

ANNEX II + III : TECHNICAL SPECIFICATIONS + TECHNICAL OFFER

Contract title : Supply of IT equipment and software for improvement of Case Management System in prosecution and prisons administration **p 1 / 70**

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Columns 1-2 should be completed by the Contracting Authority

Columns 3-4 should be completed by the tenderer

Column 5 is reserved for the evaluation committee

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

- Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer),
- Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient)
- Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offered specifications.



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1 . General requirements

1.1 Definitions and Terms

1.1.1 Abbreviations

Whenever the following abbreviations and terms are used in the Technical Specifications or in the Technical Requirements, the intent and meaning shall be interpreted as described hereunder:

BPMN	Business Process Modelling and Notation
CA	Contracting Authority
ESB	Enterprise Service Bus
FAT	Factory Acceptance Tests
GDPR	General Data Protection Regulation
IDA	Interchange of Data between Administrations
IDABC	Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens
ISA	Interoperability Solutions for European Public Administrations
PDF	Portable Document Format
PO	Prosecutor's Office
RDBMS	Relational Database Management System
SAPA	Standard Application for Prison's Administration
SAPo	Standard Application for Prosecutor's Offices
SAPS	Standard Application for Serbian Judiciary
SAT	Site Acceptance Tests
UML	Universal Modelling Language
XML	Extended Markup Language

1.1.2 Standards

According to the recommendations of the "Interoperability Solutions for European Public Administrations" (ISA), the follow-on of "Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens" (IDABC) which came to an end on 31 December 2009, and *Interchange of Data between Administrations* (IDA) European Commission Programmes, enforcing the European Union decisions, electronic

document exchange and storage in the public administrations shall rely on open document formats². Such formats are to be defined in a process open to all interested parties and to be available for all interested and competent actors to implement without restrictions.

Contractor is required that all the source documents produced, internally or exported, by the systems described in this Tender Document, and all the source documents circulated in the scope of this contract shall comply with ISO/IEC 26300-1:2015, Open Document Format for Office Applications (OpenDocument)³, or with ISO 32000-1:2008, Portable Document Format (PDF).

Please note that not Microsoft *Office* proprietary formats (documents ending in .doc, .xml), and Microsoft *Office Open XML* format (also informally known as OOXML or Open XML, documents ending in .docx, .xlsx) **are not** compliant with the required standards.

1.2 Detailed Design

The Contractor will develop the system Detailed Design, which will at least include the following elements:

- . User Requirements
- . Data Dictionary
- . Business Process Model
- . Functional Specifications
- . Technical Specifications
- . Data Model
- . Software architecture

1.2.1 User Requirements

User Requirements will be an informal, natural language description of all features of the software system, written from the perspective of an end user or user of the system.

User Requirements will include a written sentence or two and, more importantly, a series of conversations about the desired feature told from the perspective of the person who desires the capability, usually a user or customer of the system. They may follow a simple template such as “As a <type of user>, I want <some goal> so that <some reason>”; it is however required that they are expressed in a natural language familiar to the end users. A good example can be User Stories approach.

User Requirements shall not require any specific knowledge nor tool to be read and understood.

User Requirements will be approved by the Beneficiary before the finalisation of the Functional Specifications.

1.2.2 Functional Specifications

The Contractor shall present its approach on how to reach the functional specification requirements. The Contractor shall use optimised approach for both existing infrastructure and expected results to achieve best solution in terms of resources for Beneficiary that complies with the requirements.

UML or other public notations for formal description of Functional Specifications are acceptable. The Contractor shall provide CA and Beneficiary appropriate tool(s) to for reading and discussing the models, if these are not

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Decision 2004/387/EC of the European Parliament and of the Council of 21 April 2004 on the interoperable delivery of pan-European Government services to public administrations, businesses and citizens (IDABC), Official Journal of the European Union L 144 of 30 April

2 <http://ec.europa.eu/idabc/en/document/3428/5890.html>

3 <http://www.iso.org/iso/en/CatalogueDetail?CSNUNMBER=43485&scope=list=PROGRAMME>

publicly and freely available. Should Contractor's approach follow proprietary methodology and tool(s), the Contractor shall grant access to that to CA and Beneficiary for the whole implementation period.

1.2.3 Technical Specifications and Data Model

Technical Specifications shall include at least:

- Business analysis report
- Top level system design and model
- System architecture design and model
- Data model design
- Detailed functional design
- Design of identified workflows

1.2.4 Detailed Design documentation

The Contractor will draw up full design documents at Detailed Design stage on due dates, according to the timetable submitted by the Contractor and approved by the Contracting Authority.

1.2.4.1 Detailed Design documentation

The Detailed Design documentation will include all Detailed Design elaborates, and the Developer's documentation with source code guidance It should define the methodology for development and testing with reference to standards, the quality of execution, the applicable norms and guidelines; determine responsibilities for the quality of equipment, software, installation and tests, and shall provide the supervision manner of installations operation in time.

In case the designer identifies during the implementation stage more options for the solution described in the contract, then the optimum one will be selected using a comparative analysis prepared by the designer and approved by the Contracting Authority.

1.2.4.2 "As-built" documentation

After commissioning the Contractor will draw up the as-built documentation containing all possible modifications made during the development, installation and tests, compared with the option in the initial design documentation submitted to the CA.

1.3 Third-parties commercial software licensing

The Contractor shall use third parties commercial software only if in line with licensing schema. The Contractor shall evaluate and propose discontinuing of part or all those licenses that are not necessary. All commercial software licenses needed for the implementation of the system shall be part of this contract, and no additional purchase shall be operated by the Beneficiary at any time during the period of warranty, to secure the correct functioning of the system within the limits set in this Technical Specifications.

The Contractor is not allowed to implement at the solution licensing schema on temporary basis under third party commercial software.

1.4 Software development and testing

The Contractor shall present its approach on the intended software framework and software development process it intends to use in this contract. The Contractor shall use own tools for software development, versioning and and deployment during the duration the implementation and warranty periods.

During the warranty period the contractor shall maintain source code at the beneficiary's premise updated together with the supporting documentation and manuals.

1.4.1 General Testing provisions

The Contractor shall:

- perform all the tests indicated in the Technical Specification or later agreed with the CA and the Beneficiary necessary to demonstrate the functional guarantees of the equipment delivered and of the system as a whole.
- present a testing approach, describing the steps and approach followed during FAT and SAT, the associated documentation produced before and after the tests, and the Contractor's personnel in charge of performing the tests.

Whether any of the test performed during a test session fails, the appropriate corrections shall be applied, which may require the replacement of the failing equipment, and the test(s) repeated in the next testing session.

1.4.2 Factory Acceptance Tests (FAT)

FAT will be carried out only in the presence of the Beneficiary's specialists. Each delivery stage will be preceded by a FAT stage.

Software FAT shall include testing sample data, at least static and dynamic testing, white-box, black-box tests, unit testing, integration testing, component testing, system testing, operational acceptance testing, to assure functionality, performance and usability of the product.

The Contractor simulates testing conditions that generate expected working environment and workload to prove the system. The testing process shall assure that system responds correctly of any kind of user inputs. The testing shall assure that solution can handle all specified users simultaneously without degradation of performance.

FAT tests will be carried out using testing data provided by the Beneficiary, as well as testing data prepared by the Contractor.

1.4.3 Site Acceptance Tests (SAT)

Provisional acceptance tests will be carried out at the installation place (SAT) to all new installations.

Before site tests the Contractor will transmit the test schedule and the test list (globally referred as Test Plan) to CA and Beneficiary, specifying the tests to be performed for the equipment and software delivered.

The Contractor has to provide test cases, test data, expected results. The CA and Beneficiary shall use these test scenarios and shall implement own test assessment of the system together with the Contractor.

The Contractor shall set-up a separate testing environment (equipment, software, and data) for software testing, hosted in the data centres of the Beneficiary where supplies are delivered, and appropriate to verify the proper functioning of supplies. Such testing environment shall be made available at the time of verifications described in SC Article 24, and shall remain operational during the whole duration of the supply contract including any warranty period.

Such testing environment (hardware and software) shall:

1. Be provided at no cost for Contracting Authority or Beneficiary

2. Remain property of the contractor

3. Remain available for the whole duration of the defect liability period

4. Be hosted in the premises of the Beneficiary during whole duration of any testing period, required to achieve results foreseen in this supply contract and its ancillary services

The Contracting Authority may designate other person(s) to perform the quality verification of supplies. The testing of the Supplies will be realised in accordance with the provided Test Plan, which shall detail how the tests will be organised and implemented and will include, as a minimum, the following:

1. The phases of the tests, namely:

- a) the Pre-Commissioning and Preliminary Tests, the objectives of which are to ensure successful system inter-operation, and

The Contractor shall ensure the migration of structured and unstructured data from the existing system, transforming the existing data and documents into the new database and document storage without losing data and without compromising the data quality. Migration of both data should be established on four eyes control principle with verification and validation. Validation has to be completed by the owner of the data. Only after that the data can be considered as migrated. Unstructured data after verification and validation have to be linked to already validated structured data or/and other validated metadata.

1.5 Data Migration

1. Reference to the test;
2. Results;
3. Description of encountered anomalies;
4. Name and signature of the Contractor's and the Project Manager or his/her designated representative(s).

The results of the tests will be reported in the Testing and Acceptance Report where, for each test, the following information shall be provided:

The Contractor shall draw up all interface documents between the new equipment and/or systems and the equipment and/or systems existing within Beneficiary and/or third parties.

After every testing session, the Contractor shall prepare FAT and SAT documentation, containing the Test Plan, the result (pass / fail) of all tests performed, and any CA or Beneficiary observation.

1.4.4 Testing documentation

The Contractor shall prepare the testing environment in a clean and efficient manner and must ensure that all prerequisites for the successful realisation of the tests are met. The Contractor shall provide any necessary assistance in the implementation of all tests under the supervision of experts from the development support team and other authorised representatives of the Contracting Authority.

5. the Contractor shall provide tools for automatic analysis of the tests.
4. the Contractor shall provide automatic testing tools for the logging and replay of the non-regression tests;
 - a) the tests are based upon measurable metrics agreed by the Contractor and the Project Manager or his/her designated representative(s);
 - b) the tests are logged and repeatable;
3. The minimum requirements for the successful implementation of the tests, which are:
 - a) Expected state of the final system.
 - b) Expected results;
 - c) Tools and means to use for the tests;
 - d) Precise description of the procedure to be set up with reference to the commands and parameters to be set;
 - e) Measurement and recording procedures as well as procedures for reporting of test results;
 - f) Expected functionality of the system;
 - g) Reference of data or lot of data to be used for the test;
 - h) The objectives of the test;
2. The Context of the performed Tests that will be performed, such as:
 - i. tests to ensure that the system meets the requirements;
 - ii. Integration tests to ensure that the system fits into the existing IT system;
 - iii. Load tests; to test the system behaviour under normal as well as excessive load.

The Contractor shall prepare a Data Migration methodology, describing the Data Migration process, and the Contractor's personnel in charge of performing the tests of migration.

Before performing the actual Data Migration, the Contractor will prepare and submit to Contracting Authority and Beneficiary a Data Migration Plan for their approval. The Data Migration Plan describes the data transformations process, the details of data structures affected, the quality checks, and any applicable automated recovery measure. Should the data quality cannot be verified for certain data, that data will not be automatically migrated. The Contractor shall identify and quarantine unreliable data, stored for successive analysis. The Contractor shall provide the Beneficiary with appropriate tools for editing, verifying and approving of quarantined data before that is moved into the system.

Data quality check includes, but is not limited to: duplicated records, classification errors.

Data failed to pass quality check during migration shall be stored in an established buffer of quarantined data within the new system. This buffer shall be used for search and extraction of these unreliable data during daily work for further edition before to store them into the structured records of the system.

The final migration of data is to be performed by the Contractor on the live system after completion of all SAT tests.

1.6 Training

The Beneficiary's personnel will be trained in the use of the system, and the operation and maintenance of all the equipment that will be delivered under this contract.

The training on software will provide the Beneficiary personnel with required skills to use all the system features foreseen for their respective role, and to set the parameters of terminal equipment (personal computers and peripherals), to configure system communications and reports.

The training on hardware will qualify the Beneficiary personnel to use the equipment, make the diagnosis tests to equipment, locate and repair faults.

Trainees should be able to operate and maintain by themselves the equipment and the system, as well as its components, at the end of the training period.

Training sessions will include practical issues and theoretical knowledge as required so that the trained employees can provide all the operation, maintenance and intervention work.

Training courses will be delivered by experienced trainers at all the Beneficiary's premises where equipment is delivered.

The Contractor will provide trainees with own training equipment, such training laptops, a training server per class (if required), a dedicated network for the class, sample data in the solution database and for data entry during the training period, similar to real data, for the duration of the courses. The training equipment remains property of the Contractor.

The quantity of training equipment shall be sufficient to support trainees of different user profiles acting at the same time. Sharing of the same training equipment among trainees shall be limited and shall not impact on learners' experience.

