TECHNICAL ASSISTANCE FOR THE E-TENDER INITIATIVE IN KYIV, UKRAINE (PHASE ONE)
DELIVERABLE 1: TECHNICAL & BUSINESS REQUIREMENTS

MAY 29, 2015, REVISED JUNE 9, 2015

This publication was produced for review by the United States Agency for International Development. It was prepared by Tato Urjumelashvili, David Marghanaia and Yuriy Gromov, Management Systems International.
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DELIVERABLE 1: TECHNICAL & BUSINESS REQUIREMENTS

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Contracted under AID-121-O-15-00012

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CONTENTS

ACRONYMS ........................................................................................................... 1
INTRODUCTION .......................................................................................... 2
BUSINESS OBJECTIVES AND TECHNICAL REQUIREMENTS .................... 3
  ProZorro Development Process ....................................................................... 3
  ProZorro and EU Integration .......................................................................... 6
  ProZorro and Ukrainian Legislation ............................................................... 7
  ProZorro and Corruption ............................................................................... 8
  ProZorro and Public-Private Partnership ....................................................... 9
  ProZorro and Small and Medium Businesses ............................................... 9
  ProZorro, KMDA and Other Procuring Agencies ......................................... 10
PROZORRO: GAP ANALYSIS AND TECHNICAL AUDIT ......................... 11
  ProZorro Technical Architecture ................................................................ 12
  ProZorro Scaling-Up .................................................................................... 14
  Security Solutions .......................................................................................... 15
  Administration of Service Platforms, Data Checking .................................... 16
  Electronic Digital Signature ......................................................................... 16
  CDB Analytics .............................................................................................. 17
  System Transparency .................................................................................... 17
  Reverse Auction ............................................................................................ 18
  Contracts Execution, Integration with External Systems ............................. 19
  Function Module ‘Procurement Plan’ ............................................................ 19
  Warranty (Deposit Guarantee) ....................................................................... 19
  Function Module ‘Appeal’ ............................................................................ 20
  Blacklist .......................................................................................................... 21
  Function Module ‘Search’ ............................................................................ 21
RISKS IN IMPLEMENTING PROZORRO ...................................................... 22
CONCLUSIONS AND NEXT STEPS ............................................................. 23
  List of Priority Requirements for further Development of ProZorro System .... 24
  Assistance to KMDA .................................................................................... 25
  ProZorro Scaling-Up .................................................................................... 26
ANNEX 1. LIST OF MEETINGS CONDUCTED ............................................. 27
ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
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<tr>
<td>BI</td>
<td>Business Intelligence</td>
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<td>CDB</td>
<td>Central Database</td>
</tr>
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<td>CoM</td>
<td>Cabinet of Ministers</td>
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<td>CPV</td>
<td>Common Procurement Vocabulary</td>
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<td>DKPP</td>
<td>Ukrainian State Classificatory of Goods and Services</td>
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<td>DOS</td>
<td>Denial of Service</td>
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<td>EDS</td>
<td>Electronic Digital Signature</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>JSON</td>
<td>JavaScript Object Notation</td>
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<tr>
<td>KMDA</td>
<td>Kyiv City Administration</td>
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<td>MEDT</td>
<td>Ministry of Economic Development and Trade</td>
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<td>MSI</td>
<td>Management Systems International</td>
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<tr>
<td>MVP</td>
<td>Minimum Viable Product</td>
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<td>REST</td>
<td>Representational State Transfer</td>
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<tr>
<td>SMEs</td>
<td>Small and Medium-Sized Enterprises</td>
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<tr>
<td>SOA</td>
<td>Service-Oriented Architecture</td>
</tr>
<tr>
<td>SSL</td>
<td>Secure Sockets Layer</td>
</tr>
<tr>
<td>TI</td>
<td>Transparency International</td>
</tr>
<tr>
<td>UAH</td>
<td>Ukrainian Hryvnia</td>
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<tr>
<td>USD</td>
<td>U.S. Dollars</td>
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INTRODUCTION

This report provides an analysis of the technical and business requirements of stakeholders of public procurement regarding e-procurement. It matches and compares these requirements with the functionality and capabilities of the ProZorro system, as well as recommends additions and changes of system functionality for successful and effective implementation of e-procurement in the Kyiv City Administration (KMDA) and other public institutions in Ukraine.

The assessment’s objective is to define business needs and systems requirements for the e-procurement system for KMDA and the National eProcurement System. The assessment team was tasked with providing technical assistance and expertise in the following areas:

- Determine key business objectives and develop related technical requirements for the pilot activity in relation to the currently proposed national system.
- Engage with a range of stakeholders to understand needs, priorities and constraints of the proposed solution.
- Conduct a gap analysis and a technical audit of the minimum viable product (MVP) that is currently piloted in several governmental institutions, including KMDA, to include a code review.
- From the stakeholder needs assessment and analysis of the MVP, consider two options for the KMDA procurement system: (1) KMDA will use the National eProcurement System that is being developed and piloted or (2) KMDA will develop its own system, ensuring that the solution is not in conflict with a national-level system.
- Identify gaps and propose specific technical requirements to be implemented as part of the Kyiv City pilot activity.

The team was also tasked with addressing the following specific issues:

a. What are the opportunities for a public-private partnership in support of this initiative? How can the technology and other costs be shared across stakeholders?

b. Are all stakeholders who are engaged in this initiative, particularly small and medium businesses, seeking to provide goods and services to the city of Kyiv?

c. What are the key legislative and policy constraints to end-to-end automation and a paperless procurement solution in Kyiv/Ukraine?

d. How does this initiative fight corruption and build confidence in public sector activities?

e. How does this initiative support European integration objectives for Ukraine?

f. How can this effort be scaled to other cities and regions in Ukraine? What are the main opportunities?

g. Does a national e-procurement system with a central database of tenders ensure transparent and fair competition, reduce information security risks and ensure competition among the vendors offering the tender database interfaces to a range of public sector customers?

h. Obtain estimates provided by third parties for development costs, as well as hardware and commercial software to support the pilot initiative (primarily servers).
The assessment will result in two sets of deliverables, as follows:

**DEBELLERABLE #1**

**Kyiv City**
1.1 Business objectives and technical requirements documentation
1.2 Gap analysis: Kyiv City requirements and proposed solution

**National eProcurement System**
1.3 Assessment of national project business and technical requirements document
1.4 Documentation of the technical audit of MVP

**DEBELLERABLE #2**

**Kyiv City**
2.1 Detailed project plan
2.2 Development and system cost estimates and request for funding approval to USAID

**National eProcurement System**
2.3 Recommendations for technical modifications and implementation of a national electronic procurement solution

This report is Deliverable 1. It is organized against tasks and issues listed above. The report combines the analysis of the Kyiv City and the National eProcurement System and contains two major sections. The first provides finding and conclusions regarding business objectives and technical requirements identified through extensive interviews of stakeholders and review of the various documents. The second is focused on the technological part of the MVP of the system, including its configuration, functionality, etc. This section specifically points out the gaps and provides recommendations for enhancing the system based on the needs and priorities of the stakeholders and existing legal and technical constraints. The report ends with “Conclusions and Next Steps,” which sets stages for further enhancing the ProZorro system and outlines assistance KMDA needs to implement the system.

The assessment team consisted of two e-procurement experts: Tato Urjumelashvil (team leader) and David Marghania, with support by Yuriy Gromov (IT expert). Over the course of 15 days of field work in Kyiv, the team conducted about 25 group and individual interviews with procurement stakeholders, including: businesses, KMDA and other procuring agencies, e-procurement system initiators and sponsors, system developers and interface providers.

