptions are based on average international costs and prices for Cloud computing equipment and services. Even though more benefits would accrue with the use of virtual PCs, the scenario used did not include replacement of PCs by low-cost access devices. This step should come later when ministries and agencies become more familiar with the benefits of the Cloud to their institutions and trust its operation.

15.    The calculations used to reach the results above are shown in Table 7.3, below. Income was calculated by multiplying the number of servers in operation times the utilization factor times the price per server. This calculation takes into account a slow adoption of Cloud services, in which only 26 percent of servers will be used in year 2, 84 percent in year 3, and from then on, 99 percent. A faster utilization would increase the rate of return of the project and the benefits of the Cloud.  However, for the purposes of this analysis, conservative hypotheses were used. As shown in the table, initial investment is also phased:  $1.6 million in year 1, $3.5 million in year 2, and $0.9 million in year 3. Investment is aligned with demand, in the sense that equipment will be introduced as demand materializes. Operating expenses were then calculated based on the installed plant. Cash flow was calculated by subtracting the costs from the revenues. Then, cash flow for each year is discounted at the indicated rate and these flows are added to calculate the NPV, and the other results of Table 7.1.

**Table 7.3:  Calculations for Economic Analysis of the Cloud Computing Infrastructure.**

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | Total 5 years | Total 10 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % Utilization | 95.0% | 26% | 84% | 99% | 99% | 99% | 99% | 99% | 99% | 99% | 99% | | |
| Year | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | | |
| Year number | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | |
| Income | 0 | 1282005 | 4094618 | 4820925 | 4820925 | 4820925 | 4820925 | 4820925 | 4820925 | 4820925 | 4820925 | 19839400 | 43944027 |
| Investment costs | -1597711 | -3505244 | -905167 | 0 | 0 | -1637097 | -1637097 | | | | | -7645219 | -9282316 |
| Operating costs | 0 | -245882 | -785328 | -924630 | -924630 | -924630 | -924630 | -924630 | -924630 | -924630 | -924630 | -3805100 | -8428250 |
| Cash flow (gross profit) | -1597711 | -2469121 | 2404123 | 3896295 | 3896295 | 2259198 | 2259198 | 3896295 | 3896295 | 3896295 | 3896295 | 8389081 | 26233461 |
| Discount factor | 1.000 | 0.909 | 0.826 | 0.751 | 0.683 | 0.621 | 0.564 | 0.513 | 0.467 | 0.424 | 0.386 | | |
| Discounted cash flow | -1597711 | -2244655 | 1986879 | 2927344 | 2661222 | 1402784 | 1275259 | 1999416 | 1817651 | 1652410 | 1502191 | 5135864 | 13382789 |
| Cum discounted cash flow | -1597711 | -3842366 | -1855487 | 1071857 | 3733079 | 5135864 | 6411123 | 8410538 | 10228189 | 11880598 | 13382789 | | |
| Gross margin | | | 59% | 81% | 81% | 47% | 47% | 81% | 81% | 81% | 81% | | |

16.      **<u>Reduction in the number of civil servants providing services</u>**.  As citizens and businesses use electronic as opposed to physical services, the Government will save on civil servants' time. The calculation assumed an increase in efficiency due to the lower number of manual processes that will be required, because electronic transactions will reduce the amount of processing that will be done manually. The assumption was made that the civil servants who will not be needed for the provision of these services will be relocated to other offices in the national and local Governments. For this purpose, the project will provide for re-training of civil servants. The savings from the lower number of personnel required to deliver services was done by estimating the efficiency increase in the core number of civil servants (those who work in the central administration, excluding teachers and health workers). The assumption of a 1 percent increase in efficiency due to the introduction of electronic services was made, as detailed in Table 7.4. The calculation on the number of civil servants required and their cost, using current salaries, was made. This is a conservative calculation, because it includes neither the indirect costs nor future salary increases. From the calculation of each year's savings, the project investment in e-services was subtracted.  The Net Present Value of the benefits to the Government are $6.1 million (at a 10 percent discounted rate), coming from the reduction in costs to process those services.