The Contractor will provide all the materials needed for training courses. Each trainee will receive individual copies of the technical books and documents used during courses. These will be transmitted to the Beneficiary at least two weeks before the beginning of respective sessions.

The Contractor will provide eLearning platform with online training courses and training materials. The Beneficiary will be allowed to make video recordings of the courses.

Training materials, including the documents submitted before beginning the courses will become the Beneficiary property. This one will commit to multiply them only for internal uses.

The training plan will be compatible with the contract schedule so as to allow the CA and the Beneficiary to assume responsibility in due time.

1.7 Deployment of the system

1.7.1 Source code handover

The contractor shall provide documented source code for the system.

Libraries, in this context defined as “a collection of implementations of behavior, written in terms of a language, that has a well-defined interface by which the behavior is invoked” can be provided by the Contractor and/or third parties.

If libraries are provided by the Contractor, source code together with the description and scripts for generating of the executables/builds shall also be provided.

If libraries are provided by third parties, the Contractor shall prove its rights to provide such libraries as part of its solution.

1.7.2 Delivery of equipment and materials

The Contractor commits to deliver the equipment into the place indicated in the assigning documentation.

The Contractor is responsible for the packaging, dispatch, transportation and site unloading of delivered equipment (in the storage place).

The Contractor will get in due time all authorisations required for transportation on site, with confirmed possibilities of access and site lifting and unloading outfits made available.

The Contractor answers for the deterioration of materials and equipment during transport and unloading. He will bear all the costs of remedies or replacements owed to possible equipment deterioration.

Each equipment container will be marked with the contract number, destination, transporter's name and content.

The Contracting Authority can request the Contractor to postpone product delivery up to 12 months in special cases. Such request shall be issued at least 2 months in advance of the provided supply date.

All containers will allow their inspection and check-up on site.

The delivered products will be accompanied by the producer's statements of conformity and guarantee certificates. The products from regulated domains will provide EC type statements of conformity, while products will bear the EC marking.

1.7.3 Installation of equipment

The Contractor must deliver and install the Supplies in an orderly and tidy manner. Power cords and data cables, including patch cords for all networked devices, shall be run cleanly and efficiently between the equipment and power sockets and shall not cause undue obstruction or in any way create a safety risk or health hazard. Under no circumstances should cables run over the front edge of a desk/bench into a walkway. Where excess cable cannot be removed, the appliance must not be used with the excess cable coiled.

The Contractor is responsible to install, tune and optimise the delivered equipment with the selected software, operating systems and supporting licenses, including the most recent relevant device drivers.

1.7.4 Project Implementation Schedule

The execution of this contracted works shall not exceed 18 months from the date of the issuance of the commencement order issued by the Contracting Authority. The defect liability period (warranty period) shall be 12 months.

The delivery of equipment shall be planned as late as possible, compatibly with the usability of the system, in order to minimise its obsolescence.

Equipment specifications shall be updated according to market conditions existing at the time of delivery, if better than the offered ones.

Implementation periods of the main contract stages shall comply with the following:

- Milestone 1: “Detailed System Design” shall be completed within 3 (three) months after contract signature

1.8 Operations and maintenance

1.8.1 General O&M provisions

- Milestone 2: "System developed ready for FAT, and testing environment established" shall be completed not later than 12 (twelve) months after contract signature
- Milestone 3: "System passed FAT" shall be completed not later than 1 (one) month after Milestone 2
- Milestone 4: equipment delivery shall start not before Milestone 2, and end not later than Milestone 6
- Milestone 5: "Training ready for start" shall be completed not later than Milestone 3
- Milestone 6: "System passed SAT" and "Training completed" shall be completed not later than 3 (three) months after Milestone 3
- Milestone 7 (go-live): "Data Migration completed" shall be completed not later than 2 (two) month after Milestone 6. Upon Data Migration completed the system will "go-live", and the users access to old system disabled.

The Contractor shall submit to the CA the Operation and Maintenance approach, which covers the defect liability period of the contract. The Warranty Period can commence after CA approval of the Operation and Maintenance approach.

The ordinary maintenance of equipment shall be conducted by the Beneficiary staff under the supervision of the Contractor personnel. To this end the Contractor shall provide that adequate training and supervision of the Beneficiary staff in conducting the operation and maintenance of the equipment and installations delivered under this contract.

The supervision assistance shall be limited to the duration of the defect liability period.

1.8.2 Manuals

The Contractor shall provide in Serbian dedicated manuals. The package should include at least:

- User's manuals. User's manuals have to cover all roles of end-users except System Administrators.
- Administrator's manuals. Includes operation and trouble-shooting of the system, third party DMS, database, operating system, other packages, and equipment.
- Installation, configuration and optimisation manuals. Includes all used packages and system

1.8.3 Warranties

During the defect liability period the Contractor shall promptly correct, repair, redesign or/and replace any defective software, equipment, materials or parts upon receipt of a written notice of defect from the Contracting Authority or the Beneficiary.

If during the contract implementation a systematic defect occurs, the Contractor shall check, redesign, replace or repair, on its own expense, the respective element at all delivered software, equipment and installations.

The Contractor shall store all notices of defect received in a dedicated database "Ticketing System", recording at least: date of request, requester, date of solution, solution applied, references to prior defects (if any).

The Ticketing System shall provide appropriate policies for the prioritisation of defects resolution.

Beneficiary's specialists shall be granted access to the ticketing system, and shall be trained on its operation.

The Contractor will produce a report on a bi-weekly basis, listing all defects received and their details stored in the ticketing system, and the action plan for the defects reported and not yet resolved.

During the defect liability period the Contractor shall also offer help-desk level 3 support, i.e. hot-line accessible by the Beneficiary help-desk level 2 staff.

1.9 Contractor's responsibilities

The Contractor is responsible for performing all the contract requirements described at the paragraphs "Scope of the contract" for the respective Lot. In doing so, the Contractor has the full liability for contract implementation under safe operational condition and in full compliance with the laws of the country and other obligation as lay down in the contract.

All proposed personnel that are working under this contract shall have the adequate professional qualifications and hold required licenses needed for performance of their specific duties under the contract.

The Contractor shall have the obligation to send to the CA for its prior approval the list of all the staff and their qualifications indicating their specific duties/task/job/ assignments in the implementation of the contract.

The Contractor will propose a contract implementation plan for the execution of tasks, supply of equipment, and provision of ancillary services, which shall be aligned to the proposed "Contract Implementation Schedule" as presented in the respective Lot. The contract implementation plan will include the execution terms, tasks assumed, as well as highlight of any deviation from previous plans. The contract implementation plan will be also elaborated in electronic form, in a habitual format for contract management, agreed by both parties.

The Contractor is free to size the resources used under the contract.

The Contractor is responsible for auxiliary, additional and/or collateral services, equipment, installations and services that are part of the contract concluded with the CA but are necessary to complete and the good functioning of the system.

Activities performed by the Contractor will not disrupt the proper functioning of equipment / systems and existing installations. In particular, integrity and technical characteristics of equipment, systems and existing installations should not be affected during the execution of:

- services to be provided and activities to be performed;
- new products, systems and installations.

The CA and Beneficiary will take over the system after provisional acceptance have been signed (in accordance with commercial provisions). Final acceptance will be made after warranty period expiration (in accordance with commercial provisions).

During contract execution the Contractor is obliged to comply with the Serbian applicable norms with respect to labour safety, guard, fire prevention & extinguishing, and environmental protection.

The Contractor is responsible for integrating the supplied equipment/systems into the equipment/systems existing in Beneficiary and/or third parties.

The Contractor shall be fully responsible for the organisation of its site, shall be borne by costs associated with it is the Contractor's obligation and liability which are stipulated in the contract. Any partial acceptance or modification of the scope and terms and conditions of contract that has been approved by the Contracting Authority shall not relieve the Contractor of its obligation under the contract to ensure complete and the good functioning of the system as defined in the contract or as later modified.

The Contractor will ensure the confidentiality of any data and information provided by the Contracting Authority or produced under this contract, especially of that whose disclosure can lead to an increasing vulnerability of the installations.

Only adequately qualified and trained staff shall be allowed to be present on contract site and work under this contract.

2. Lot 1: Improved Case Management System in the Prosecutor's Offices – SAPO

2.1 Preamble

2.1.1 Background

Analysis of the SAPO system and the current data base model has to include an identification, design and developing of the missing functionality of the existing system, its optimisation, creation of all analytical reports and tools into the reporting module oriented to the end-users that allows to create ad hoc reports and to use predefined reports. The analytical reporting module has to include full analytical reporting capabilities for both the local office needs, for management and operational purposes. A set of rules has to be developed for these reports and to be implemented into the reporting tools.

A new module has to be designed and developed for a full scale central statistics at different levels of the prosecution. The module have to be able to implement operations as data transfer extract load for current data base model and external legacy data from various sources, mainly from structured files (.xls, .csv, etc.) with quality check and further using of an OLAP business intelligence software cube. It shall include the identification of data, data definition into new model, data transformation, design of the statistics and reporting data base model. The module has to provide tools for querying of collected data and creating storing and reusing predefined and ad hoc reports and provides option for publishing it in both editable and non-editable formats for OLAP base/cube. The module has to provide visualisation tools and dashboard for tracking and reduction of the decision making process and time, for setting and monitoring and visualising of goals, workloads, progress, deadlines, and thresholds, KPI, published reports, tasks, drill into the collected data in specified directions. The module has to provide publishing/exporting of reporting capabilities to the public users.

The required licenses for implementation have to be delivered and the rights to use have to be transferred to the Beneficiary. The licenses have to include all existing currently and future users and the licenses with no time limits. Efficient, at least 128-bit data encryption has to be implemented on the new data base model. Access to unencrypted data has to be available only via the prosecutor's application under the implemented user rights. All personal and sensitive data should be encrypted.

The design of the system has to incorporate the policy for implementation of active-passive disaster recovery. An example for automated backup of the production environment of SAPO application to the disaster recovery location in Nis could be configured and implemented. In case if the disaster recovery site is not ready to accommodate the equipment during the project performance, the Contractor shall implement the disaster recovery schema locally in the premise of HQ of Prosecution to demonstrate the system disaster recovery has been completed.

2.1.2 Current hardware hosting SAPO pilot

The Beneficiary owns the following hardware:

1. 7 servers (2 CPU Intel Xeon X5650, 192 GB RAM)
2. 2 servers (2 CPU Intel Xeon E5640, 48 GB RAM), achieving uninterruptible work of the application
3. Storage system used at site is NetApp FAS 3240A with two redundant controllers, populated with disks for a total of 86TB (raw). Backup storage is NetApp FAS3210A. The utilised storage size as of 19.04.2016, after 3 years from SAPO go-live, is 31.2 TB, which is 36.3% of the available space
4. Xerox WorkCentre 5790

Servers group currently is utilised around 20% of its capacity. The registered cases workload is 40% of expected.

2.1.3 Current third-parties commercial software licenses

2.1.3.1 Document Management System software

The Contractor may decide to reuse in its proposal the ECM licenses provided with the pilot solution; adoption of that particular software is however not compulsory. If the reuse of existing licenses is included in the offer, the software shall be upgraded to its most recent version, and licenses upgraded accordingly.

In case that proposed solution is based on different ECM system, the contractor shall deliver licenses for all SAPA users including users included in the pilot project and provide document and data migration to the new system.

2.1.3.2 RDBMS Software

The Beneficiary owns all server licenses required by SAPO pilot, and used for SAPO pilot only;

1. Microsoft Server 2008 R2 Standard

2. Microsoft SQL Server 2008 R2

The completed list of all licenses can be provided upon request.

2.1.3.3 Virtualisation software

The Beneficiary owns the following virtualisation software bundled with the delivered hardware:

5. VMware vSphere 5 Enterprise Plus

2.2 Scope of this contract

The scope of the contract for the Lot 1 – SAPO system is the following:

1. Prepare detailed design of the SAPO system including user requirements, workflows, functional requirements, data model, hardware architecture, etc., including the additional functionalities not currently included in the pilot system.

2. Develop the necessary custom software necessary to implement the SAPO system.

3. Review the database model and migrate – where applicable – the existing data into the new model without data loss and with improvement of data quality.

4. Review and redesign the existing hardware and supply the necessary equipment needed for the implementation of the SAPO system.

5. Install, commission, and test the SAPO system.

6. Assure required performance of the whole system as it is stated in section 2.4.3 .

7. Train the Beneficiary staff in use, maintenance and operation of the SAPO system, according to their respective role.

8. Perform all other contractual obligations during the defect liability period.

The SAPO system shall:

Support at least 2058 users in 90 PO offices and 9 departments, according to the following user roles:

1. Registry office service – both existing and 212 new working places

2. Deputy prosecutor/Assistant/Typist service – both existing and 990 new working places

3. Scanning service – both existing and 82 new working places

4. Statistics service – both existing and 74 new working places

2.3 Architecture of SAPO system

2.3.1 General architecture provisions

The SAPO system shall:

1. Be centralised, web-based custom application, based on any Enterprise Content Management solution that satisfies technical requirements defined in chapters 2.3.1 and 2.3.2 for all users at prosecution offices administration. Outline of the proposed system architecture has to be attached to the bid.