**BUSINESS OBJECTIVES AND TECHNICAL REQUIREMENTS**

**ProZorro Development Process**

The development of the e-procurement system in Ukraine, which was later named ProZorro, was intended to improve efficiency and transparency in public procurement, reduce costs, attract more participants, decrease opportunities for corruption and ensure compliance with international standards.

According to the Ministry of Economic Development and Trade (MEDT), Ukraine lost about 50 billion UAH (USD $2.39 billion, amounting to 20 percent of the total procurement value) in 2014 due to limited
competition and corruption of the outdated and inefficient procurement system. That system involved 25,000 procurement commissions and resulted in more than 1.5 million contracts in 2014.1

ProZorro was developed in March 2014 by a group of non-governmental sector supporters that included Ukrainian and international experts and software and interface development companies. The system is designed in accordance with international standards and international best practices, and is based particularly on the system in Georgia, which is recognized as among the best in the world. Currently, ProZorro includes the following modules:

- Module of registration and e-procurement announcements;
- Module of clarification (questions and answers);
- Module of electronic filing of tender offers;
- Module of reverse auction;
- Module of selecting the winner and publishing the contracts;
- Module of business intelligence (BI); and
- Electronic payments for participation in the procurement.

The initiative for development of the system was supported by the Presidential Administration of Ukraine2 and MEDT. With their support, ProZorro has been piloted since January 2015 in a number of public institutions and municipalities for conducting threshold procurements3; the number of governmental agencies participating in the pilot is growing.

As of May 16, 2015, 21 governmental institutions participating in the pilot have announced 356 procurements totaling USD $9 million (194 million UAH), resulting in 120 contracts. Savings are estimated at approximately USD $1.8 million (36 million UAH), or 7–12 percent of planned procurement value.4

The infographic below (developed by MEDT) provides key information about the reform:

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1 Maxim Nefiodov, deputy minister of MEDT. Reform of the system of state procurement in Ukraine. Presentation at the meeting of the National Reform Council on May 15, 2015:
http://reforms.in.ua/Content/download/Sessions/6/7.1%2020150514%20NRC_Public%20Procurement_Presentation_v9_A4_DR.PDF and
http://reforms.in.ua/index.php?pageid=zasidannya-nazionalnoi-rady-6


3 Threshold procurements are purchases of goods worth up to 100,000 UAH and services worth up to 1 million UAH. Current legislation restricts the use of electronic systems for procurements that do not exceed these amounts.

PUBLIC PROCUREMENT REFORM

WHAT IS THE SYSTEM OF PUBLIC PROCUREMENT TODAY?

MARKET SIZE 250 BLN UAH
TOTAL NUMBER OF AGREEMENTS >1.5 MLN AGREEMENTS
NUMBER OF TENDER COMMITTEES 25 THSD. COMMITTEES

From the total procurement sum, 120 BLN UAH spent on purchases below the threshold without procedures and 130 BLN UAH above the threshold with procedures.

AT LEAST 50 BLN UAH PER ANNUM—LOSSES FROM CORRUPTION AND LIMITED COMPETITION

WHAT IS PROZORRO E-PROCUREMENT SYSTEM?

PROZORRO is an e-procurement system which appeared from an initiative of civil organizations, commercial e-procurement systems, state authorities, and entrepreneurs. The system was launched in February 2015 for purchases without procedures as a voluntarily way for conducting procurement.

KEY DIRECTIONS OF THE REFORM

1. E-procurement system
2. Simplification of business participation
3. External monitoring with use of BI
4. Institutional reform
5. Professionalization

E-PROCUREMENT IS THE KEY TO REFORMING THE SYSTEM OF PUBLIC PROCUREMENT.

REFORMS: SUCCESS ALSO DEPENDS ON SIMULTANEOUS PRIVATIZATION, DeregULATION & E-GOVERNMENT PROCESSES

KEY SYSTEM’S PRINCIPLES

1. Single database / single auction module
2. Multiple user interfaces
3. Cross-access (competition)
4. Open code
5. Reversible auction
6. Cooperation via API
7. E-signature is non-obligatory
8. From simple to complicated

CENTRAL DATABASE AUCTION
COMMERCIAL PLATFORMS
BIDDERS (STATE CUSTOMERS, SUPPLIERS)

PUBLIC CONTROL

ADVANTAGES OF THE SYSTEM
- Open code, always available for audit and control
- Compulsory auction for effective price reduction
- Transparent statistics on bidding and simple appeal process
- Competition among platforms to improve procurement services

STATISTICS ON COMPLETED PROCUREMENTS WITH PROZORRO SYSTEM AS OF MAY 24, 2015

TENDERS VOLUME 3.14 MLN UAH
AVERAGE BIDDERS NUMBER ~4.6
NUMBER OF TENDERS >66
AVERAGE SAVINGS ON COMPLETED TENDERS ~15%

“TO-BE” STATUS FOR E-PROCUREMENT REFORM

“AS-IS” STATUS (2015)
- Official web-portal (paper procedures)
- E-procurement ProZorro system with auctioning (voluntary)
- E-procurement ProZorro system with auctioning (voluntary)

“TO-BE” STATUS (2016-2017)
- EU Directives (e-procedures with price and non-price parameters)
- Hybrid system with auctioning (e-procedures)
- Without procedures with voluntary use of auctioning

FIRST STAGES OF PUBLIC PROCUREMENT REFORM

STAGE 0
- Reform concept
- Stakeholders involvement
- MVP—ProZorro
- NRC requires OES’s to switch to ProZorro system

STAGE 1
- Department reform
- E-procurement pilot in ProZorro
- Deregulation
- Corruption reduction
- Alignment with international standards (WTO-GPA)

STAGE 2
- Law in public procurement e-system
- Single e-procurement system
- E-appeals
- Integration of open public registries

STAGE 3
- Stage-by-stage transition to e-procurement
- Civil society monitoring
- Active promotion of e-procurement
- Introduction of professional education in public procurement

TECHNICAL ASSISTANCE FOR THE E-TENDER INITIATIVE IN KYIV, UKRAINE (PHASE ONE) 5
Procurement reform, in which ProZorro holds a major role, is a top priority and was included in Ukraine Strategy 2020. This strategy defines the main stages of reform, including the mandatory transition to ProZorro for all government procurements in 2016 for purchases below the mandatory tender thresholds established by the EU directives (€ 134,000 for procurements of goods and services and €5,186,000 for procurements of construction works) that now covers about 90 percent of purchases in Ukraine. This table shows the stages of implementation of the system and the terms and status in accordance with the Strategy:

<table>
<thead>
<tr>
<th>STAGES OF IMPLEMENTATION OF E-PROCUREMENT REFORM</th>
<th>Stages</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development of the general concept of reform</td>
<td>completed</td>
<td></td>
</tr>
<tr>
<td>2. Implementation of the pilot project on threshold tenders (does not require legislative changes):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Development of technical specifications</td>
<td>completed</td>
<td></td>
</tr>
<tr>
<td>b. Involvement of electronic service platforms</td>
<td>completed</td>
<td></td>
</tr>
<tr>
<td>c. Development of minimum viable product (MVP)</td>
<td>completed</td>
<td></td>
</tr>
<tr>
<td>d. Piloting the system by some governmental institutions</td>
<td>ongoing</td>
<td></td>
</tr>
<tr>
<td>e. Implementation of convenient means for reporting and analysis</td>
<td>ongoing</td>
<td></td>
</tr>
<tr>
<td>f. Completion, updating, correction of the system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Scaling up the electronic system to all threshold tenders on voluntary basis</td>
<td>4/1/15–12/31/15</td>
<td></td>
</tr>
<tr>
<td>a. Recommended transition of the procurement of simple product groups to electronic procurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Preparation of the infrastructure of all public procurement agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Training of procurement agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Mandatory transfer of all public procurements to electronic system</td>
<td>from 1/1/16</td>
<td>until 6/30/15</td>
</tr>
<tr>
<td>a. Amendments to current legislation</td>
<td></td>
<td>until 6/30/15</td>
</tr>
<tr>
<td>b. Completion of communication tools and information security</td>
<td></td>
<td>until 6/30/15</td>
</tr>
<tr>
<td>c. Preparation of appropriate public infrastructure</td>
<td></td>
<td>until 12/31/15</td>
</tr>
<tr>
<td>5. Aligning legislation and procedures with EU directives according to the second stage</td>
<td></td>
<td>until 6/30/17</td>
</tr>
</tbody>
</table>

**ProZorro and EU Integration**

The principles and basic functionality of ProZorro generally comply with the new EU directives on electronic procurements. This is reflected in the draft strategy to reform the public procurement system, developed by MEDT in the framework of the obligations arising from the EU-Ukraine Association Agreement, which states that the e-procurement system should, at a minimum, have:

- electronic modules of annual procurement plans, electronic declarations and notifications, electronic submission of bids, e-evaluation, contract management and e-payment, e-complaints, e-catalog and the module of framework agreements. All of these modules are either already in ProZorro or envisioned and planned to be developed and implemented soon. The strategy also emphasizes that the electronic system should ensure “openness, transparency and unrestricted access to relevant electronic services,” which is fully reflected in the principles and functionality of ProZorro. Those principles include the following:

1. Reducing and preventing systemic corruption by ensuring transparency in the procurement system and removing the human factor in the evaluation of proposals.

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2. Transparency: ensuring unrestricted public access to information and the documents related to the implementation of public procurement.
3. Preventing discrimination and ensuring fairness in the evaluation of tender proposals by removing the possibility of subjective decision-making during the procurement process.
4. Simplicity and ease in using procurement procedures that should encourage broadening the range of procurement participants.
5. Transition to paperless procurement, which will increase efficiency and reduce costs.
6. Full reporting and analysis of all public procurements.

**ProZorro and Ukrainian Legislation**

Current legislation imposes some restrictions and limitations on using e-procurement and therefore requires reform, including the following:

- The Law on Public Procurement of 2014 left open the question of e-procurements and reverse auctions. Current legislation allows conducting e-procurement for threshold procurement only. The transitional provision of the law calls for the development of a separate law on e-procurement, which has not been created. Without additional legislation, it will be impossible to broaden e-tenders and reverse auctions beyond threshold procurements.

Professionals have different opinions concerning legislative support for the e-procurement system. Some believe that the issues related to e-tenders, including the question of reverse auctions, can be settled by a regulation from the Cabinet of Ministers (CoM). If reverse auction is considered an integral part of e-procurement and not a separate procedure (as many believe in Ukraine), a single CoM order should be sufficient; otherwise, a separate legislation for the reverse auction is required.

The other group of experts argues that the issue can be resolved by adopting a law specifically regulating e-procurement as it is required by the Law on Public Procurement of 2014.

Based on the above, two options exist for legal changes to support and expand e-procurement:

1. Develop and adopt a resolution from the Cabinet of Ministers, which would settle the issues of e-tenders, including a reverse auction. In this case, the transitional provision will need to be removed from the Law on Public Procurement. This approach is intended to bypass bureaucracy and can be implemented relatively quickly.
2. The second option is more complicated from both a formal, legislative point of view and from a technical point of view, as the law on e-procurement needs to be adopted as provided by the Law on Public Procurement, the deadlines for which have already passed. The development of the law itself will not take long, but it is not clear how fast it will be considered and adopted by the Parliament of Ukraine.

- Current legislation also places restrictions on the use of Secure Sockets Layer (SSL) protocol and storing public data in cloud storage such as Amazon and Google, which have long been recognized as a reliable and less expensive alternative to traditional methods of data storage on physical media. These restrictions limit the ability to use modern e-solutions that are critical for the system’s functionality and security and increase the cost of the system.
• A legal requirement of compulsory use of electronic digital signature (EDS) is seen as one of the regulatory restrictions. The compatibility issue of certificates of digital signatures issued by different service providers has not been solved internationally or on local levels. As a result, the users of different platforms of ProZorro would need to use several EDS, depending on what service platform they use. Furthermore, requirements for using EDS also impose problems for foreign bidders, for whom the public procurement market becomes virtually inaccessible.

Thus, the current Ukrainian legislation does not promote wide use of electronic procurement. As a result, ProZorro was launched for only those threshold procurements that are not subject to these legal restrictions, and the procuring organizations have more flexibility in selecting an approach for conducting procurements.

At the time this report was written, the development of a draft law on e-procurement was initiated by the Department of Public Procurement of MEDT, led by the reformist team that was headed by Alexander Starodubtsev, who recently joined the Ministry. One of the team’s main tasks is to support and further develop ProZorro.

**ProZorro and Corruption**

Research shows that public procurement is a highly corrupt area. More than 99 percent of Ukrainian suppliers reported kickbacks and corruption in procurement.8

Opportunities for manipulation and subjectivity and the unwieldiness of a paper system are essential factors for corruption to occur. ProZorro has a fundamentally new approach for issues of openness and transparency in procedures and information, as well as for the evaluation of the tender offers. Factors that are stipulated in the concept of the system that should reduce opportunities for corruption include:9

- Absolute transparency. Any document and any information related to procurement must be open and available online to all interested parties.
- Simple, clear and easy-to-use methods of procurement.
- All tenders without exception are electronic.
- Information on all procurements is put into a single electronic system.
- Starting price of a tender is provided to all bidders, which reduces the possibility of manipulation and price inflation.
- Documents from the administrative authorities (e.g., the company registration certificate, certificate of no debts, certificate of no bankruptcy proceedings) are required to be provided by successful bidders only prior to the award. This will reduce the bureaucratic burden on the bidders.
- Use of reverse auction is an obligatory part of the tender.
- The order of the proposal evaluation starts with the lowest price, followed by the evaluation of the technical proposals and qualification using a yes/no approach.

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9 Tato Urjumelashvili and David Margania. Concept on development and implementation of eProcurement in Ukraine 2014–2015: https://drive.google.com/file/d/0BzAqEyry9Q-2RVRHsWxUjD5FwNHB3ZGIn6MDhiQZVdJxN5SG0M/view?usp=sharing
Any registered user may request clarification regarding tender documents using a dedicated electronic module. All answers should be available to all bidders and be an integral part of the tender documentation.

Any registered user of the system must be able to file a complaint during or after the procurement using a dedicated electronic module of appeal. Response to a complaint is obligatory and open to the public.

**ProZorro and Public-Private Partnership**

ProZorro was created by a group of enthusiasts on a voluntary basis, filling the vacuum left by the government’s lack of political will to cope with the issue of public procurement. The coordinators of the initiative also attracted representatives of business, who on a voluntary basis developed system modules according to relevant specifications and tested them. Software developing companies, such as Quinta Group, UsabilityLab, RBCGroup and SoftServe were involved in the development of the system.