17.      **Reduction in costs of accessing Government services.** As citizens and businesses access electronic services online, they will spend less time and money than with the traditional way of waiting in line and going several times to the ministries and agencies to request services. In Table 7.4, the savings were calculated, in terms of the average cost of the time saved by accessing services as follows:  first, the number of working Moldovans who will access electronic services was calculated, based on international experience in other countries with similar programs and the number of people who will have access to the Internet in Moldova, either at home, or at work, or in a public facility (such as a cybercafé, or rural tele-center). For the first five years it was assumed that the average citizen who uses the services' gateway online will save half a day per year as compared with the status quo. This number would increase to 2 days per year for years 5-10, as more e-Services become available. By multiplying the number of saved days by the average wage, the economic benefit was obtained—and then this value was multiplied by the number of beneficiaries accessing the e-services, in order to estimate the total amount of savings that the Moldovan people will accrue as a result of this Project.

18.      The Net Present Value of the financial benefits to the population and businesses from time saved during transactions with the Government would be $25.9 million. These calculations were done for the 10-year period after effectiveness and in order to calculate net present value of the yearly benefits, a discount rate of 10 percent was used.

19.      **Sensitivity Analysis.**  The previous analyses assume normal project implementation. However, a more conservative, pessimistic, scenario was also calculated under the following assumptions:  (a) the project is delayed for two years and only then the benefits of using the Cloud materialize; (b) the Government does not move the civil servants to other positions, or reduce the workforce, therefore there will not be any savings here; and (c) finally, the e-Services are introduced at a slower pace, resulting in a delay of two years for the benefits of time saved by citizens and businesses. Table 7.5 shows the results. Table 7.4 gives the calculations.

**Table 7.5. Summary of Results of Sensitivity Analysis**

| Item | Normal Scenario | Conservative Scenario |
|---|---|---|
| **Internal Rate of Return** | **79%** | **21%** |

20.     Additional economic benefits are:

- ***Reduction in carbon footprint from using less power.*** Virtualization, new cooling technologies and using green servers will results in significant reductions in carbon emissions due to the decreased power consumption and savings in electricity, which is one of major component of operating costs of a datacenter.  Current cost of electricity used by today's technologies is approximately $3.7 million, while the electricity consumption of the proposed Cloud-based solution will cost approximately $250,000 annually, for the same computing power.  The 10+ times in reduction in electricity bills translates in 10+ rate of decreased carbon emissions and of direct heating of atmosphere by datacenters. Additionally, the proposed replacement of PC with dump terminals in the next few years will result in further reduction of power consumption since each uses 5-10 Watt of power, while PCs currently in operation in Moldova use 20 times more power.

- ***Reduction in paper consumption.*** A substantial positive impact is expected from reduced use of paper by the Government and citizens due to introduction of e-services and document management system for the Government.  The current use of paper in Moldova results in approximately 8,000 tons of annual waste/landfill.  According to standard rates, one tree allows printing 600 average newspapers or produce 50 kg of paper. For example, just by making the "Monitorul Oficial" newspaper in online format  could save about 1,000 trees annually (6,000 newspapers in one issue published about 100 times a year translates into publishing 60,000 issues per year).

- ***Reduction in gas consumption.*** Introduction of the e-services is also expected to reduce gas consumption resulting from reduction in use of transportation services in relation to improved electronic delivery of public services, as e-services will be accessed at home or at work without the need to travel to the Government offices in the capital.