1. Identify users' Business Processes
2. Design workflows for the identified Business Processes
3. Use Business Process Modelling Notation (BPMN) for the identified workflows
4. Implement workflows into the application
5. Provide applications' control and management tools of the implemented workflows

The Contractor shall:

Currently the system has no implemented workflow engine. The Contractor has to identify and design all business processes as workflows currently existing at the PPO. Any identified workflow should include and unify all variations between offices with pilot application and offices not yet automated. The workflow parameters should be editable and accessible by the end user for maintenance. The workflow definitions shall be exportable in BPMN.

2.4.1.2 External workflow management through a dedicated engine.

The Contractor has to keep the achieved functionality at the pilot phase. It is expecting to improve and optimise the work process, to improve searching capabilities for updating of data for existing cases, improve data quality during the data entry, optimise licensing schema, where it is applicable.

The current pilot functions are described in Annex 1.

2.4.1.1 All functionalities provided by the pilot SAPO

2.4.1 Functional requirements

The SAPO system shall provide the following functionalities:

2.4 Functionalities of SAPO system

3. The Contractor shall revise and optimise the licensing schema according to current specifications.
 - a) Operating system
 - b) RDBMS
 - c) Application Server
 - d) Content Management System
 - e) Workflow Management System
 - f) Scanning system
 2. The Contractor shall deliver, update and use the latest stable release of all necessary third-party commercial software, maintained by the vendor, available at the moment of deployment of prosecutor's system including, but not limited to:
 1. The Contractor equips the central location, that complies to the proposed software architecture for existing hardware described in section 2.1.2 and supplies under this contract for all users of the system within the scope, specified in section 2.2, according to their roles. Includes the customised application and licenses for any necessary third-party commercial software
- The use of specific commercial software is not compulsory, but it is recommended to be reused by the proposed solution. If the use of existing licenses in table "EMC software licenses" is included in the offer, they have to be upgraded to their most recent version.

2.3.2 Third-parties commercial software licenses

2. Allow dealing with at least 100'000 unique cases per year
3. Designs and delivers identified workflows in terms of BPMN. Provides tools for maintenance of the changes in implemented workflows.

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2.4.1.3 Extended analytical reports

The reporting tools, currently implemented in the pilot need optimisation and extension of implemented functionalities with searching and filtering functions, ad hoc reporting and analytics and data visualisation. The implemented searching capabilities must not degrade overall performance of the system.

The existing current reports should be migrated to new reporting tool.

Ad hoc searching within operational database has to be reduced.

The analytical reporting has to provide enough functions for filtering and managing existing data by the end user. The list and content of predefined reports will be designed during the business analysis. The Contractor shall create predefined reports, not presented in current version of application.

2.4.1.4 Statistical reporting

Currently the solution has no statistical reporting system. The Contractor shall identify needs and design a statistical reporting tool; shall deliver required for it licenses for the expected number of users with their roles; shall design the data placeholder (data warehouse for example), capable to accommodate data for the production of both internal and public statistics; shall design and produce predefined statistical reports; shall train users and allow end users to create their own reports.

The Contractor shall perform the following activities:

1. Creates a placeholder for collecting, storing, analysing and hierarchical publishing of non-transactional statistical data for all PO.
2. Data placeholder must support upgrade to distributed architecture, running in active-active cluster where multiple instances of same database will run in parallel achieving greater availability and workload distribution among instances. Each instance must be able to access all data in placeholder.
3. Data placeholder must be able:
 1. to manage its own storage volumes supporting automatic data rebalancing after adding or removing disks without disruption in data availability. It must support 2 way or 3 way mirroring of data. It must support presenting parts of storage space that is managing to operating system.
 2. to divide tables in partitions in order to improve speed of access and managing of data.
 4. Allows placeholder independently to store, maintain and query data history
 5. Fills the placeholder with the selected transactional data of the application, assuring quality, integrity and consistence of the collected data
 6. Opens the placeholder to maintain structured (minimum .xls, .csv types) data.
 7. Data integration tool should be implemented in order to provide querying ETL (Extract Transform and Load) and ELT (Extract, Load to placeholder, Transform) functionalities of selected data from/to placeholder to serve Beneficiary's services and other external authorities.
 8. Data integration tool should be able to run Transformation in target data placeholder system, without need of separate staging systems.
 9. Data Integration tool must support parallel data processing.
 10. Both data placeholder and reporting tool must support equipment, running on MS Windows, Linux and Unix (HP-UX, AIX and Solaris) operating systems.
 11. Creates and delivers predefined statistical reports, based on required public statistics
 12. Provides capability for ad hoc statistics reports
 13. Provides tool for:
 1. viewing and publishing and exporting of text and graphics statistics reports
 2. defining and visual tracking and presenting end users at own personalisable dashboard of important parameters, deadlines, thresholds, KPI.

14. For purposes of administration and end users operations like querying, filtering, selecting, searching, sorting in both directions, reordering RReporting tool must be used via web interface and must support all major internet browsers: Microsoft Internet Explorer, Google Chrome and Mozilla Firefox.

15. Users of reporting tool must be able to see and use logical business model even when data source is highly complex.

16. Reporting tool must have service oriented architecture, a common semantic business model and integrated meta-data management.

17. Reporting tool must support:

1. blending of data from one data source with data from another data source, different placeholder, server or service.
2. write-back feature from reports, where users of reporting tool have the ability to modify the data source in the placeholder that they see in a table.
3. unified security model and single sign on. It also must support using LDAP, MS AD or database as external authorisation sources.
4. drill-down and drill-up functionalities.
5. later upgrade to active-active cluster architecture where multiple applications servers can run in parallel hosting different modules of reporting tool system in order to achieve greater availability.
6. different hierarchy for different logical sources.
7. integration with portals that are compliant with JSR-168 and reporting tool of judiciary.
8. the usage tracking statistics at the detailed query level.
9. adding link to customized help pages in reports.
18. Reporting platform must be able to execute code in parallel.
19. Reporting tool must be able:

1. to connect to different data sources like XML files, RDBMS: DB2, MySQL, MS SQL, Oracle Database, PostGres, Excel xls and ASCII files, ODBC data sources, and Big Data sources like Hive and Cloudera Impala.
 2. to integrate with external application via web services.
 20. Reporting tool must allow integration with R statistical language in order to utilize it for extending analytical functions.
- Statistics reports to be managed by 3 statisticians located centrally, 2 administrators located centrally and 90 publishers at the offices

2.4.2 Security requirements

The Contractor shall perform the following activities:

1. Apply at least 128 bit encryption on the data in the new database model
2. Identify sensitive and personal data
3. Encrypt sensitive personal data
4. Implement GDPR rules on all collected data
5. Register each request parameters that queries saved data, especially sensitive data

2.4.3 Non-functional requirements

The Contractor shall perform the following activities:

1. Reviews, utilises and improves system architecture in line with extended number of users
2. Uses ESB as media exchange and rights management with external authorities

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2.5 Reconfiguration of system hardware platform

The contractor shall re-design the existing virtual servers' architecture at the existing hardware, and/or supply different/additional equipment to meet the required performance.

In case re-design of servers' architecture and/or additional equipment is offered, the respective cost shall be included in the price of the solution at the tendering phase with justification on it.

The solution shall be clustered for high throughput, and all relevant services accessed through load balancer.

The proposed solution has to be fault-tolerant on site. The proposed SAPO architecture shall be compliant with the Beneficiary disaster recovery centre as active-passive system.

1. Incorporates interoperability capabilities with other judiciary systems
 1. with police IS (minimum personal data and addressing, sanctions, other identified)
 2. with courts IS (minimum electronic application of request, other identified)
 3. upon request from lawyer/suspected (minimum individual request stated in legislation, other identified)
 2. For each service and data above generates and provides meta data for public access, and exchange within selected repository in specified format (minimum xml, with xsd schema; JSON)
- The Contractor shall perform the following activities:

2.4.4 Interoperability requirements

3. Assures response time for daily editing task should not exceed 2 s. It is not related to the reporting/massive searching functions
4. Secures data within the new databases with minimum 128-bit encryption
5. Provides access to unencrypted data to be only via application under the implemented user rights
6. Does not allow use of client hardware interfaces and external memory for data exchange
7. Does not store system data locally at clients side
8. Locks the terminal when idle after a certain period
9. Uses the judiciary-wide directory service provided by the Beneficiary, based on Microsoft Active Directory, for users' authentication and their roles rights at prosecutor's application
10. Assures compatibility with any of the following browsers: Mozilla Firefox, Google Chrome and Microsoft Internet Explorer/Edge, having their stable version maintained by the vendor at the time of deployment
11. Assures compatibility with Microsoft Office and at least one of the following office suites: Apache OpenOffice and its derivatives such as LibreOffice, having their stable version maintained by the vendor at the time of deployment
12. Keeps history of changes within application with time stamp of the operation, the identification of performed operation and user identification
13. Restricts editing of records, already entered into the system
14. Supports filtering of entered data for faster data search and selection
15. Handles both Serbian locales in data including proper searching, filtering and sorting. Internal interpretation shall be only in Cyrillic
16. Revises and cleans-up data and data classification for current and past periods
17. Both data placeholder and reporting tool must be able to run on Microsoft Windows, Linux and Unix (HP-UX, AIX and Solaris) hosts

2.6 Initial training of SAPO users

The Contractor has to organise training courses on site in such a way to proceed with at least two groups per type whereas training course needs 1 full day training. The schedule has to be organised on half day basis at one and the same time for groups, to allow trainees to work half a day and to be trained the other part of the day. The Contractor shall perform the following activities:

1. Develop and provide training plan with logistics and schedule for approval
2. Train users of the system, separated into following groups:
 - a) Train all 2058, both current and new users of the system to use the applications
 1. New users – on site, at least 5 days, in groups with no more than 20 trainees
 2. Current users – on site, at least 3 days, in groups, with no more than 20 trainees. The 5 full days training of new users shall be organised on a half day training within 10 days period.
 - b) Train 50 selected users as trainers - at the premise of Beneficiary, at least 5 days, in group with no more than 10 trainees
 - c) Train 25 users as level 1 help desk employees – at the premise of the Beneficiary, at least 2 days, in groups, with no more than 10 trainees
 - d) Train 4 administrators as level 2 help desk employees and for maintenance of delivered hardware - at least 3 days
 - e) Performs tests before and after completion of training courses and provides results
3. Provides training equipment and training plan for the organised training groups on site according to the schedule
4. Provides training materials on paper, where it is applicable
5. Provides electronic training materials in Serbian, by establishing tailored distance learning system, situated and accessible within the internal network of the Beneficiary
- 6.
7. Loads regularly prepared electronic materials and user's manuals to distance learning system
 - a) Maintains FAQ (collected by help desk team) updated regularly from the user's feedback and questions, on most typical cases and know-how
 - b) Serves as electronic help, separated from the application itself and open for users
 - c) Updates electronic materials in line with the changes of applications during maintenance period
8. Provides printed user's manual, administrator's, configuration and installations manuals in Serbian

2.7 Content of the bid

The following table summarises the component of the bid. Each component has to be clearly marked with its reference and will be part of the evaluation process:

Ref	Bid component	Notes, remarks, ref. to documentation	Evaluation Committee's Notes
1	Outline of the proposed SAPO system architecture (based on the requirements specified in section 2.3 """)		
2	Project Implementation Schedule (based on the requirements specified in section 1.7.4 """)		
3	Outline of Testing approach (based on the requirements specified in section 1.4 """) and Special Conditions Article 25)		
4	Outline of Data Migration approach (based on the requirements specified in section 1.5 """)		
5	Outline of Training approach (based on the requirements specified in sections 1.6 """) and 2.6 """)		
6	Operation & Maintenance plan covering the defect liability period (based on the requirements specified in section 1.8 """)		
7	Detailed description of how after-sales service will be delivered for the four years following the warranty period (Special Conditions Article 33)		
8	A commercial offer concerning corrective and evolutive maintenance for the solution as a whole [custom software, CMS licenses, commercial software, and hardware] according to Special Conditions Article 32.6. This commercial offer will cover one year following the warranty period, and will include (a) one or more draft maintenance contract(s), (b) one or more draft Service Level Agreement(s), and (c) a commercial quotation of the comprehensive maintenance per year of for the whole period of one year following the warranty period. This maintenance contract is not part of the tendered supplies, and the beneficiary may or may not subscribe it.		