Several companies — Prom.Ua, e-Tender, SmartTender — developed Web-based service platforms for piloting the system, and the number of companies interested in joining the effort is growing. On the government side, the Presidential Administration and MEDT sponsored the system, assuring the participation of public institutions in piloting the system. Currently, more than 20 government institutions participate in piloting the system, including the Ministry of Defense, the Ministry of Justice, Energoatom, the Ministry of Infrastructure, the Ministry of Finance, and the municipalities of Kyiv and Lviv. Thus, the process of creating a system initiated from the bottom and turned into a public-private partnership.

The concept model of ProZorro assumes further development of such a partnership. This is reflected in the fact that the government will maintain the Central Database (CDB) and the module of reverse auction, while the private sector will develop and manage interface modules — service platforms — on a competitive and self-financing basis.

**ProZorro and Small and Medium Businesses**

Several factors frightened potential bidders — namely small and medium-sized enterprises(SMEs) — from participating in state and municipal procurement, including the high level of corruption of traditional paper-based procurement, the complexity of the procedures, the large volume of documents and a complex system of registration and certification. ProZorro aimed to eliminate these and other issues and to attract a larger number of SMEs. Among such factors are the following:

- **Simplification and reduction in cost** of preparing proposals, thanks to the introduction of the self-declaration principle. Under this, documents issued by the administrative authorities are not required at the application stage, just at the stage of selecting the winner. Therefore, bidders will be required to

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11 [http://minfin.com.ua/2015/05/08/7050073/](http://minfin.com.ua/2015/05/08/7050073/)
self-certify their compliance with the qualification requirements only when submitting their bids. This will reduce the administrative burden on businesses, as they will save on costs and labor hours that are currently being spent to obtain a large number of documents from different governmental agencies.

- **Elimination of geographical inequity** by replacing paper documents with an electronic form. With a paper-based system, nonresident bidders had to take three or four trips to the location of the procuring agency (receiving tender documents, submission of a proposal, opening the proposal envelopes and signing the contract with the winner). This imposed onerous financial and time expenses and thus put nonresident bidders in a disadvantaged position.

- **Easy registration** in the system, **availability** of the tender documents in electronic form and **electronic submission** of the bids will significantly simplify participation in the procurement for all bidders.

- **Optional** use of **digital signatures** for registration in the system and for submission of a proposal that does not impose any additional burden on the bidders.

Just a few months of piloting ProZorro showed increased competition and an expanded range of bidders, including SMEs. For example, the Ministry of Defense reported that 80 percent of suppliers participating in e-procurements were new to the Ministry and 50 percent of suppliers had never participated in public procurement in the past.

**ProZorro, KMDA and Other Procuring Agencies**

The assessment team held several meetings with KMDA to assess its requirements and needs for implementing an e-procurement system. As mentioned, KMDA was among the largest users of the ProZorro system and the administration was, overall, satisfied with the experience. As a result, KMDA is planning to encourage a larger number of its procuring entities to use the system with the ultimate goal of involving all of its 1,672 procuring entities in procurement via ProZorro. The total expected savings by the end of the year is around 200 million UAH (USD $9.6 million).

Interviews with management and procurement specialists of KMDA and state-owned enterprises, which are part of KMDA, as well as analysis of the system showed that the main technical and business requirements of KMDA for an e-procurement system largely coincide with existing functionality of ProZorro. Nonetheless, KMDA staff outlined other requirements and needs that were either envisioned in the system or need to be added. Among the requirements are:

- Develop a BI module to guide the procurement process of subordinate departments and procuring units on the final procurement, as well as determining the average prices for certain categories of purchases and the price per unit of specific goods. This will improve planning and reduce the cost of procurement.

- Implement multi-profiles of purchasing units (user management). This will create the ability to monitor and administer the procurement process of the procuring units accountable to KMDA.

- Guarantee provision of tender offers and the rules for their retention in case a bidder withdraws a proposal, and other cases stipulated by Ukrainian legislation.

- Use automatic exclusion from the system to minimize instances of suppliers not loading the document during the registration of the bid.
• Provide the ability to track and notify (via SMS or e-mail) all interested parties about the status of a tender and any changes.
• Standardize tender documents and technical descriptions of the goods and services of mass consumption.
• Develop a procurement planning and budgeting module.
• Develop a module of electronic contracts, including digital signature to sign the contract.
• Develop a module for submitting the application for the purchase to purchasing departments. This, according to respondents, will facilitate the aggregation of demand.
• Develop a module for filing and processing complaints electronically.
• Increase the capacity of the system (scaling up and integrating with other systems).

System requirements expressed by KMDA are similar to the requirements made by other users of the system, though many go beyond the e-procurement system. These requirements include:

• Link the e-procurement system to government electronic systems for budget management, planning and automation of budgetary obligations payment, and connect it to the register of companies.
• Add the qualifier of articles of supply of the NATO cataloging system to the specification of the goods procurement by the Ministry of Defense of Ukraine.
• Refine the search filters of the procuring agency, including the ability to specify the structural affiliation of the procuring agency (i.e., hierarchy).
• Introduce multi-lot function.
• Give officials incentive to implement public procurement and optimize the number of staff involved.
• Resolve the legislative restrictions on the use of a security protocol SSL while requiring the use of security protocols with Ukrainian security services.
• Resolve the issue of delays in payments to suppliers (which sometime exceed a year).
• Assure equality of the parties in contracts — the regulations on liability of suppliers for breach of the contract are usually significantly more discriminatory than regulations on the procuring agency.
• Ease strict, formal requirements that limit the possibility of correcting minor errors, which is often used by corrupt officials to manipulate the outcome of the tender.
• Improve analytical information on the price per unit.
• Reduce the number of documents required for participation in a bid (a set of certificates and extracts from the administrative authorities), as this is a significant financial and time burden on the bidders.

**PROZORRO: GAP ANALYSIS AND TECHNICAL AUDIT**

This section provides results of the technical analysis of the MVP of ProZorro being piloted in Ukraine. Recommendations for changes and improvements are marked with ☑ for reader convenience. These and other recommendations are summarized in the “Conclusions and Next Steps” section.
ProZorro Technical Architecture

ProZorro is designed in accordance with international standards of data exchange, Open Contracting Data Standards, which provide the possibility for its audit and control. The system is designed in accordance with service-oriented architecture (SOA) based on methods of interaction Representational State Transfer (REST). This solution provides a multi-platform approach, which includes two main components: a CDB and several service platforms that allow the user to interact with the CDB via an Application Programming Interface (API). The interaction of the service platforms with CDB is performed using the format JavaScript Object Notation (JSON). The diagram below (Figure 1) shows that the users through the service platforms connect to CDB and, in the case of auction, service platforms provide direct access to the module of the auction.

QlikView is used for a business analysis of procurement, or BI. The application enables performing an analysis of purchases in all available sections: products and their groupings (groups, classes, etc.), tenders (open, completed), the organizers and participants.

**FIGURE 1. PROZORRO CONFIGURATION**

Technical solutions and components of ProZorro are presented in Figure 2. The blocks highlighted in blue are the structural units of ProZorro, namely:

- **OPAPI**: REST server responds to requests of HTTP to communicate with the database, which is implemented on Python.
- **OPDB**: Database of solution (document-oriented DBaaS CouchDB) contains the metadata to access binary files, information about tenders.

- **DocumentStorageS3**: Storage server for tender documents and binary files (such as PDF, XLS, etc.). The server is provided by Amazon, which offers high scalability, reliability, high-speed and low-cost storage infrastructure.

- **Auction**: Module of reverse auction, Web application of module of auction that, centrally in the CDB, provides a part of the tender process – the reverse auction.

- **BIDB**: QlikView analytics on CDB data.