| Table 7.4. MOLDOVA E-Governance Transformation Project - e-Services economic analysis, million of US$ | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| **Direct Benefits to the Government** | | | | | | | | | | |
| Reduction in processing costs | $ - | $ 0.5 | $ 1.1 | $ 1.6 | $ 2.1 | $ 2.7 | $ 3.2 | $ 3.8 | $ 4.3 | $ 4.8 |
| Total Direct Benefits | $ - | $ 0.5 | $ 1.1 | $ 1.6 | $ 2.1 | $ 2.7 | $ 3.2 | $ 3.8 | $ 4.3 | $ 4.8 |
| Costs | $ 0.8 | $ 1.0 | $ 1.7 | $ 1.7 | $ 2.0 | $ 1.7 | | | | |
| Cash Flow | $ (0.8) | $ (0.5) | $ (0.6) | $ (0.1) | $ 0.1 | $ 1.0 | $ 3.2 | $ 3.8 | $ 4.3 | $ 4.8 |
| NPV @ 10% | $6.1 | | | | | | | | | |
| **Benefits to the Population and Businesses** | | | | | | | | | | |
| Savings | - | $ 0.1 | $ 0.5 | $ 1.8 | $ 4.0 | $ 5.9 | $ 7.6 | $ 9.3 | $ 11.8 | $ 13.5 |
| NPV @ 10% | $25.9 | | | | | | | | | |
| **Assumptions** | | | | | | | | | | |
| Civil servants in Central Ministries | 12,000 | 11,880 | 11,760 | 11,640 | 11,520 | 11,400 | 11,280 | 11,160 | 11,040 | 10,920 |
| Salaries plus social benefits | $ 373 | $ 373 | $ 373 | $ 373 | $ 373 | $ 373 | $ 373 | $ 373 | $ 373 | $ 373 |
| Total Cost, million | $ 53.7 | $ 53.2 | $ 52.6 | $ 52.1 | $ 51.6 | $ 51.0 | $ 50.5 | $ 50.0 | $ 49.4 | $ 48.9 |
| Efficiency increase, % | 0% | 1% | 2% | 3% | 4% | 5% | 6% | 7% | 8% | 9% |
| Population | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 | 3.60 |
| Labor force | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 |
| Percent of labor force who accessed serv | 0% | 2% | 6% | 14% | 24% | 35% | 45% | 55% | 70% | 80% |
| Beneficiaries accesing e-services, m | 0.000 | 0.020 | 0.080 | 0.180 | 0.300 | 0.443 | 0.569 | 0.696 | 0.886 | 1.012 |
| Time Saved, days/year | 0 | 0.5 | 1 | 1.5 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cost/day | $ 6.7 | $ 6.7 | $ 6.7 | $ 6.7 | $ 6.7 | $ 6.7 | $ 6.7 | $ 6.7 | $ 6.7 | $ 6.7 |
| Savings, million | $ - | $ 0.1 | $ 0.5 | $ 1.8 | $ 4.0 | $ 5.9 | $ 7.6 | $ 9.3 | $ 11.8 | $ 13.5 |
| **Savings due to the M-Cloud** | | | | | | | | | | |
| Total Costs of the m-Cloud | -1.597711 | -3.751126 | -1.690495 | -0.92463 | | | | | | |
| Cash Flow | -1.597711 | -2.469121 | 2.404123 | 3.896295 | 3.896295 | 2.259198 | 2.2592 | 3.896 | 3.896 | 3.896 |
| **Normal Scenario** | | | | | | | | | | |
| a +b+c | (2.4) | (2.9) | 2.3 | 5.6 | 8.0 | 9.1 | 13.1 | 16.9 | 20.0 | 22.2 |
| IRR | 79% | | | | | | | | | |
| **Conservative (pesimistic) scenario** | | | | | | | | | | |
| Two year delay in receiving benefits, no labor reductions | (2.40) | (4.75) | (3.39) | (2.62) | 1.24 | 3.99 | 5.89 | 6.46 | 9.85 | 13.17 |
| IRR | 21% | | | | | | | | | |

# Annex 8:  Major Related Projects Financed by the World Bank and/or other Agencies

1.  **THE COMPETITIVENESS ENHANCEMENT PROJECT (CEP) (P089124)**
    The CEP aims to assist Moldova in enhancing the competitiveness of enterprises through improvements in the business environment and by making adequate standards, testing and quality improvement services av*ailable to enterprises. Synergies*:  Regulatory reform, including, *inter alia*, the introduction of Regulatory Impact Assessment mechanism for new regulations affecting business operations; and improving access to finance for private enterprises are two components of CEP that will be linked to the GeT Project. GeT could facilitate participation o*f* ICT enterprises in matching grants program.