2.8 Items to be delivered

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	Turn-key customised centralised CMS 1. System scope: compliant with requirements specified in section 2.2 “” 2. System architecture: compliant with requirements specified in section 2.3 “” 3. Detailed Design: compliant with requirements in sections 2.3 “”, 2.4 “”, and 2.5 “” 4. System functionalities: compliant with requirements specified in section 2.4 “” 5. Software development: compliant with requirements specified in section 1.4 “” 6. System testing: compliant with requirements specified in section 1.4 “” and Special Conditions Article 25 7. System deployment: compliant with requirements specified in section 1.7 “”			
2	Bundle of Content Management System licenses 1. Enterprise-grade content management system, featuring: (a) process management (workflow engine) that can execute business processes described in BPMN (b) search features including instant search suggestions and simple search filtering (c) multimedia content storage (d) document scanning and capture (e) seamless access from other applications (f) information governance: Access Controls and Audit Tools			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	2. Allowing at least 2 058 users to use the solution specified in Item #1 3. Licensing model: compliant with requirements in sections 1.3 “””, and 2.3.2 “””			
3	Bundle of software licenses (commercial or commercially supported OpenSource) such as Application Server, RDBMS, Operating System: 1. As required by the solution specified in Item #1 2. Additional to the commercial software licenses currently dedicated to the pilot system, according to the proposed solution Unlimited number of Microsoft SQL Server 2008 R2 SP1 licenses, if foreseen by the proposed architecture, will be provided by the Beneficiary and do not need to be included in this bundle.			
4	Personal Computer (PC) 1. Small Form Factor PC 2. Processor: minimum base frequency 3.0GHz, minimum 4 cores 3. Min RAM memory: minimum 4 GB DDR4 2400MHz 4. Min 500GB 7200rpm Hard drive 5. Internal DVD±R optical drive 6. Graphics adapter: Discrete, minimum graphics frequency 900Mhz, interface compatible with Item #5 7. Sound card: integrated, on-board			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	8. 10/100/1000 Mbps RJ45 network adapter and Ethernet Cat6 patch cable min. 3m 9. Mainboard interfaces, minimum: 1xDisplay Port and 1xDisplay Port or HDMI 10.Expansion slots: minimum 1xPCIe x16, 1x PCIe 11. Minimum 12x USB ports, out of which at least 6x USB 3.0, with minimum 4 USB ports located on front side of the case 12. Keyboard with Serbian layout, optical mouse with scroll function 13. Speakers: external stereo or built in case mono 14. FOSS office suite (such as OpenOffice or LibreOffice) 15. Compliant standards: CE and/or TUVGS, RoHS, EPEAT, WEEE, and Energy Star compliant			
5	Monitor (display) 1. Min 21.5" diagonal wide screen, LED , Screen Ratio: wide, 16:9 2. Min Resolution 1920x1080 3. Min Contrast: 1000:1 4. Min Brightness: 250 cd/m2 5. Max Response time: 6 ms 6. Min Viewing Angle: Vertical 178°, horizontal 178° 7. Video input: at least two (VGA display port and HDMI), compatible with PC Item #4; including			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	cabling, compatible with PC Item #4 8. Height-adjustable stand, pivot, swivel 9. USB hub with at least 2x USB 3.0 ports 10. CE and Energy Star compliant 11. Connection cables for both analogue and digital interfaces			
6	PC Operating System 1. Operating System for personal computer, featuring: a) Customisable Graphical User Interface (GUI) b) 64 bit native c) Package manager, capable to freely obtain packages and security updates d) Capability of authenticating to a Microsoft Active Directory Domain Controller			
7	Storage Area Network (SAN) 1. The data storage system must have at least two controllers in the active-active configuration. 2. Controllers must be completely independent units without components that connect them such as chassis or backplane 3. Minimum 48GB DRAM cache per offered system 4. Min 4TB read cache per offered system			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>5. Supports Min up to 480 drives per HA storage system</p> <p>6. Must have a minimum of 4 x 10GBps port for connection to clients per offered system</p> <p>7. Must have a minimum of 4x 16GBps ports with associated SFP along with short-range optical modules with an LC connector to connect to the SAN support unified access of data through FC, iSCSI, SMB 3.0, NFS v3, v4, pNFS</p> <p>8. Double disk failure protection</p> <p>9. Option to support triple disk failure protection</p> <p>10.Support inline data compression and deduplication on all protocols</p> <p>11.Support thin provisioning on all protocols</p> <p>12.Capability to mix SSD sizes within a system/controller</p> <p>13.Storage capacity must be minimum 48 x 1.8TB SAS HDDs in one or more disk shelves</p> <p>14.Support scale out to 8 controllers/nodes in a single system/cluster</p> <p>15.QoS to support all protocols in the system</p> <p>16.Non-disruptive controller upgrade to a newer generation</p> <p>17.Must support remote replication to existing Netapp FAS3000 series for at least 100TB space via 1Gb LAN connection either directly or through external appliances</p>			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>18.Support to online move data within the storage system between different pools with no assistance on the host</p> <p>19.Support snapshot, clones for the full offered capacity</p> <p>20.Support application integration to create snapshots (VMware, HyperV, Oracle, MSSQL, Exchange, Sharepoint, SAP)</p> <p>21.Support single file restores and clones from snapshots</p> <p>22.Support phone home feature to improve support experience</p> <p>23.Support Active Directory based authentication for the storage management</p> <p>24.Storage performance monitoring including storing historical data</p> <p>25.Solution must support network compression for replication</p> <p>26.Support for separate failure domains within the array and cluster</p> <p>27. Warranty for 3 years including spare stock locally in country</p> <p>28.All necessary drivers and licenses required to run the storage as described in "ANNEX IIa Technical Requirements" including existing hardware environment, without degradation of performance.</p>			

2.9 Ancillary Services

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	Data migration Compliant with requirements specified in section 1.5 ^{“a”}			
2	Initial user training Compliant with requirements specified in section 1.6 ^{“a”} , and 2.6 ^{“a”}			

2.10 Distribution Schedule

Sites	Items	1,4, 1,5, 1,6 PC, Display, OS	1,7 SAN
Appellate PO KRAГУJEVAC, Kneza Mihaila 2	24	14	
Higher PO VALJEVO, Vuka Karadžića 5	14		
Higher PO VRANJE, Kralja Stefana Prvoenčanog 1	14		
Higher PO ZAJEČAR, Generala Gembete bb	8		
Higher PO ZRENJANIN, Kej 2. oktobra 1	10		
Higher PO JAGODINA, Knežinje Milice 84-86	12		
Higher PO KRAGUJEVAC, Kneza Mihaila 2	13		
Higher PO KRALJEVO, Karadorđeva 5	10		
Higher PO KRUŠEVAC, Trg Kosovskih junaka 3	10		
Higher PO LESKOVAC, Pana Đukića 13	8		
Higher PO NEGOTIN, Trg Stevana Mokranjca 1	12		
Higher PO NOVI PAZAR, Žitini trg 16	10		
Higher PO PANČEVO, Vojvode Radomira Putnika 13-15	12		
Higher PO PIROT, Srpskih vladara 126	7		
Higher PO POŽAREVAC, Jovana Šerbanovića 4	12		
Higher PO PROKUPLJE, 21. Srpske Divizije 1	12		
Higher PO SMEDEREVO, Trg Republike 2	10		
Higher PO SOMBOR, Trg Cara Uroša 1	8		
Higher PO SUBOTICA, Senčanski put 1	8		
Higher PO UŽICE, Nade Matić 6	8		
Higher PO ČAČAK, Cara Dušana 6	8		
Higher PO ŠABAC, Gospodar Jevremova 8	14		
Basic PO RUMA, Železnička 10	7		
Basic PO STARA PAZOVA, Karadorđeva 3	14		
Basic PO ALEKSINAC, Ace Milojevića 2	7		
Basic PO ARANDELOVAC, Knjaza Miloša 102	7		
Basic PO BAČKA PALANKA, Kralja Petra -1 18	5		
Basic PO BEČEJ, Danila Kiša 8	5		
Basic PO BOR, Moše Pijade 3	8		

Items	1,4, 1,5, 1,6 PC, Display, OS	1,7 SAN	Sites			
		5	Basic PO BRUS, Mike Dordevića bb			
		20	Basic PO VALJEVO, Vuka Karadžića 5			
		6	Basic PO VELIKA PLANA, Momira Gajića 7			
		5	Basic PO VELIKO GRADIŠTE, Žitni trg 1			
		7	Basic PO VLADIČIN HAN, Svetosavska 1			
		24	Basic PO VRANJE, Kralja Stefana Prvovenčanog 1			
		8	Basic PO VRBAS, Palih Boraca 9/c			
		12	Basic PO VRŠAC, Žarka Zrenjanina 38			
		8	Basic PO GORNJI MILANOVAČ, Kneza Aleksandra Karadordevića 29			
		7	Basic PO DESPOTOVAČ, Saveza boraca 71			
		14	Basic PO ZAJEČAR, Trg oslobođenja bb			
		14	Basic PO ZRENJANIN, Kej 2. oktobra 1			
		16	Basic PO JAGODINA, Knežinje Milice 15			
		9	Basic PO KIKINDA, Svetozara Miletića 1			
		33	Basic PO KRAGUJEVAČ, Kneza Mihaila 2			
		22	Basic PO KRALJEVO, Pijakina 4			
		20	Basic PO KRUŠEVAČ, Trg Kosovskih junaka 3			
		5	Basic PO KURŠUMLIJA, Palih Boraca 37			
		7	Basic PO LAZAREVAČ, Karadordeva 19			
		6	Basic PO LEBANE, Cara Dušana 118			
		20	Basic PO LESKOVAČ, Koste Stamenkovića 16			
		14	Basic PO LOZNICA, Jovana Cvijića bb			
		6	Basic PO MIONICA, Vojvode Mišića 30			
		10	Basic PO MLADENOVAČ, Kralja Aleksandra Obrenovića 76			
		10	Basic PO NEGOTIN, Trg Stevana Mokranjca 1			
		16	Basic PO NOVI PAZAR, Žitni trg 16			
		18	Basic PO PANČEVO, Vojvode Radomira Putnika 13-15			
		14	Basic PO PARAČIN, Majora Marka 1			
		5	Basic PO PETROVAČ NA MLAVI, Srpskih vladara 159			
		9	Basic PO PIROT, Srpskih vladara 126			

Items	1.4, 1.5, 1.6 PC, Display, OS	1.7 SAN	Sites			
				Basic PO POŽAREVAC, Jovana Šerbanovića 4	9	12
			Basic PO POŽEGA, Uče Dimitrijićevića 6	12	12	
			Basic PO PRIJEPOLJE, Valtierova 171	12		
			Basic PO PROKUPLJE, 21. Srpske Divizije 1	12		
			Basic PO RAŠKA, Ratka Lukovića 23	5		
			Basic PO SENTA, Glavni Trg 2	3		
			Basic PO SMEDEREVO, Trg Republike 2	18		
			Basic PO SOMBOR, Venac Stepe Stepanovića bb	14		
			Basic PO SUBOTICA, Senčanski put 1	16		
			Basic PO TRSTENIK, Doktora Milunovića bb	5		
			Basic PO UB, Kralja Petra oslobođioca 60a/1	5		
			Basic PO UŽICE, Nade Matić 6	12		
			Basic PO ČAČAK, Cara Dušana 8/1	18		
			Basic PO ŠABAC, Karadorđeva 25	22		
			WC PO, Beograd, Ustanička 29	14		
			PO Department BUJANOVAC, Trg Karadorđa Petrovića 22	/		
			PO Department IVANJICA, Boška Petrovića 9	/		
			PO Department KNJAŽEVAC, Kej Dimitrija Tucovića 5	/		
			PO Department KUČEVO, Žike Popovića 31	/		
			PO Department MAJDANPEK, Trg oslobođenja 11	/		
			PO Department PRIBOJ, Vuka Karadžića 20	/		
			PO Department SJEENICA, Save Kovačevića bb	/		
			PO Department ŠID, Cara Dušana 4	/		
			Prosecutor Data Center, Beograd, Katanićeva 15	/		
Total	850	1				

3. Lot 2: Improved case management system in the Administration for the Enforcement of Criminal Sanctions

3.1 Preamble

3.1.1 Background

After the successful roll-out the intention is to extend the SAPA application to the remaining institutes (22 of total 31 sites). In addition, the Administration needs to have fully functional, extended with missing functionality, comprehensive reporting software solution in each module for predefined and ad-hoc reports. A set of rules for accessing and use of these reports have to be developed and implemented. The tools have to include full analytical reporting capabilities for both the local office needs for management and operational purposes. The overall extension of the system involves some investment in infrastructure, software and improvement of human resources skills by extensive training.

Organised by the Penal institution there are maximum 5 services (depending on the size of the institution, some institutions don't have organised all departments):

- General affairs service
- Treatment service
- Security service
- Service for training and employment
- Health care service

In the system of penal and correctional institutions there are the following types of persons:

- Deprived of liberty. This includes: convicted, detained, convicted of misdemeanour, persons on educational measure, persons on treatment measures, persons serving juvenile prison
- People in Special Prisons Hospital. This includes: mandatory psychiatric treatment and confinement in a medical institution; mandatory treatment of drug addicts; mandatory treatment of alcoholics; persons who are temporarily sent from other prisons because of bad health condition; the detained persons in the procedure for the application of security measures; mandatory psychiatric treatment and confinement in a medical institution
- Convicted with alternative sanctions. This includes: community service; suspended sentence with protective supervision; home arrest (detained persons) with electronic surveillance; home arrest (detained persons) without electronic surveillance; home arrest sentence (convicted persons) with electronic surveillance;

The Special Prisons hospital is a separate institution and there are following type of persons:

- Mandatory psychiatric treatment and confinement in a medical institution,
- Mandatory treatment of drug addicts
- Mandatory treatment of alcoholics
- Persons who are temporarily sent from other prisons because of bad health condition
- The detained persons in the procedure for the application of security measures Mandatory psychiatric treatment and confinement in a medical institution

A full scale central statistics module has to be created as reporting and analytics tool with implemented all required periodical reports for any level of UIKS. The tool also has to be able to implement operations like data transfer-extract-load (ETL) for the created data dimensions and external legacy data from various sources, mainly from structured files (.xls, .csv, etc.) after quality check. It shall include the identification of data, data definition into data dimensions, data transformation, design of the statistics and reporting data base model.