**FIGURE 2. PROZORRO ARCHITECTURE**

One of the important functions of CDB is the execution of reverse auction. The data on tenders and access regulations are provided by API and reverse auction logic. The service platforms provide the service to end-users. In addition to the services they are required to provide, the service platforms, at their discretion, may offer other services, e.g., notification about new purchases, search of procurement or statistics on procurement. API checks the data coming from the service platforms to CDB during the registration to the tender, the users, the tender offer, etc. Thus, the presence of several service platforms and the competition among them will contribute to the development of the system and improve the quality and quantity of additional services to bidders. In turn, the CDB provides a single point of access to all tenders and consolidated information on ongoing and past procurements.

While the current technical solution of ProZorro is sufficient for the pilot stage, it requires further improvements and modifications to be able to address the following risks:
<table>
<thead>
<tr>
<th>System Component</th>
<th>Description of Risk</th>
<th>Risk Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CDB</strong></td>
<td>If the capacity of ProZorro is not enlarged, it risks being overloaded by a rapidly growing number of new customers using the system.</td>
<td>High</td>
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<tr>
<td></td>
<td>Integrity and stability of ProZorro can be compromised if service platforms are not enabled to run multiple versions of CDB in parallel.</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Architecture</strong></td>
<td>The system can be compromised if any service platform fails to execute proper authorization of an end-user. Currently, only identity of service platforms is checked (authorized) on the level of CDB while end-users are authorized by platforms only. As a result, CDB does not have information about identity of the end-users.</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>System stability and technical sustainability are vulnerable if measures to reduce the impact of system failure and ensure system recovery are not implemented. These measures include strengthened primary and backup virtual servers on Amazon AWS, implemented distributed file storage on different Ukrainian datacenters, etc.</td>
<td>High</td>
</tr>
<tr>
<td><strong>Connection</strong></td>
<td>The system is vulnerable to errors due to the absence of an automated testing tool to run robotized integrated testing of each component connected to ProZorro.</td>
<td>High</td>
</tr>
<tr>
<td><strong>CDB/Architecture</strong></td>
<td>The system certification required for transferring ProZorro to the government is over-regulated and the certification requirements are outdated. This undermines the progress for ProZorro to be handed over to a designated governmental institution.</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>ProZorro CDB can be overloaded if the archiving function for the automatic removal of documents from the main database (with possibility to access archived data through all user interfaces) is not developed.</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

**ProZorro Scaling-Up**

Scaling up the system is possible through the expansion of the architecture, adding a layer of load balancing and server for parallel system operation within the framework of horizontal scaling. Figure 3 depicts the conceptual architectural scheme of solution with this addition.
Thus, with increasing load on API, CDB and DB servers, the parallel functionality will provide stable and uninterrupted operation of the system.

☑ ProZorro is loaded on 20 percent of the maximum allowable load with the current configuration solution. When connecting the new public procurement agencies, it is necessary to take into account a possible increase in the load on the CDB and scale up the system.

**Security Solutions**

Security is provided by SSL encryption and by API services during access to the documents and data via authorized service platforms. All data access and activities are logged. The API library and documentation are freely available at [http://openprocurement.org](http://openprocurement.org). Data on tenders for the audit, analytics or other needs are accessible to anybody from API open services. Thus, according to the concept of development of ProZorro and solutions used by MVP, the following is provided in the system:

- Safe data storage;
- Security measures to ensure the confidentiality of tender offers;
• Monitoring of the system; and
• Notice and security policy in the case of denial of service (DOS) attacks or similar targeted attempts aimed against the integrity of the system, security, etc.

☑ The following documentation and functionality needs to be developed:
• Backup system and manuals;
• Fallback recovery plan;
• Rules of service and maximum allowable periods of inactivity;
• Service Level Agreement (SLA).

Administration of Service Platforms, Data Checking

Currently, API of ProZorro checks data that comes from the authorized service platforms to CDB. This is limited to the information submitted by bidders to CDB via service platforms and requires the implementation of an integrated data control system. The integrated data control can be implemented through the development of an automated testing tool for testing service platforms, which would monitor the current status of each platform on ongoing or planned functionality. The automated testing tool can also be used for auditing the existing platforms. The audit should provide for a minimum functionality of the system and, for example, administering and checking information and services provided by platforms, such as:

• Nomenclature reference data of Common Procurement Vocabulary (CPV) and the Ukrainian State Classificatory of Goods and Services (DKPP) to be used at the procurement notice (and a NATO classifier for the needs of the Ministry of Defense);
• Provision by the platforms of a complete procedure of tenders for both procurement agencies and for suppliers before signing a contract, appeal or cancellation of a procurement;
• Provision by the platforms of transparency of all stages of a tender and confidentiality during the reverse auction;
• Informing the interested suppliers about any changes in tender documentation including cancellation of a procurement; and
• Integration testing of all service platforms.

Besides the control of services provided by the platforms to the bidders, administration of platforms includes a set of actions for connecting new platforms to CDB and conducting integration testing within the accreditation of the platforms. Three platforms are connected to the system and an additional three are being tested. Verification of the new platform’s functionality and connecting it to the system occur manually. It is a time-consuming process that takes between two and three months per platform.

☑ Development of a test bench for testing platforms and unification of the requirements for the platforms will allow faster (by up to three weeks) functional verification of the platforms.

Electronic Digital Signature

Using the electronic digital signature (EDS) is not required either for login on ProZorro or for the submission of tender proposal. The problem of compatibility of digital signature certificates issued by
different service providers has not been solved at the international or local level. Consequently, users would have to use several EDS, depending on the platform they operate. Using EDS creates problems largely for foreign participants, for whom the public procurement market becomes virtually inaccessible. This problem remains unresolved in many countries, including those in the EU.\textsuperscript{13} Therefore, the use of EDS is not mandatory under the relevant EU directive.\textsuperscript{14}

**CDB Analytics**

QlikView is used for procurement data analysis. The application uses data from CDB, including: procurement agencies, directories, data on tenders, the amount of the tenders, the number of product groups in the units, offers of the bidders, winners and data on the contracts. The application allows performing analysis for any selected period of time by any combination of selections (goods, tenders, bidders, etc.).

Procurement agencies have the attributes of legal address and shipping address, which show their geographic location. Suppliers also have location data that can be used to visualize reporting data.

- It is necessary to modify data control from the platforms on the side of CDB for the correct provision of location data of suppliers and customers.

The system provides detailed analysis and aggregation of indicators for individual dimensions.

- It is necessary to add analytics on averages of procurement, any deviation from these figures can have a corrupt nature or, conversely, a positive trend, depending on the terms of the tender of a particular procurement agency, etc.

Currently, all CDB data can be used for analytics, although the growth of the number of tenders may lead to CDB overload.

- Overload can be prevented by implementing the archive server, which would reduce the load on the system in the future. Keeping only data on current and new tenders on the CDB will free up resources for the database’s operation. Thus, archive data will be distributed to external organizations for audit or statistics on the procurement, and the process will not place a burden on the resources of CDB.

**System Transparency**

CDB Web resource public information should be accessible for all system users and other interested parties. At the moment, this resource is [http://prozorro.org](http://prozorro.org), which publishes the final results of the auctions, provides links to the platforms, posts press releases and blogs informing the public, and provides a tool for discussion about the status and the progress of the system and the procurements. This resource can also be used to ensure transparency and openness of the system, in particular the publication of blacklisted suppliers, appeals regarding the tenders and decisions on them (see the description that follows).