2.  **GOVERNMENT`S CENTRAL PUBLIC ADMINISTRATION REFORM (CPAR) (P105602)**
    The objective of the CPAR is to strengthen the institutional capacity of the public administration for better policymaking, policy implementation and efficient use of public resources.  The Project is in the process of procuring software and hardware for establishing the Public Functions and Civil Servants Register. **Synergies**: The GeT project also deals with the issue of making the public sector more efficient and effective using ICT. M-Cloud shared e-Government infrastructure could provide enhanced back-up and storage services to CPAR clients.

3.  **HEALTH SERVICES AND SOCIAL ASSISTANCE (P095250)**
    The primary objective of P095250 is to support the Government's program to increase access to quality and efficient health and improve the efficiency of social assistance services for the Moldovan population in line with the MTEF for 2007-09. If the project is successful, Moldova will reap the following long–term benefits:  (i) pre-mature mortality and disability will be decreased, thereby closing the gap between the EU and Moldova through upgraded health services, increased financial protection and increased efficiency of the healthcare system; and (ii) social assistance coverage will be increased among the needy—and leakages will be decreased. **Synergies**:  The GeT project may be used to improve the healthcare system through the development of health-related e-services.  M-Cloud shared e-Government infrastructure could provide back-up and storage services to HSSAP clients.

4.  **STRENGTHEN THE EFFECTIVENESS OF THE SOCIAL SAFETY NET RBF (RESULTS-BASED FINANCING) SIL (SPECIFIC INVESTMENT LENDING) (P120913)**
    The objective of P120913 is to strengthen the effectiveness of the social safety net by:  (i) consolidating SSN benefits and scaling-up the new Targeted Social Assistance program; (ii) strengthening the basic architecture of the SSN benefits administration; and (iii) linking TSA to the graduation and employment agenda. This project is currently under preparation. **Synergies**:  The social assistance could be paid through mobile applications that the GeT project will provide. M-Cloud shared e-Government infrastructure could provide back-up and storage services to RBF clients.

5.  **DISASTER RISK MITIGATION AND ADAPTATION PROJECT (P115634)**
    The objective of the Disaster Risk Mitigation and Adaptation Project (DRMAP) is to reduce Moldavia's vulnerability to natural hazards and the impact of climate change—which may result in serious human and economic losses. This objective will be achieved by:  (i) improving preparedness and response capabilities; (ii) strengthening the capacity of the State Hydrometeo Service (SHS) to deliver its services; and (iii) helping Moldovan farmers adapt to climatic hazards, such as drought, frost, and hail. Under this project, there are several large-value and small-value IT procurements, both software and hardware (servers, computers). These will be procured for the State Hydrometeorological Service, Ministry of Agriculture and Civil Protection and Emergency Situations Service of the Ministry of Interior. None of these procurements have been launched yet. **Synergies**:  The GeT project will facilitate the dissemination of agro-meteorological information to farmers and decision-makers via mobile applications. M-Cloud shared e-Government infrastructure could also provide back-up and storage services to DRMAP clients.

6.  **PUBLIC FINANCIAL MANAGEMENT TECHNICAL ASSISTANCE PROJECT (P082916)**
    The Public Financial Management Project aims to achieve effective and transparent management of public finances, as an enabler of poverty-reducing programs and economic growth. The project finances international and local consulting services, training, information systems, and office-related equipment in the areas of:  (i) Budget Formulation Methodology; (ii) Budget Execution Methodology; (iii) Financial Management Information System (FMIS); (iv) Normative and Legal Framework for Internal Control and Audit; (v) Transformation of Financial Control into Internal Audit Function; and (vi) Expanding the Internal Audit to Line Ministries and Sub-national

Entities. **Synergies**: The GeT project will also strengthen institutional capacity and enhance transparency in some areas of public financial management. M-Cloud shared e-Government infrastructure could provide enhanced back-up and storage services to PFM project clients.

7. **Building e-Governance in Moldova, UNDP**
   Advanced use of ICT by public administration institutions, E-Govt Concept; ICT training system for public servants re-designed to ensure an increasing number and quality of electronic services for citizens and business community, 1 on-line service developed and piloted. **Synergies**: Better management and transparency through use of ICT in Government.