3.1.2 Current hardware hosting SAPA pilot

The Beneficiary owns the following hardware:

1. 7 servers (2 CPU Intel Xeon X5650, 192 GB RAM)
2. 2 servers (2 CPU Intel Xeon E5640, 48 GB RAM), achieving uninterruptable work of the application
3. Storage system used at site is NetApp FAS 3240A with two redundant controllers, populated with disks for a total of 86TB (raw). Backup storage is NetApp FAS3210A.

Servers group is currently utilised up to 10% of its capacity. The registered cases workload is 70% of expected.

As of 19.04.2016, after 3 years from SAPA go-live, the utilised storage size is 80% of the available space.

However, a number of daily backups of the system are stored on the storage space without proper policies in place for the management and purge of such backups. The Contractor shall put in place appropriate policies and tools for the optimisation of the storage space.

3.1.3 Current third-parties commercial software licenses

3.1.3.1 Document Management System software

The Contractor may decide to reuse in its proposal the ECM licenses provided with the pilot solution; adoption of that particular software is however not compulsory. If the reuse of existing licenses is included in the offer, the software shall be upgraded to its most recent version, and licenses upgraded accordingly.

In case that proposed solution is based on different ECM system, the contractor shall deliver licenses for all SAPA users including users included in the pilot project and provide document and data migration to the new system.

3.1.3.2 RDBMS Software

The Beneficiary uses 700 users Linux server and MySQL, dedicated to SAPA pilot. One application user is used for both Linux and MySQL. The use of this particular software is not compulsory, but can be reused by the proposed solution. If the use of existing licenses is included in the offer, they have to be upgraded to their current version

3.1.3.3 Virtualisation software

The Beneficiary owns licenses of VMware vSphere 5 Enterprise Plus virtualisation software bundled with the delivered hardware

3.2 Scope of the contract

The scope of the contract for the Lot 2 – SAPA system is the following:

1. Prepare detailed design of the SAPA system including user requirements, workflows, functional requirements, data model, hardware architecture, etc.
2. Develop the necessary custom software necessary to implement the SAPA system including all existing pilot SAPA functionalities in use in 9 institutions, improvements of existing SAPA functionalities and new functionalities according this document and conducted business analysis with Beneficiary in the Detailed System Design project phase .
3. Review the database model and migrate – where applicable – the existing data and documents into the new system without data loss and with improvement of data quality.
4. Supplying the necessary equipment needed for the implementation of the SAPA system.
5. Implement improved SAPA as a centralised application in all 31 sites.
6. Install, commission, and test the SAPA system.
7. Assure required performance of the whole system

8. Training the Beneficiary staff in use, maintenance and operation of the SAPA system, according to their respective role.
9. Perform all other contractual obligations during the defect liability period.

The SAPA system shall:

Support at least 1650 users in 31 sites.

3.3 Architecture of SAPA system

3.3.1 General architecture provisions

The SAPA system shall:

1. Be centralised, web-based custom application, based on any Enterprise Content Management system that satisfies technical requirements defined in chapter 3.3.3 for all users at prison's administration (at least 1650 users in 31 sites). Outline of the proposed system architecture has to be attached to the bid.
2. Supports 1650 users in 31 prisons and institutions dealing with at least 15'000 unique cases per year covering following type of persons:
 - a) Deprived of liberty
 - b) People in Special prison hospital
 - c) Convicted with alternative sanctions
3. Covers all functionalities provided by the pilot SAPA in use in 9 institutions, as described in the pilot project documentation for the following user roles:
 - a) General affairs service
 - b) Treatment service
 - c) Security service
 - d) Service for training and employment
 - e) Health care service
4. Designs and delivers identified workflows in terms of BPMN, XPD or similar compatible open standard. Provides tools for maintenance of the changes in implemented workflows.

3.3.2 Third-parties commercial software licenses

The use of specific commercial software is not compulsory, but it is recommended to be reused by the proposed solution. If the use of existing licenses specified in section 3.1.3 is included in the offer, they have to be upgraded to their most recent version.

1. The Contractor shall equip the central location, that complies to the proposed software architecture for existing hardware in section 3.1.2 for all users of the system within the scope, specified in section 3.2, according to their roles. Includes the customised application and licenses for any necessary third-party commercial software
2. The Contractor shall deliver, update and use the latest stable release of all necessary third-party commercial software, maintained by the vendor, available at the moment of deployment of prosecutor's system including, but not limited to:
 - a) Operating system
 - b) RDBMS
 - c) Application Server
 - d) Content Management System

- e) Workflow Management System
- f) Load balancing system

3.3.3 General technical requirements for ECM as part of SAPA system

The solution must be a Web-based solution, preferably based on an enterprise content management system (ECM) configured and tailored to the specific requirements.

Proposed ECM system shall include content management, document capture and workflow functionalities

Proposed ECM should support interoperability with other systems, by supporting open standards-based technologies including WebDAV, XML, Web services. Open security model also should easily integrate with common authentication methods such as LDAP and Active Directory.

ECM should support clear API interface to enable developers to integrate a standard set of library services to support the document management and collaborative requirements of their applications.

There are no software installations on the client-hardware and maintenance concerns the centralised application only.

The clients' interfaces are Internet browser based.

Document capture solution must be integrated within ECM system, or able to integrate with ECM system

There must be one functional centralised database within the data centre infrastructure for all functions.

Single sign-on user code/password access for all SAPA components must be built into the system

System should support interoperability functions implemented via secured web services, including document management, workflow and case management functionalities

Proposed ECM system shall allow the storage, tracking and management of documents and records for all SAPA modules and services, tightly integrated with Workflow to support the end-to-end cross functional processes.

ECM shall offer functionality to encrypt documents in document storage, thus making this content unreadable if it is acquired outside the proper channels.

Proposed system shall support case process flow management including case creation, editing and deletion by specialised users without new (application software) development.

Proposed ECM shall include modelling tool for business process creation and should support BPMN 2, XPDL or similar compatible open standard. Business process engine, which execute processes, should be based on standard workflow engine solution.

ECM shall support task assignments to cases and manual tasks in predefined business processes

ECM shall support linkage and storing of various different documents, notes, files in different formats (scanned, text processing, video, sound, or photo formats)

Proposed ECM shall support categorisation of documents by various attributes set by the users or available within the system.

The system shall support flexible pre-defined search and identifications of cases by different attributes related to the case

Proposed ECM shall support auditing functionality including tracking of case status history, history of documents stored in the system, tracking all incoming/outgoing documents relating to the SAPA case.

3.4 Functionalities of SAPA system

SAPA represents an application meant to standardise and ease work with persons deprived of liberty, located in the correctional facilities, and to provide the required data for Administration for Execution of Penal Sanctions. The SAPA system in scope of this procurement shall include:

- all functionalities of existing pilot SAPA system in use in 9 institutions (chapter 5.4)

- all functionalities classified as improvement of existing SAPA system functionalities (chapter 3.4.1)
- all functionalities classified as development of new functionalities (chapter 3.4.2)

The software will support the electronic management of staff and inmate data. Staff and inmates will have personal data, safely stored information about their activities in the prison, alongside inmates' formal accusation, medical records, and penology treatment information.

Such a developed SAPA system shall be implemented as a centralized solution and implemented in all 31 prison institutions

All structured and unstructured data from old SAPA system as well as all data available in electronic format should be migrated into the new SAPA system:
The following chapters explain the specific requirements of new SAPA system, improvements and required new functionalities.

3.4.1 Improvement of existing Business Requirements

3.4.1.1 General affairs management module

General Affairs Register has to handle all events and data such as initial registration data, changes in status, releases, all kind of temporary releases, tracking of escort to/from the courts, transfers between prisons. All

prisoners' data shall be available to the corresponding operator in any prison, depending on user rights and defined workflow. The module has to be extended by introducing entry forms, documents and reports, linked to the missing workflow process.

The workflow has to be implemented accordingly to the prison's structure and staff responsibility, and data entry process in the module has to be optimised.

The register has to be extended also with: Scanning and storing capability for the external documents; work with templates; use and manage electronically signed documents and the preferred format for these documents is .pdf.

1. Handles all events and data at the department including initial registration data, changes in status, release with all temporary releases, tracking of escort to/from the courts, transfers between prisons

2. Makes available prisoners' data to the corresponding operator in any prison, depending on role and user rights within the defined workflow

3. Extends the data entry forms, generated documents and reports with the required by the workflow data collection

4. Establishes workflow accordingly to the prison's structure, staff responsibility, and data entry process

5. Introduces scan, classify, store and search of external documents functions

6. Introduces work with templates

7. Manages use of electronically signed .pdf documents

3.4.1.2 Financial, deposit, cash register management module

The existing prisoner's financial management module to be extended with local electronic cards to be used in local canteen for payments, and to be linked with deposits and salaries already maintained in the module. General improvement and complete implementation is expected.

1. Extends payments in prison canteen with local electronic cards

2. Completes use of local electronic cards with deposits and salaries of prisoners

3. Extends payments in prison canteen with possibility to recharge prepaid telephone cards for prisoners. This functionality has to support integration with external application and data exchange with SAPA as well as data processing about the sold prepaid telephone cards in SAPA system

3.4.1.3 Analytical reporting management module

The system has to cover all required reports, including reports for general statistics and consolidated reports for prisons. The data for past periods in these reports has to be error-free.

1. Provides ad hoc reporting tool
2. Creates predefined reports, not presented in current version of application, including health care service
3. Improves general statistics and consolidated reports for prisons

3.4.1.4 Health care service, pharmacy management module

The service is providing medical care to the deprived persons. It serves as application mainly for general practitioners and specialised doctors at the prison/prison hospital. The module has to be extended by introducing entry forms, documents and reports, linked to the missing workflow process. Data exchange with public health institutions for person history of illness has to be taken into account. The module has to be able to share information with other departments, the activities has to include element as: migration of old data; delivery and control of medicine, substitutions, replacements, improve functionality of medical and pharmacy storehouse management; management of warnings, including extension of the list of the warnings; improving process of searching and selecting of people and linked data to them; improved reporting and data access to other services e.g. accomplish in a crime.

1. Covers the following profiles of patients of the hospital: Mandatory psychiatric treatment and confinement in a medical institution; Mandatory treatment of drug addicts; Mandatory treatment of alcoholics; Persons who are temporarily sent from other prisons because of bad health condition; The detained persons in the procedure for the application of security measures; Mandatory psychiatric treatment and confinement in a medical institution.
2. Extends the data entry forms with additional data, specified above and improved searching functionality by person, generated documents and reports with the required by the workflow data collection;
3. Exchanges data bidirectionally with other health institutions for persons' history of illness
4. Revises workflow to allows access to information, collected from other departments, especially treatment, service and security and data access from other services e.g. accomplish in a crime
5. Extends storehouse support management including delivery and control of medicine, substitutions, replacements
6. Extends management of person/medicine related warnings, opens classifications of the warnings

3.4.1.5 Treatment service management module

Revision of data access rights for users from different departments in the prison including security, health and treatment service.

The new workflows introduced by the legislations have to be implemented.

The system has to allow to appoint a prisoner to a servant within the service and to be able to change the servant.

1. Revises data access rights for users from departments: security, health and treatment service
2. Introduces new workflows required by the changed legislation
3. Creates couple "appointed prisoner – servant" within the service; capable to modify the couple

3.4.1.6 Service for training and employment management

The system has to be improved as functionality and to be added missing or hidden data such as date of completion of sentence, date of real exit from the prison, information for behaviour of the prisoner, information about persons who use vacation outside the institution. These data has to be linked to the corresponding or/and new functions, workflow and reports. The corresponding workflow, functions and roles has to be updated.

1. Extends data entry with missing or hidden data including date of completion of sentence, date of real exit from the prison, information for behaviour of the prisoner, information about prisoners in vacation, outside the institution
2. Includes data, entered above in existing/new functions, workflows and reports
3. Extends workflow, corresponding functions, roles and rights

3.4.1.7 Security service management module

The system has to be improved as functionality and to be added missing data. These data has to be linked to the corresponding or/and new functions, workflow and reports. The corresponding workflow, functions and roles has to be updated.