Reverse Auction

ProZorro is designed to ensure the functioning of the centralized reverse auction for both procurement agencies and suppliers. The reverse auction is divided into stages:

- Initiation of procurement;
- Registration of the offers for procurement;
- Reverse auction;
- Qualification of the winner; and
- Completion of procurement.

Software implements the distribution of access to the data depending on the user’s role in the system. CDB stores information on past, current and pending procurements, as well as providing business process of the reverse auction.

☑ To systemize and standardize the information, it is necessary to develop a standard form for technical and qualification requirements for suppliers at the announcement of the tender. This form will allow suppliers to review basic requirements and reduce duplications that occur frequently in the absence of standard forms. Standard forms will also assist future auditing and analysis of the procurement information. Data consolidation of technical and qualification requirements will also assist procurement agencies with the development of the tender requirements for future similar tenders to better plan procurement and to reduce the initial cost of procurement using average rates of the completed procurements. In addition, standard forms can be used for two-stage auction and framework procurement, described below.

☑ ProZorro provides reverse auction only for threshold procurement. Further development of the service should also involve the logical and technical implementation of a two-stage auction and framework procurement.

Differences between two-stage and single-stage tenders are that during the two-stage tender, suppliers range not only by price, but also by the quality of the services offered. At the first stage, the technical proposal of the supplier is assessed against technical requirements set by tender documentation and the criteria of the required quality. The second step is a reverse auction to reduce prices of the offers. The winner is determined automatically by the system, based on price and quality. Thus, the two-stage tender allows inclusion of a quality factor in evaluating tender proposals for goods and services in addition to the cost factor.

Framework procurement is used to determine basic conditions for the procurement of goods and services of mass consumption, such as office paper, stationery, computers and office equipment, etc. In the framework tenders, one or more winners are selected, and procurement agencies may conclude contracts with them during the term of the framework agreement.

☑ The two-stage tender and framework procurement will significantly expand the scope of the system in public procurement.
Contracts Execution, Integration with External Systems

Implementation of the system in service-oriented architecture (SOA) facilitates its integration with external systems, thanks to the implementation of process-oriented approach, which is associated with certain processes and functions as an integral part, and not with the software objects. Thus, the correct implementation of processes and optimization can significantly simplify the procedure of procurement for all stakeholders from the procurement announcement to signing a contract and its implementation.

One important aspect of e-procurement is a procurement contract and the implementation of the contract. Currently, the system requires uploading a scanned copy of the contract, and therefore no information is available for further analysis, audit or use in other systems.

☑ This problem can be solved by developing a fill-out form for the contract. Information on the supplier and procurement agency is available in the system. The object of procurement and specification can also be provided in a standardized form by the customer during registration of the tender. Thus, by defining a template of the contract and a template for procurement specification, it is possible to implement an electronic contract in digital form. Such a contract can be certified by EDS of the parties or, at the initial stage, can be formed for a signature on paper, followed by uploading it to the system. Further refinement of the function for allowing electronic signature is not difficult. Contract data can later be used to generate Treasury payment functions.

The further integration of e-procurement to the wider system of e-government involves at least the ability to exchange data with services such as:

- Electronic Treasury;
- Company register; and
- Register of individuals and legal entities.

Information on contracts (commitments, contracts, bills, acts of acceptance, a report on the performance of the contract, invoices, etc.) should be open to public.

Function Module ‘Procurement Plan’

A module of the procurement plan is envisioned by the system but is not developed. With this module in place, a procurement agency must upload its procurement plan to the system. The “Procurement Plan” module should provide the format for preparation and publication of the procurement plan, which would contain basic information about the procurement, such as price, means and CPV or DKPP code. A tender can be announced only if it is included in the procurement plan and registered with the system procurement agency. The procurement plans must be available to all interested users or guests of the service platforms for viewing and downloading in user-friendly formats (e.g., Excel and CSV).

Warranty (Deposit Guarantee)

The system concept provides the necessity of warranty or tender security to establish the seriousness of supplier’s intentions and minimum financial security for participation in the tender. The warranty must be provided prior to the submitting of the tender offer. The warranty must be returned to the supplier at the end of the tender in the event of cancellation of the tender or its completion with negative results, or signing a...
contract. The warranty may be retained if the supplier waived its tender offer, is disqualified on the results of a tender or refused to sign the contract.

☑ In case of e-warranty, the following procedures and restrictions should be considered:
  
  - The system should ask for and confirm acceptance of the regulations on the use and recovery of the warranty;
  - The beneficiary of the warranty must be an authorized agency or the service platform;
  - The size of the warranty must be clearly established by appropriate normative act and specified at the announcement of the tender by the procurement agency; and
  - Rules must be described in detail for the bidders.

Function Module ‘Appeal’

The initial technical requirements for the development of ProZorro were supplemented with a section on the function module “Appeal.” This module is designed to allow bidders to file complaints both at the announcement of the tender for the appeal of tender documents as well as at the stage of qualification for appealing the results of the tender. Unlike the module for questions and clarifications, this function should allow them to influence the procurement process, namely, to shift the dates of procurement procedure at the time of the complaint, or even to cancel the tender according to the results of appeal.

☑ The appeal process should comply with the following principles:
  
  - The appeal of the tender can be conducted by any user registered in the system until the final decision on the tender.
  - The appeal may be initiated if the user believes that the rights of the bidders have been violated or the procurement procedures do not comply with the law and the established rules.
  - The system should place the appeal on a public website.
  - If an appeal is filed in accordance with the rules, it is considered accepted from the date of submission to the system.
  - In the case of an active appeal on the tender, the system should not allow the winner to sign a contract until the resolution of the complaint.

The technical requirements provide the need to create a board of appeal, which would deal with appeals of the bidders. It provides a description of the process of filing, registering and processing appeals in the system.

☑ Processing of appeals must satisfy a number of principles, including the following:
  
  - Dispute resolution and decision-making is performed by the board within the time established by the law and should be specified in the user agreement of the system.
  - If the appeal requires clarification of the information it provides, the applicant receives notice from the board with an indication of the period allotted for refinement. If the required information is not provided in time, the board can recognize the appeal as inadmissible. If information is provided in the allotted period, the period of appeal resolution starts with the notification of acceptance of the revised appeal.
The board of appeal is authorized to satisfy the appeal totally or partially, or dispose the appeal with justification.

The decision of the board is open and placed in the system and on the public website.

This module should greatly simplify the process of resolving disputes and appeals, ensure transparency, and increase participation in public procurement.

**Blacklist**

☑ To monitor the implementation of agreements on the use of the system and the right to take part in public procurement, the function should be implemented at the level of CDB that would allow the system to not accept in the tender process the participants who have violated the rules of the procurement process. This is a so-called “blacklist” of dishonest suppliers. The rules and procedures of inclusion of suppliers in this list should be determined by normative acts of the authorized body or the Law of Ukraine and disclosed in the user agreement. This list should be public and available to everyone.

**Function Module ‘Search’**

The search in the system is implemented by the service platforms, though ProZorro should provide a minimum search functionality to be performed on a minimum set of filters:

- Procurement number (ID);
- Customer (search from the third character of the name);
- Supplier (search from the third character of the name);
- Procurement status;
- Codes of classifiers (search from the third character of the name);
- Status date (when it was announced, when the auction is, etc.);
- Announced price of procurement (from/to);
- Price of the contract (from/to);
- Geographic location of the procurement agencies; and
- Subsidiary of the customer.

The service platforms must implement the ability to save search results in Excel or CSV.