8. **Development of Communications Regulation Project, EBRD**
   Implementation of the Law on Electronic Communications; creation of Project Steering Group (PSG); review of legislation; market analysis; commercial and technical aspects of interconnection and access; assistance in elaboration of universal service obligations, etc. At the initial stage (2000-2002) benefited from a similar project funded by USAID. **Synergies**: Creates a basic legal framework for telecommunications development, which is the foundation for e-transformation

9. **MRGSP - Moldova Rapid Governance Support Program, USAID**
   The MRGSP will improve the judicial sector with implementation of the Integrated Case Management System; it will reform the Ministry of Agriculture and Food; it will reform the Center for Combating Economic Crimes and Corruption; and it will provide support for decentralization and communications training. **Synergies**: Creates better Government management and transparency.

10. **Reform in Customs and Police Administration, USAID**
    These reforms will mainstream IT in corruption investigation units in the Customs Service and Ministry of Internal Affairs, establish standards and ethical rules, and help to implement the EU "New Computerized Transit System" (NCTS). **Synergies**: Creates customs transparency using ICT applications.

11. **BIZTAR - Business Regulatory and Tax Administration Reform Project, USAID**
    The objective of BIZTAR is to encourage productive investment for lowering the overall cost of state regulation of private enterprises, improving of licensing, simplification of tax reporting, improving access to Government information, and fostering public monitoring. **Synergies**: BIZTAR is a GeT project partner in implementation of ICT applications for business.

12. **CEED 2 - Competitiveness Enhancement & Enterprise Development 2, USAID**
    The objective of CEED 2 is to encourage competitiveness and development in the IT industry, textile and apparel, and winemaking. It also helps to develop sustainable industry clusters. **Synergies**: CEED 2 provides support to the local ICT companies' competitiveness and industry cluster development.

IBRD 33448R

**UKRAINE**

*To Chernivtsi*
*Dnestr*
*To Vinnytsya*

Ocniţa
Briceni
Moghiliov-Podolski
*To Chernivtsi*
*To Vinnytsya*

Donduşeni
Edineţ
Soroca

48°N

Drochia
Rîşcani
Floreşti
Camenca

Costeşti
Glodeni
Balţi
Şoldăneşti
Rîbniţa

*Nistru*

Balatina
Sîngerei
Rezina

Făleşti
Teleneşti
Chiperceni

*Prut*

Orhei

*To Voznesens'k*

**ROMANIA**

Sculeni

Mt. Bălănesti
(430 m)
Călăraşi
Dubăsari
**TRANSNISTRIA**
Criuleni

Ungheni
Strășeni
Stăuceni
Grigoriopol

*To Pascani*

Nisporeni

47°N

**CHIŞINĂU**

Lăpusna
Ialoveni
Anenii
Noi
Tiraspol

*To Zhmerynka*

Leuseni
Hînceşti
Bender
(Tighina)

Slobozia

Căinari

*To Odesa*

*Plain*
Căuşeni

Cimişlia
Ştefan-Vodă
*Nistru*

*Bugeac*

Leova
*To Birlad*

Comrat
Basarabeasca

**UKRAINE**

Cantemir
**GĂGĂUZIA**

Ceadîr-
Lunga
*To Artsyz*

46°N

Cahul
Taraclia
**GĂGĂUZIA**

Vulcăneşti

*To Imayil*

*To Bucharest
and Constanta*

*Black
Sea*

| | |
|---|---|
| 0 10 20 30 40 Kilometers | |
| 0 10 20 30 Miles | |

MAY 2007

## MOLDOVA

- ○ SELECTED CITIES AND TOWNS
- ◉ AUTONOMOUS TERRITORIAL UNIT CAPITALS
- ◉ RAIONS OR MUNICIPALITIES CAPITALS*
- ✪ NATIONAL CAPITAL
- ～ RIVERS
- — MAIN ROADS
- — RAILROADS
- ┅ AUTONOMOUS TERRITORIAL UNIT BOUNDARIES
- — RAIONS OR MUNICIPALITIES BOUNDARIES
- ·–·– INTERNATIONAL BOUNDARIES

*Names of the raions or municipalities
are identical to their capitals.*

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MOLDOVA