1. Extends the collected data by missing ones
2. Incorporates new data into existing or/and new functions, workflows and reports
3. Updates the current roles and rights

3.4.2 Development of new Functionalities / Business Requirements

3.4.2.1 External workflow management through a dedicated engine

The system has to introduce external workflow capable to design and maintain identified workflows in different sites and prison/detention types.

1. Designs of the identified current workflow
2. Implements workflow into the application
3. Provides applications' control and management tools of the implemented workflow
4. Uses Business Process Modelling Notation (BPMN), XPDL or similar compatible standard for identified workflows

3.4.2.2 Special prisons management module

The system has to be implemented in the special prisoner's hospital, adding all required functionality, optimised workflow processes, reporting and outputs, document templates and data forms that are describing these specific events

3.4.2.3 Other detention institutions module

The prisons and detention institutions have registering in many cases different events and specific workflows. The system has to incorporate variance of the detention institutions for each of the remaining sites.

1. The system has to include the workflow and events for all remaining 22 detention institutions

3.4.2.4 Alternative sanctions management and Mary Law

1. The system has to handle persons convicted under alternative sanctions rules
2. The system has to be improved and extended to handle all events of the alternative sanctions
3. The system has to introduce functions, referred to record according to The law on special measures to prevent the commission of crimes against sexual freedom of minors - Mary Law

3.4.2.5 Arms and specialised equipment

1. The system has to be improved and extended to handle all events of the specialised equipment and arms module

3.4.2.6 *Juvenile Reformatory (VPD in Krusevac) module*

1. The system has to be improved and extended as functionality and to be added missing or hidden data such as date of completion of sentence, date of real exit from the prison, information for behaviour of the prisoner, information about persons who use vacation outside the institution.
2. These data has to be linked to the corresponding or/and new functions, workflow and reports.
3. The corresponding workflow, functions and roles has to be updated

3.4.2.7 *Statistical reporting module*

1. The system has to introduce statistical reporting capabilities. The system integrator has to develop data cleaning procedure for cleaning data within the existing data base and from the ETL process of data loading of the provided data to assure the quality of data entry and designed statistics. The decision on matching the records shall be taken by the authorised person within each of prison's offices that provided and owned the disputable data.
2. The system has to cover all required reports, including reports for general statistics and consolidated reports for prisons. The data for past periods, included into report in these reports has to be error-free.
3. The data, loaded from external sources, do not have to be included in daily operations and statistics reports before final approval by the authorised person at the prison

3.4.2.8 *Interoperability with third party canteen software*

For prisons where canteens use third party software, it is necessary to standardise and develop set of web services and corresponding functionalities to support full integration and data exchange between SAPA and third party canteen software.

The following web services shall be supported and developed in SAPA

- Availability of PDL data
 - The canteen application can request a list of PDL details based on various criteria. This service enables the canteen application to obtain the list of PDLs residing in a certain part of prison
 - A deposit state for a certain PDL
 - When a certain PDL is specified, the current state of his deposit (the amount of money available) is returned to the canteen application
 - Update of PDL transactions
 - Data regarding canteen expenditure is transferred to SAPA, in order to update PDL and record the payment details.
 - Reporting
- Reports of PDL deposit and PDL transactions

3.4.3 *Security requirements*

The Contractor shall perform the following activities:

1. Identify sensitive and personal data
2. Implement GDPR rules on all collected data
3. Register each request parameters that queries saved data, especially sensitive data

3.4.4 *Non-functional requirements*

The Contractor shall perform the following activities:

1. Provides users and roles management
- a) That tracks of their tasks, activities
- b) Distinguish and manages profiles and access rights

c) Makes roles flexible to accommodate variance in the structures in prisons

2. Extends the application

- a) Assures response time for daily editing task should not exceed 2 s. It is not related to the reporting/massive searching functions
- b) Secures data within the new databases with minimum 128-bit encryption
- c) Provides access to unencrypted data to be only via application under the implemented user rights
- d) Implements data security under ISO 27001
- e) Keeps versions
- f) Does not allow use of client hardware interfaces and external memory for data exchange
- g) Does not store system data locally at clients side
- h) Locks the terminal when idle for a certain period
- i) Is compatible with any of the following browsers: Mozilla Firefox, Google Chrome and Microsoft Internet Explorer/Edge, having their stable version maintained by the vendor at the time of deployment.
- j) Is compatible with any of the following office suites: Microsoft Office, Apache OpenOffice and its derivatives such as LibreOffice, having their stable version maintained by the vendor at the time of deployment.
- k) Keeps history of changes within application with time stamp of the operation, the identification of performed operation and user identification
- l) Allows to use "a time machine" over the history of changes to search and identify entered data per person/prisoner/detained and/or personnel by means of application and system logs

- m) Restricts editing of records, already entered into the system
- n) Supports filtering of entered data for faster data search and selection
- o) Handles both Serbian locales in data including proper searching, filtering and sorting. Internal interpretation shall be only in Cyrillic.
- p) Revises and cleans-up data and data classification for current and past periods
- q) Migrates historical electronic medical personal records in usable form

3.4.5 Interoperability requirements

Incorporates interoperability capabilities via ESB with other systems:

1. With police IT system (minimum personal data and address, sanctions)
2. With state prosecution IT system (minimum electronic submission of request for detention, custody, or arrest of a person)
3. With Judicial Information system (minimum electronic request for execution of the sentence). SAPA does not exchange directly data with Serbian courts. This exchange is going thru Judicial Information system, over ESB
4. With health insurance register (minimum health profile, personal data)
5. For each service above generates and provides meta data for public access, and exchange within selected repository in specified format (minimum xml, with xsd schema; JSON)



3.5 *Reconfiguration of system hardware platform*

The contractor shall re-design the existing virtual servers' architecture at the existing hardware, and/or supply different/additional equipment to meet the required performance.

In case re-design of servers' architecture and/or additional equipment is offered, the respective cost shall be included in the price of the solution at the tendering phase with justification on it.

The solution shall be clustered for high throughput, and all relevant services accessed through software load balancer.

The Contractor shall configure a dedicated backup system using the device Item 2.10 with the following requirements:

- controller-based replication with the existing storage system NetApp FAS 3240A with two redundant controllers via 1Gb LAN connection either directly or through external appliances. In case of external appliance, the Contractor have to include it in the offer.
- archiving of existing data of closes cases, and data must be stored according to the laws in force.

3.6 *Initial training of SAPA users*

The Contractor has to organise training courses on site in such a way to proceed with at least two groups per type whereas training course needs full days training, see below. The schedule has to be organised on half day basis at one and the same time for groups, to allow trainees to work half a day and to be trained the other part of the day. The Contractor shall perform the following activities:

1. Develops and provides training plan with logistics and schedule for approval
2. Train users of the system, separated into following groups:
 - a) Train all up to 1650, both current and new users of the system to use the application on site, at least 1 days, in groups with no more than 20 trainees
 - b) Train 90 selected users as trainers - at the premise of Beneficiary, at least 3 days, in group with no more than 10 trainees
 - c) Train 10 users (technicians and IT staff) as level 1 help desk employees – at the premise of the Beneficiary, at least 3 days, in groups, with no more than 10 trainees
 - d) Train 3 administrators as level 2 help desk employees and for maintenance of the delivered hardware - at least 3 days
 - e) Performs tests before and after completion of training courses and provides results
3. Provides training equipment and training plan for the organised training groups on site according to the schedule
4. Provides training materials on paper, where it is applicable
5. Provides electronic training materials in Serbian, by establishing tailored distance learning system, situated and accessible within the internal network of the Beneficiary:
 - a)
 - b) Loads regularly prepared electronic materials and user's manuals to distance learning system
 - c) Maintains FAQ (collected by help desk team) updated regularly from the user's feedback and questions, on most typical cases and know-how
 - d) Serves as electronic help, separated from the application itself and open for users
 - e) Updates electronic materials in line with the changes of applications during maintenance period
6. Provides printed user's manual, administrator's, configuration and installations manuals in Serbian

3.7 Content of the bid

The following table summarises the component of the bid. Each component has to be clearly marked with its reference and will be part of the evaluation process:

Ref	Bid components	Notes, remarks, ref. to documentation	Evaluation Committee's Notes
1	Outline of the proposed SAP A system architecture (based on the requirements specified in section 3.3 """)		
2	Project Implementation Schedule (based on the requirements specified in section 1.7.4 """)		
3	Outline of Testing approach (based on the requirements specified in section 1.4 """) and Special Conditions Article 25)		
4	Outline of Data Migration approach (based on the requirements specified in 1.5 """)		
5	Outline of Training approach (based on the requirements specified in sections 1.6 """) and 3.6 """)		
6	Operation & Maintenance plan covering the defect liability period (based on the requirements specified in section 1.8 """)		
7	Detailed description of how after-sales service will be delivered for the four years following the warranty period (Special Conditions Article 33)		
8	A commercial offer concerning corrective and evolutive maintenance for the solution as a whole [custom software, CMS licenses, commercial software, and hardware] according to Special Conditions Article 32.6. This commercial offer will cover one year following the warranty period, and will include (a) one or more draft maintenance contract(s), (b) one or more draft Service Level Agreement(s), and (c) a commercial quotation of the comprehensive maintenance per year of for the whole period of one year following the warranty period. This maintenance contract is not part of the tendered supplies, and the beneficiary may or may not subscribe it.		