To achieve transparency in the procurement process and timely informing of all stakeholders, the service platforms should inform bidders about the stages and changes of the tender or tender documents. Also, to increase competition and to attract new suppliers the sites should provide subscription to new tenders for suppliers on criteria that meet a minimum set for search and refer to the tender or procurement agencies.
RISKS IN IMPLEMENTING PROZORRO

Political and financial:

- **Unresolved issues of system financing.** The estimated cost of maintaining the functioning of the system, according to MEDT, is 10 million UAH per year (USD $478,000). The authors of this report are not aware about parameters of this estimate and are therefore unable to provide any comments. However, at present the issues of system financing have not been solved.

- **Undefined public agency** that will assume the ownership of the system. Currently, the system legally belongs to the nonprofit organization Transparency International (TI), to which the developers handed over all their proprietary rights on conditions that TI in the future will hand over the system to the state free of charge.

- **Legislative provision.** Current legislation limits on the expansion of the use of e-procurement prohibits the use of SSL protocol and storing public data in cloud storages used in ProZorro, and requires the use of EDS, which is not provided by the system. At present, there is no agreement in the government and among the experts on the required legislative changes that inhibits the adoption of the legislation necessary for the development and expansion of the e-procurement system.

Technical:

- **Quickly growing level of system load.** Currently, the system is loaded to 20 percent of the maximum allowable load with current configuration of the system technical solutions, and ensures 130 tenders daily. As new procurement agencies join the system, the load on CDB will be increased. For example, KMDA alone is planning to require all of its 1,642 procuring entities to join the system. ProZorro should be ready to accept a large quantity of new participants by increasing system capacity. This requires scaling up the system.

- **Fast transfer** of ProZorro over to authorized governmental body, which is not prepared for its adoption and maintenance.

- **Unresolved issues of security and stability of the system:** namely what occurs with bidders registered on the service platform, which may not be available for some time for some technical reasons.

Qualification:

- **Lack of qualification of procurement agencies.** Mass migration of procurement agencies in ProZorro without proper preparation requires the creation of conditions for the training of procurement agencies, including KMDA.

- **Lack of trained personnel.** The lack of qualified, well-trained and well-paid professionals on procurement both at the central and local levels creates a vacuum in the growing need of training for both procurement agencies and bidders.

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15 Maksim Nefyodov, Vice-Minister of Economic Development and Trade, and Alexander Starodubtsev, Head of Public Procurement Department of MEDT, “The progress of reform of public procurement and involvement of other ministries to pilot project of electronic procurement,” May 13, 2013: https://youtu.be/FgX8K3eiftw
Other:

- **Creation of state-owned platform** refers to the probability that such a platform would work against the principles of healthy competition laid down in the multi-platform model.
- **Payment delay** or non-payment under the contracts of public procurement can discredit the system.
- Possible **displacement of corruption schemes** from tender procedures to the implementation and payment under the contracts.
- **Misinterpretation of price information** by law enforcement and regulatory authorities can occur. Prices established in the course of market research can be significantly reduced in the course of auction, which may cause law enforcement agencies to suspect that the price has been deliberately inflated. Therefore, it is necessary to improve the methodology of market research and provide training for organizers of procurement, as well as for the law enforcement and regulatory authorities.

**CONCLUSIONS AND NEXT STEPS**

The analysis of ProZorro showed the following:

- The system as a whole meets the standards and requirements of the EU and takes into account best international practices.
- Current legislation limits the possibility of wide use of e-procurement, and therefore it is available for threshold procurement only. There is a broad discussion in the country now of the approaches of legislative changes, but there is no common vision. Legislative limits also refer to the use of technology and electronic digital signatures.
- The system largely meets the needs of users of the system from both customers and suppliers. Conceptual model and technical solution provide the necessary set of modules for the full implementation of the procurement process. However, the system must be supplemented by other modules or expanded to better satisfaction of users' needs, including the planning module, the module of analytics, the module of appeal, implementation of multi-lot procurement, etc. The list of priority measures necessary for the development of the system is given in the table below.
- Quite a rapid transition of a significant amount of state and municipal agencies to the system demands the immediate implementation of possibilities of system for scaling up.
- The technical solution uses innovative approaches to ensure optimal and stable operation of the system while ensuring the required level of security. The use of open code expands the functionality of the system and facilitates its control and audit.
- The use of multi-platform approach of a single central database in the maintenance of public authority and several service platforms provided by private companies, provides (1) cost effectiveness, (2) the quality of services through the competitiveness of the service platforms and (3) public-private partnership.
- Piloting of the system showed positive results in terms of increasing the efficiency of procurement, cost reduction and cost savings.
- Piloting of the system in 14 departments of KMDA goes successfully and meets the essential requirements and needs of the Administration. Currently, the continued use and expansion of the
system to other departments is the best solution for KMDA in the implementation of e-procurement, including in terms of cost savings. Thus, there is no need for KMDA to create its own system or its own service platform.

List of Priority Requirements for further Development of ProZorro System

<table>
<thead>
<tr>
<th>PRIORITY REQUIREMENTS FOR FURTHER DEVELOPMENT OF PROZORRO SYSTEM</th>
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<tbody>
<tr>
<td>Nr.</td>
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<tr>
<td><strong>Priority 1</strong></td>
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<td><strong>Priority 2</strong></td>
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</table>
### PRIORITY REQUIREMENTS FOR FURTHER DEVELOPMENT OF PROZORRO SYSTEM

<table>
<thead>
<tr>
<th>№</th>
<th>Function</th>
<th>Description</th>
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<tbody>
<tr>
<td>13</td>
<td>Module for two-stage tenders, to take into account MEAT quality criteria considerations</td>
<td>Two-level tenders will introduce quality indicators to assess proposals and will affect calculation of final price of tenders. This functionality is needed for more complicated purchases, when the winner cannot be identified based on price only (e.g. professional services, construction works, etc.).</td>
</tr>
<tr>
<td>14</td>
<td>Contract management module for entire contract lifecycle</td>
<td>Contract tracking will register status of the contract implementation, delivery of goods/services, and payments to suppliers</td>
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<tr>
<td>15</td>
<td>Integrated Data Protection System (IDPS)</td>
<td>Information security – is needed particularly before transferring ProZorro to the government organization</td>
</tr>
<tr>
<td>16</td>
<td>Reporting module for negotiated procedures (direct contracts)</td>
<td>Through this module, the procuring entities will upload information into the system on types of procurement (e.g. direct contracts), that was not previously available online. This module will ensure the integrity of the public procurement data.</td>
</tr>
<tr>
<td>17</td>
<td>Module for the Framework Agreements</td>
<td>Module for the Framework Agreements will be used by the procuring entities to carry out the Framework tenders and establish an agreement with one or several suppliers on terms governing contracts that may be awarded during the life of the agreement (as a rule 2+1+1 years). FA is not a contract; a contract is made only when the order is placed by the individual procuring entity.</td>
</tr>
</tbody>
</table>

*The system may have other modules as described, e.g., Search, Deposit Guarantee and Blacklist, among others.  
**Numeric values assigned to each function are based on categorization, not level of importance.

### Assistance to KMDA

One of the objectives of this analysis was to determine whether KMDA should use ProZorro, or there is a need for KMDA to develop an independent system of electronic procurement. The experience of using ProZorro since the launch of the pilot project showed positive results, including its use by KMDA. As a result, at a meeting of the Anti-Corruption Council of KMDA on May 19, 2015, the mayor officially announced the decision to use ProZorro in all procurement units of KMDA for all threshold procurements. The authors of this report fully support the decision of KMDA to use ProZorro and agree that there is no need for the administration to create a separate system or its own platform.

Nevertheless, the transfer of all (more than 1,600), procurement units of the KMDA to ProZorro must be agreed upon with the coordinators of the pilot project ProZorro, not to cause problems related to the technical limitations of the current system infrastructure.

Also, for the successful implementation and use of e-procurement in KMDA the following is needed:

- **Training:** Procurement specialists of procurement units of KMDA should be trained before moving to ProZorro. Competence of procurement professionals will play a significant role in successful implementation of reform; and technical assistance in development and implementation of training programs becomes increasingly important. Training programs will be needed for existing staff and for
new employees in the future. These programs will also be useful for other cities and government agencies that will join ProZorro.

- **Internal regulations**: To review internal policies and procedures of KMDA for their better adaptation for e-procurement and to develop and implement the appropriate internal regulations and standard operating procedures.

- **Manuals and forms**: To develop and implement manuals and forms to standardize procurement processes.

- **Business analytics**: To develop the content of systematic reports for analysis and monitoring of procurement conducted by procurement units and to train relevant staff of KMDA.

KMDA requires technical and advisory assistance in the implementation of these tasks.

**ProZorro Scaling-Up**

Only two municipalities — Kyiv and Lviv — along with government agencies participate in piloting ProZorro. The experience of these two cities will be invaluable for the expansion of the system to other cities in Ukraine. It should be taken into account that the level of readiness of different cities to use the system will be uneven both from a technological point of view and in terms of training of procurement specialists, as well as potential suppliers. Also the possible resistance from the administrative authorities should be taken into account as it often occurs in response to innovation.

For the successful use of ProZorro in other cities, based on the experience of Kyiv, it will be necessary to provide the following:

- Define the parameters of technological readiness of a municipality for the transfer to the system. In particular, the availability of the necessary computer equipment and software, internal network and its maintenance. Of particular importance that is very importance is the quality of the internet connection.

- Develop a program of staff training at all levels, including management, personnel involved in procurement and technical staff.

- Prepare trainers and coaches for conducting training according to the developed program and provide consultation at the workplace. Trainers and coaches can be both from KMDA and independent experts.

- Prepare a manual and standard documents to be used during the transition to e-procurement system.

How can this effort be scaled to other cities and regions in Ukraine? What are the main opportunities?
### ANNEX 1. LIST OF MEETINGS CONDUCTED

#### MEETINGS CONDUCTED IN 2015

<table>
<thead>
<tr>
<th>#</th>
<th>DATE</th>
<th>TIME</th>
<th>NAME</th>
<th>AFFILIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>April 20</td>
<td>9 A.M.</td>
<td>Timothy Dubel</td>
<td>USAID, eGovernance Adviser</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tamara Palyvoda</td>
<td>USAID, COR, Project Manager</td>
</tr>
<tr>
<td>2</td>
<td>April 20</td>
<td>3 P.M.</td>
<td>William Schreiber</td>
<td>Kyiv Investment Agency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yuriy Nazarov</td>
<td>Kyiv Investment Agency, Deputy Director</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Alena Vasiletskaya</td>
<td>Kyiv Investment Agency</td>
</tr>
<tr>
<td>3</td>
<td>April 21</td>
<td>1 P.M.</td>
<td>Alena Vasiletskaya</td>
<td>Kyiv Investment Agency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vyacheslav Novokhatskiy</td>
<td>Kyiv Investment Agency</td>
</tr>
<tr>
<td>4</td>
<td>April 22</td>
<td>11 A.M.</td>
<td>Oleksandr Starodubitsev</td>
<td>MEDT, Head of the Procurement Department</td>
</tr>
<tr>
<td>5</td>
<td>April 22</td>
<td>3 P.M.</td>
<td>Miroslav Opyr</td>
<td>Quintagroup, CEO</td>
</tr>
<tr>
<td>6</td>
<td>April 23</td>
<td>9:30 A.M.</td>
<td>Mariya Gornostai</td>
<td>Administration of the President of Ukraine, Adviser</td>
</tr>
<tr>
<td>7</td>
<td>April 23</td>
<td>4:30 P.M.</td>
<td>Viktor Nestulya</td>
<td>TI-Ukraine, Senior Analyst</td>
</tr>
<tr>
<td>8</td>
<td>April 24</td>
<td>9:30 A.M.</td>
<td>Vyacheslav Bykovets</td>
<td>Union of Small, Medium and Privatized Enterprises of Ukraine, Director General</td>
</tr>
<tr>
<td>9</td>
<td>April 27</td>
<td>3 P.M.</td>
<td>Oksana Prodan</td>
<td>Business Association Fortetsya, Head</td>
</tr>
<tr>
<td>10</td>
<td>April 27</td>
<td>5:30 P.M.</td>
<td>Volodymyr Mhailenko</td>
<td>“Ukrainskiy Papir,” Director</td>
</tr>
<tr>
<td>11</td>
<td>April 28</td>
<td>1 P.M.</td>
<td>Oleksandr Starodubitsev</td>
<td>MEDT, Head of the Procurement Department</td>
</tr>
<tr>
<td>12</td>
<td>April 28</td>
<td>4 P.M.</td>
<td>Oleksandr Novokhatskiy</td>
<td>e-Tender platform, Senior developer</td>
</tr>
<tr>
<td>13</td>
<td>April 29</td>
<td>9:30 A.M.</td>
<td>Igor Nikonov</td>
<td>Kiev City State Administration, First Deputy Head</td>
</tr>
<tr>
<td>14</td>
<td>April 29</td>
<td>11 A.M.</td>
<td>Oleg Sherbatenko</td>
<td>Smart Tender, CEO</td>
</tr>
<tr>
<td>15</td>
<td>April 30</td>
<td>10 A.M.</td>
<td>Oleksand Makhno</td>
<td>EnergoAtom, Deputy Director</td>
</tr>
<tr>
<td>16</td>
<td>April 30</td>
<td>12:30 P.M.</td>
<td>Volodymyr Grychenko</td>
<td>State Administration, Senior Public Procurement consultant</td>
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<tr>
<td>17</td>
<td>April 30</td>
<td>2:30 P.M.</td>
<td>Artur Pereverzev</td>
<td>Ministry of Defense, Project manager and procurement coordinator</td>
</tr>
<tr>
<td>18</td>
<td>April 30</td>
<td>5 P.M.</td>
<td>Samvel Akobyan</td>
<td>NetCast, CEO</td>
</tr>
<tr>
<td>19</td>
<td>May 5</td>
<td>11 A.M.</td>
<td>Miroslav Opyr, Yurii Gromov</td>
<td>USAID, eGovernance Adviser, USAID, COR, Project Manager</td>
</tr>
</tbody>
</table>
## MEETINGS CONDUCTED IN 2015

<table>
<thead>
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<th>NAME</th>
<th>AFFILIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>May 13</td>
<td>12 P.M.</td>
<td>Mykola Polienko, Andrey Khliakin, main developer of Prom.Ua, Nikolai Zhandorov Director of B2B/B2G Procurement</td>
<td>Prom.ua</td>
</tr>
<tr>
<td>21</td>
<td>May 14</td>
<td>3 P.M.</td>
<td>Olena Stepanova and others</td>
<td>AmCham</td>
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<tr>
<td>22</td>
<td>May 15</td>
<td>11 A.M.</td>
<td>Anna Yastrebova and Sergey Savchenko</td>
<td>PublicBid, IT- Contract</td>
</tr>
<tr>
<td>23</td>
<td>May 15</td>
<td>3 P.M.</td>
<td>Yuriy Nazarov and others</td>
<td>Kyiv Investment Agency, Deputy Director</td>
</tr>
</tbody>
</table>