3.8 Items to be delivered

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	Turn-key customised centralised CMS System scope: compliant with requirements specified in section 3.2 “” 1. System architecture: compliant with requirements specified in section 3.3 “” 2. Detailed Design: compliant with requirements specified in sections 3.3 “”, 3.4 “”, and 3.5 “” 3. System functionalities: compliant with requirements specified in section 3.4 “” 4. Software development: compliant with requirements specified in section 1.4 “” 5. System testing: compliant with requirements specified in section 1.4 “” and Special Conditions Article 25 6. System deployment: compliant with requirements specified in section 1.7 “”			
2	Bundle of Content Management System licenses 1. Enterprise-grade content management system, featuring: a) process management (workflow engine) that can execute business processes described in BPMN b) search features including instant search suggestions and simple search filtering c) multimedia content storage			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<ul style="list-style-type: none"> d) document scanning and capture e) seamless access from other applications f) information governance: Access Controls and Audit Tools 			
	<ul style="list-style-type: none"> 2. Allowing at least 1 650 users to use the solution specified in Item #1 3. Licensing model: compliant with requirements specified in sections 1.3 “^o”, and 3.3.2 “^{oo}” 			
3	<p>Bundle of software licenses (commercial or commercially supported OpenSource) such as Application Server, RDBMS, Operating System:</p> <ul style="list-style-type: none"> 1. As required by the solution specified in Item #1 2. Additional to the commercial software licenses currently dedicated to the pilot system, according to the proposed solution <p>Unlimited number of Microsoft SQL Server 2008 R2 SP1 licenses, if foreseen by the proposed architecture, will be provided by the Beneficiary and do not need to be included in this bundle.</p>			
4	<p>Personal Computer (PC)</p> <ul style="list-style-type: none"> 1. Small Form Factor PC 2. Processor: minimum base frequency 3.0GHz, minimum 4 cores 3. Min RAM memory: minimum 4 GB DDR4 2400MHz 4. Min 500GB 7200rpm Hard drive 			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	5. Internal DVD±R optical drive 6. Graphics adapter: Discrete, minimum graphics frequency 900Mhz, interface compatible with Item #5 7. Sound card: integrated, on-board 8. 10/100/1000 Mbps RJ45 network adapter and Ethernet Cat6 patch cable min. 3m 9. Mainboard interfaces, minimum: 1xDisplay Port and 1xDisplay Port or HDMI 10. Expansion slots: minimum 1xPCIe x16, 1x PCIe 11. Minimum 12x USB ports, out of which at least 6x USB 3.0, with minimum 4 USB ports located on front side of the case 12. Keyboard with Serbian layout, optical mouse with scroll function 13. Speakers: external stereo or built in case mono 14. FOSS office suite (such as OpenOffice or LibreOffice) 15. Compliant standards: CE and/or TUVGS, RoHS, EPEAT, WEEE, and Energy Star compliant			
5	Monitor (display) 1. Min 21.5" diagonal wide screen, LED , Screen Ratio: wide, 16:9 2. Min Resolution 1920x1080 3. Min Contrast (standard): 1000:1 4. Min Brightness: 250 cd/m2			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	5. Max Response time: 6 ms 6. Min Viewing Angle: Vertical 178°, horizontal 178° 7. Video input: at least two (VGA display port and HDMI), compatible with PC Item #4; including cabling, compatible with PC Item #4 8. Height-adjustable stand, pivot, swivel 9. USB hub with at least 2x USB 3.0 ports 10. CE and Energy Star compliant 11. Connection cables for both analogue and digital interfaces			
6	Notebook 1. Processor: min. base frequency 2.6GHz, min. 4 cores, 64-bit technology compatible, min. 6MB of CPU cache 2. 3D Graphic card: 2 GB 128 Bit 3. Display: min. 15.6" (1920x1080) Antiglare 4. Memory: min. 8GB DDR4 5. HDD: min. 256GB SSD 6. Camera: minimum HD webcam 7. Connectivity: RJ-45 Gigabit LAN, Wireless LAN, Bluetooth 4.0 8. Ports & Expansions: minimum 3x USB 3.0 ports, HDMI or Display port VGA, memory card reader, docking connector			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	9. Fingerprint reader 10. Smart card reader			
7	PC Operating System 1. Operating System for personal computer, featuring: a) Customisable Graphical User Interface (GUI) b) 64 bit native c) Package manager, capable to freely obtain packages and security updates d) Capability of authenticating to a Microsoft Active Directory Domain Controller			
8	Storage Area Network (SAN) 1. The data storage system must have at least two controllers in the active-active configuration. 2. Controllers must be completely independent units without components that connect them such as chassis or backplane 3. Minimum 48GB DRAM cache per offered system 4. Min 4TB read cache per offered system 5. Supports Min up to 480 drives per HA storage system 6. Must have a minimum of 4 x 10GBps port for connection to clients per offered system 7. Must have a minimum of 4x 16GBps ports with			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>associated SFP along with short-range optical modules with an LC connector to connect to the SAN support unified access of data through FC, iSCSI, SMB 3.0, NFS v3,v4,pNFS</p> <p>8. Double disk failure protection</p> <p>9. Option to support triple disk failure protection</p> <p>10.Support inline data compression and deduplication on all protocols</p> <p>11.Support thin provisioning on all protocols</p> <p>12.Capability to mix SSD sizes within a system/controller</p> <p>13.Storage capacity must be minimum 48 x 1.8TB SAS HDDs in one or more disk shelves</p> <p>14.Support scale out to 8 controllers/nodes in a single system/cluster</p> <p>15.QoS to support all protocols in the system</p> <p>16.Non-disruptive controller upgrade to a newer generation</p> <p>17.Must support remote replication to existing Netapp FAS3000 series for at least 100TB space via 1Gb LAN connection either directly or through external appliances</p> <p>18.Support to online move data within the storage system between different pools with no assistance on the host</p> <p>19.Support snapshot, clones for the full offered capacity</p>			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>20.Support application integration to create snapshots (VMware, HyperV, Oracle, MSSQL, Exchange, Sharepoint, SAP)</p> <p>21.Support single file restores and clones from snapshots</p> <p>22.Support phone home feature to improve support experience</p> <p>23.Support Active Directory based authentication for the storage management</p> <p>24.Storage performance monitoring including storing historical data</p> <p>25.Solution must support network compression for replication</p> <p>26.Support for separate failure domains within the array and cluster</p> <p>27.Warranty for 3 years including spare stock locally in country</p> <p>28.All necessary drivers and licenses required to run the storage as described in "ANNEX IIa Technical Requirements" including existing hardware environment, without degradation of performance.</p>			
9	<p>Fibre Channel Switch</p> <p>1. Fibre Channel ports: Switch mode min 12 port configuration (optional min 12 port increment through Ports on Demand [PoD] license)</p> <p>2. Performance: Auto-sensing 2, 4, 8, and 16 Gbps</p>			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	<p>port speeds</p> <p>3. ISL trunking: Frame-based trunking with up to eight 16 Gbps ports per ISL trunk; up to 128 Gbps per ISL trunk</p> <p>4. Aggregate bandwidth: 384 Gbps end-to-end full duplex</p> <p>5. Frame buffers: 8192 dynamically allocated</p> <p>6. Security: DH-CHAP (between switches and end devices), FCAP switch authentication; FIPS 140-2 L2-compliant, HTTPS, IPsec, IP filtering, LDAP with IPv6, Port Binding, RADIUS, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch</p> <p>7. Management access: 10/100 Mbps Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45), and one USB port</p> <p>8. Enclosure: Rack, 1U</p>			
10	<p>Application firewall</p> <p>1. Firewall appliance, enclosure 2RU maximum</p> <p>2. Minimum 5 Gbps of firewall throughput</p> <p>3. Minimum IPS throughput 800 Mbps</p> <p>4. Minimum 350,000 concurrent connections</p> <p>5. Minimum 25000 connections per second</p> <p>6. Minimum built-in 10 x 10/100/1000Base-T RJ45 ports</p> <p>7. Minimum 2 network expansion slots with the possibility of expanding with additional</p>			

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
	8. Redundant AC power 9. URL filtering – included minimum one year subscription 10. IPS (Intrusion Prevention System) – included one year subscription 11. Anti-Virus protection – included one year subscription 12. Anti-Spam protection – included one year subscription 13. SSL VPN remote access with GRE, IP-IP and IPsec tunnels capability			

3.9 Ancillary Services

1. Item Number	2. Specifications Required	3. Specifications Offered	4. Notes, remarks, ref to documentation	5. Evaluation Committee's notes
1	Data migration Compliant with requirements specified in section 1.5 “”			
2	Initial user training Compliant with requirements specified in section 1.6 “”, and 3.6 “”			

3.10 Distribution Schedule

2.4, 2.5, 2.7 PC, Display, PC OS	2.6 Notebook	2.8 SAN	2.9 Fibre Channel Switch	2.10 Application Firewall	Beograd, Central, Nemanjina 22-26	16	7	1				Beograd, District Prison, Bačvanska 14	28		Beograd, Special Prison Hospital, Bačvanska 15	28		Požarevac, Penal - Correctional Institution – Zabela, Dunavska bb	36	1		Požarevac, Penal - Correctional Institution for Women u Požarevcu, Moše Pijade 9	16	8	Smederevo, District prison, Trg Republike 4	8		Negotin, District prison, Branka Perića 9	8		Kragujevac, District prison, Mlavska bb	8		Čuprija, Penal - Correctional Institution, Danila Dimitrijevića 7a	16		Niš, Penal - Correctional Institution, Druga ulica 20	36	1		Vranje, District prison, Cara Dušana 1	8		Leskovac, District prison, Šestog Septembra 2	12		Prokuplje, District prison, Takkova 6	12		Kruševac, District prison, Nemanjina bb	8		Kruševac, Juvenile institution, Blagoja Parovića bb	20		Zaječar, District prison, Izvorski put bb	16		Valjevo, Juvenile institution, Loznički put bb	16		Šabac, Penal - Correctional Institution, Stefana Prvovenčanog bb	12		Čačak District prison, Cara Dušana 3/1	8		Novi Pazar, District prison, Oslobođenja 39a	8		Užice, District prison, Nade Matić 2	8	
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IMPORTANT NOTE: Notebooks will be delivered to the central location in nemanyina, and from there will be distributed to the commissioners for alternative sanctions within the higher courts jurisdictions all over the country.

Items Sites	2.4, 2.5, PC, Display, PC OS	2.6 Notebook	2.8 SAN	2.9 Fibre Channel Switch	2.10 Application Firewall
Kraljevo, District prison, Vojvode Putnika 3	8				
Sremska Mitrovica, Penal - Correctional Institution, Fruškogorska bb	32	1			
Novi Sad, District prison, Proleterska 16a	16				
Sombor, Penal - Correctional Institution, Statarski put 1	12				
Subotica, District prison, Park Rajhla Ferenca 1	12				
Zrenjanin, District prison, Gundulićeva 1/a	12				
Pančevo, District prison, Njegoševa 6	12				
Padinska Skela, Penal - Correctional Institution, Zrenjanski put bb	28				
Padinska Skela, Penal - Correctional Institution - Padinska Skela, Zrenjanski put bb	20				
Total	480	10	1	4	4

4. Annex 1: Current SAPO pilot system implementation

4.1 Background

The project provided a 24x7 accessible Integrated and Standardised Software Application for the Prosecution Offices (SAPO). The project implemented SAPO as an information system with ability to be integrated with other judicial systems. A pilot system deployment currently runs in 15 offices at PO .

The POs in scope at which the SAPO software application was deployed and is operating under productive conditions are:

1. Republican Prosecutors' Office, Belgrade
2. Appellate Prosecutors' Office, Belgrade
3. Higher Prosecutors' Office, Belgrade
4. First Basic Prosecutors' Office, Belgrade
5. Second Basic Prosecutors' Office, Belgrade
6. Third Basic Public PO in Belgrade
7. Appellate Prosecutors' Office, Novi Sad
8. Higher Prosecutors' Office, Novi Sad
9. Basic Prosecutors' Office, Novi Sad
10. Appellate Prosecutors' Office, Niš
11. Higher Prosecutors' Office, Niš
12. Basic Prosecutors' Office, Niš
13. Higher Prosecutors' Office, S.Mitrovica
14. Basic Prosecutors' Office, S.Mitrovica
15. Basic Public PO in Obrenovac

Due to a law that was enacted in January 2014, called the "New PO Network Law", the number of POs that the SAPO application was rolled out to is actually 23 instead of the 15.

The pilot system implementation included:

- 1) Analysis, Design and Development of the Standardised Software Application for the Prosecution Office (SAPO) for all types of Serbian Prosecutors' offices, along with a pilot deployment in 15 POs in Serbia. The delivery included also the provisioning of documentation, training of users and maintenance services for all the POs at which the SAPO application was deployed. Implementation of the SAPO software application is based on the EMC Documentum with xCP Platform.
- 2) Identify, initiate, and analyse functions for the integration of the SAPO system with other systems, including ESB, SAPS and SAPA.
- 3) Development and implementation of a pilot for an Integrated Information Exchange (IIE) system, which connected institutions from each of the three organizations (Courts, Prosecution and Prison Administration), in order for these institutions to be able to communicate and exchange electronically all necessary information. As determined during the initiation phase of the project, there was no need for direct communication between SAPO and SAPA, so the IIE focused on the development of two interfaces, one between SAPO with SAPS and another between SAPA with SAPS. Implementation of the IIE was based on the JBoss Enterprise Service Bus Open Source platform. Communication now requires exchange of data between systems in the judiciary via ESB. The system should be extended by this new functionality.
- 4) Publish statistical data of the system, through existing web sites of the Justice Sector, namely the PO Web Site for the SAPO Statistics. To complete the tests, the Contractor implemented all necessary export and transfer mechanisms in order to have data from the SAPO database sent to the PO Web Site, while the appropriate user interface and import mechanisms were implemented at the existing PO Web site. The SAPO statistics Web Site SW application was deployed at the testing and production environments, and statistical files were uploaded at the existing PO web site for testing purposes. All tests were executed successfully. The statistical module has to be elaborated in more details and the be extended with new functions and reports.

- 5) Complete all development and testing activities, related to the implementation of "Integration / interfacing of SAPO and other applications". This included the integration and deployment of all involved software applications at the test and production environments, along with all necessary testing activities. Currently, a separate project for implementation of ESB as integration tool is ongoing.

- 6) Train of SAPO users. Training of users was performed in three stages.

Stage I of SAPO training involved the execution of the training tasks and specifically the SAPO End User pilot classroom training for the High and Second Basic PO in Belgrade.

Stage II entailed End User classroom training for all end users of the remaining in scope POs, as well as Administrator technical classroom training for the SAPO Administrators. As part of Stage II training for SAPO 494 End Users were trained by the Contractor on the usage of SAPO, while another 10 PO administrators / operators were trained on the technical administration and supporting of SAPO. The trainings were conducted in multiple locations in Serbia, in equipment and classrooms provided by the Beneficiary. There were some technical problems during the training process.

Stage III is identified as training during "Go-live" phase. For SAPO, the go-live process included first the "small", in terms of users and cases, POs, followed by the "larger" ones, such as the First Basic PO in Belgrade. During the SAPO go-live process, on-site support and hands-on training were provided as part of Stage III training for approximately 10 days per PO.

The Contractor has to identify the trained users and to provide for them specific training for refreshing of skills and separate training for new functionality.

- 7) A Help Desk for SAPO, including all levels Help desk considering ticketing system, staff, and support. The SAPO administrators were defined to be the Help Desk level 2 operators while the company provided Help desk level 3.

The Contractor has to keep or to extend existing help desk schema.

- 8) The 10 PO outside Belgrade are linked via telecommunication lines to central site of the system. Establishing of telecommunication links is not in the scope of this project.

4.2 Current technical infrastructure of Prosecutor's Offices

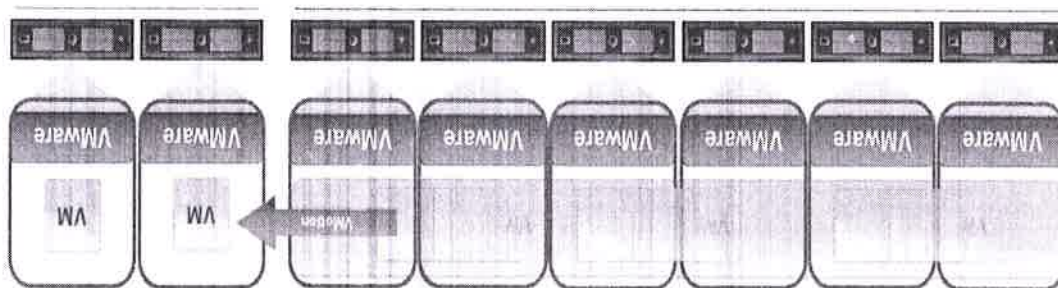
The solution architecture is centralised, with the servers in the data center on Katanićeva 15 in Belgrade, and all prosecutors' offices in WAN network, accessing via HTTP protocol SAPO modules that have been implemented as a web application.

Current Architecture is presented on the following figure:

Figure 1: Architecture of SAPo^4

This allows the implementation of virtual infrastructure which allows the transfer of functionality of a production server by standby server in the event of failure of any of the production server.

Figure 2: Virtual Server Infrastructure of SAPO⁵



Production Servers

Standby Server

Table 1: Configuration of SAPO logical servers

Name	Usage	Commercial software	Capacity
SAPODB	Database Server	Windows Server 2008 R2 Standard, SP1	1 CPU, 32GB RAM
SAPPCS	Content Server	Windows Server 2008 R2 Standard, SP1	1 CPU, 32GB RAM
SAPAPP	Application Server	Windows Server 2008 R2 Standard, SP1 Apache Tomcat 7.0, JDK 1.6, JDK 1.7 Documentum Administrator 7.0 xCP Runtime 2.0 Patch 06 xMS Agent 1.0 Patch 06	1 CPU, 32GB RAM
SAPINDEX	Index Server	Windows Server 2008 R2 Standard, SP1 EMC Documentum xPlore 1.3 Patch 06 Windows Server 2008 R2 Standard, SP1	2 CPUs, 32GB RAM
SAPOBAM	Business Activity Monitoring Server	Windows Server 2008 R2 Standard, SP1 Apache Tomcat 7.0, JDK 1.7 Documentum Content Transformation Services 7.0 xCP Runtime 2.0 Patch 06	2 CPUs, 32GB RAM
SAPOLIA	Application Server for Scanning	Windows Server 2008 R2 Standard, SP1 InputAccel Server 6.5 SP1 InputAccel Client Modules 6.5 SP1 InputAccel Web Components 6.5 SP1 DFC 7.0 eInput 2.2	2 CPUs, 32GB RAM

The architecture is based on nine physical servers Fujitsu PY BX924 S2 Dual Socket Server Blade⁶ hosted on Blade Chassis Fujitsu BX900S1⁷, and configured as described below.

⁵ [http://mpravde.gov.rs/files/3%20konkursna%20dokumenta%20D00%20B0\(1\)-%201.pdf](http://mpravde.gov.rs/files/3%20konkursna%20dokumenta%20D00%20B0(1)-%201.pdf)

- 7 servers equipped with
2 x Intel Xeon Processor X5650, 6 core per processor
192 GB RAM expandable to 384 GB
2 servers equipped with
2 x Intel Xeon Processor E5640, 4 cores per processor
48 GB RAM expandable to 384 GB

Table 2: Comparison of SAPo physical vs logical servers resources

Physical		Logical		physical cluster weekly utilisation	
Number of CPUs		18		6% min – 21% max 11% average	
RAM		1440 GB		192 GB	
				35% min – 40% max 37% average	

The support dates for servers⁸ are 31-Dec-2018 (Manufacturer End of Support) and 31-Dec-2020 (Date Sustaining Support End Date). The End of the Product Support date for chassis is 31-Mar-2024. This mean that the servers have sustainability for the next 5 years.

Storage system is NetApp FAS 3240A with two redundant controllers, populated with disks for a total of 86 TB (raw). Backup storage is NetApp FAS3210A. The used storage as of 19.04.2016, after 3 years from SAPo go-live, the available capacity on storage is 31.2 TB, 36.3% of the available.

4.3 Technical summary of pilot SAPo

The system is implemented as a web application on the EMC Documentum platform xCP2 for case management and documents management, and EMC Captiva platforms for digitization and processing of digital images. All documents are stored in a safe area of storage system and metadata (attributes) are stored in a database on MS SQL Server 2008 R2.

Authentication is on the level of EMC Documentum Content Server, with the possibility of switching to domain authentication if user request.

Each office has one multifunction network device designed for scanning the entire incoming documentation, which, via an email server SAPo solutions send scanned documents to an application, starting the imaging process that goes through every scanned document. Each scanned document is converted to text format and automatically indexes on the index server, becoming searchable throughout the text. SAPOBAM the server that collects statistics for active processes and enables reporting processes.

SAPo is a web application, with the followings modules:

- Scanning:
EMC eInput web application, EMC Captiva InputAccel imaging server
- Registry:
Java JSF 2 and RichFaces 4 web application, EMC Documentum DFC, EMC Documentum Content Server
- Case management:

⁶ Part Number is S26361-K1341-V200, <http://support.it.fujitsu.com/InIndexWarranty.asp?lng=EN>

⁷ Part Number S26361-K1245-V300

⁸ <http://www.fujitsu.com/us/Images/PRIMERGY-server-support-roadmap-factsheet.pdf>

EMC xCP 2 web application, EMC xCP 2 runtime, EMC xCP 2 Process Engine, EMC Documentum Content Server

• Reporting:

Java JSF 2 and RichFacesWeb application, Jasper Report

• Administration

EMC Documentum Administrator

The Beneficiary owns 700 named user maintained licenses of EMC Documentum, including Documentum Content Server v.7.0, EMC xCP v.2.0, EMC Captiva (both 100k PPY standard server and corresponding users), as detailed in the table below.

Table 3: EMC software licenses

#	Description	Part Nr	Qty
1	Composer	456-102-401	700
2	Content server, ver. 6 7 & below	456-102-403	700
3	Content Services for EMC Centera, ver. 6 7 & below	456-102-404	700
4	Documentum CIS N-European Lang Dictionaries	456-102-405	700
5	Documentum CIS W-European Lang Dictionaries	456-102-406	700
6	Documentum application Connectors SDK	456-102-408	700
7	Documentum Custom Client	456-102-496	150
8	Documentum Content Intelligence Services, ver. 6 7 & below	456-102-410	700
9	Documentum Federated Search Services	456-102-414	700
10	Process Builder	456-102-468	1
11	Forms Builder	456-102-469	1
12	Documentum Web Development Kit	456-102-419	700
13	Administrator, ver. 6 7 & below	456-102-399	700
14	Business Activity Monitor	456-102-372	550
15	Process Integrator	456-102-373	550
16	Documentum Document Image Services, ver. 6 7 & below	456-102-374	550
17	Process Engine	456-102-375	550
18	TaskSpace	456-102-376	550
19	Documentum Tumbnail Server, ver. 6 7 & below	456-102-186	700
20	EMC Documentum Mobile Server	456-102-753	700
21	Documentum xCP	456-102-797	550
22	Captiva Export for EMC-NC	456-102-279	1
23	Captiva Standard Server Test/DRS 10k PPY	456-102-260	1
24	Captiva Export for EMC-NC	456-102-279	1
25	Captiva Server Volume +100k PPY Perpetual	456-102-264	44
26	Captiva ScanPlus Module (Standard) – NC	456-102-367	1
27	Captiva Attended Client – NC	456-102-368	1
28	Captiva EInput Attended Client	456-102-276	12

EMC Documentum and Captiva platform is installed with the following components and versions:

• EMC Documentum

- Content Server 7.0 Patch 06
- Thumbnail Server 7.0
- Image Services 7.0
- Process Engine 2.0 Patch 06
- Content Intelligence Services 7.0 Patch 04
- Composer 6.7 SP1
- Administrator 7.0
- xPlore 1.3 Patch 06
- Content Transformation Services 7.0 Patch 03
- EMC xCP
 - Viewer Services 2.0 Patch 06
 - Designer 2.0 Patch 06
 - Runtime 2.0 Patch 06
- EMC InputAccel
 - Server 6.5 SP1
 - Client Modules 6.5 SP1
 - Web Components 6.5SP1
- EMC xMS Agent (xMS Server) 1.0 Patch 06
- EMC BAM server 2.0 Patch 06
- EMC eInput 2.2

In addition, licenses are available for MS SQL Server 2008 R2 for 4 cores.

5. Annex 2: Current SAPA pilot system implementation

5.1 Background

The project provided a 24x7 accessible Integrated and Standardised Software Application for the Prosecution Offices (SAPo). The project implemented SAPo as an information system with ability to be integrated with other judicial systems. A pilot system deployment currently runs in 9 offices at PA .

The PA sites in scope at which the SAPA software application was deployed and is operating under productive conditions are:

1. AEPS Central Office, Belgrade,
2. Special Prison Hospital, Belgrade,
3. District Prison (KPZ) Belgrade,
4. District Prison (KPZ) Padinska Skela,
5. District Prison (KPZ), Sremska Mitrovica,
6. District Prison (KPZ), Zabela-Požarevac,
7. District Prison (KPZ), Valjevo,
8. District Prison (KPZ), Niš and
9. VP Dom Krushevac

The pilot system implementation provided:

- a) Analysis, Design and Development of the Standardised Software Application for the Prison's Administration Office (SAPa) for all sites and types, along with a pilot deployment in 9 PA in Serbia. The delivery included also the provisioning of documentation, training of users and maintenance services for all the PAs at which the SAPa application was would be deployed. Implementation of the SAPA software application is based on the Prozone eDocumentus platform.
- b) Identify, initiate, and analyse functions for the integration of the SAPA system with other systems, including ESB, SAPs and SAPo.
- c) Development and implementation of a pilot for an exchange system, which connected institutions from each of the three organisations (Courts, Prosecution and Prison Administration), in order for these institutions to be able to communicate and exchange electronically all necessary information. As determined during the initiation phase of the project, there was no need for direct communication between SAPo and SAPa, so the media focused on the development of two interfaces, between SAPa with SAPs. Implementation of the exchange system was based on the JBoss Enterprise Service Bus Open Source platform. Communication now requires exchange of data between systems in the judiciary via ESB. The system should be extended by this new functionality.
- d) Complete all development and testing activities, related to the implementation of "Integration / interfacing of SAPa and other applications". This included the integration and deployment of all involved software applications at the test and production environments, along with all necessary testing activities. Currently, a separate project for implementation of ESB as integration tool is ongoing.
- e) Train of SAPa users. Training of users was performed in reduced duration.
- f) In addition, a Help Desk for the SAPa was organised. It include all levels Help desk considering ticketing system, staff, and support. The SAPa administrators were defined to be the Help Desk level 2 operators while the company provided Help desk level 3.
- g) The Contractor has to keep or to extend existing help desk schema.
- g) The 10 PA outside Belgrade are linked via telecommunication lines to central site of the system. Establishing of telecommunication links is not in the scope of this project.

5.2 Current technical infrastructure of Prison Administration

SAPA server infrastructure comprises of data centre in Belgrade in Bačvanska 14. 3 virtual servers are implemented on a virtual infrastructure based on VMware, with about 100 users online from the 8 biggest prisons.

Table 4: Configuration of SAPA logical servers

Name		Usage	Commercial software	Capacity
SAPA_1	Database Server	(active)	CentOS 6.2	48 CPUs, 96GB RAM
SAPA_2	Application Server		CentOS 6.2 MySQL version 1.5.61 Apache Tomcat	48 CPUs, 96GB RAM
SAPA_3	Application Server	(passive)	CentOS 6.2 Apache Tomcat	48 CPUs, 96GB RAM

The architecture is based on nine physical servers Fujitsu PY BX924 S2 Dual Socket Server Blade⁹ hosted on Blade Chassis Fujitsu BX900S1¹⁰, and configured as described below.

- 7 servers equipped with 2 x Intel Xeon Processor X5650, 6 core per processor 192 GB RAM expandable to 384 GB
- 2 servers equipped with 2 x Intel Xeon Processor E5640, 4 cores per processor 48 GB RAM expandable to 384 GB

Table 5: Comparison of SAPA physical vs logical servers resources

Physical		Logical	% utilisation
Number of CPUs		144	60%
RAM		288 GB	

The support dates for servers¹¹ are 31-Dec-2018 (Manufacturer End of Support) and 31-Dec-2020 (Date Sustaining Support End Date). The End of the Product Support date for chassis is 31-Mar-2024. This mean that the servers have sustainability for the next 5 years.

Storage system is NetApp FAS 3240A with two redundant controllers, populated with disks for a total of 86 TB (raw). Backup storage is NetApp FAS3210A. The available capacity of storage, after 3 years from SAPA go-live, is about 30% of the total.

Information for public procurement of the telecommunication services are available on <http://portal.ujn.gov.rs/Dokumenti/JavnaNabavka.aspx?idd=1257101> and procedure is start on 13.10.2016 and decision for awarding of contract on 16.11.2016:

- Contract for Telecommunication services for primary WAN link is selected Orion Telecom - 13.936.560, 00 RSD (VAT excl.), 16.723.872, 00 RSD (VAT included)

⁹ Part Number is S26361-K1341-V200, <http://support.its.fujitsu.com/IndexWarranty.asp?lng=EN>

¹⁰ Part Number S26361-K1245-V300

¹¹ <http://www.fujitsu.com/us/Images/PRIMERGY-server-support-roadmap-factsheet.pdf>

- Telecommunication services for backup WAN link is selected Telekom Srbija – 6,949.152,00 RSD (VAT excl.), 8,338,982,40 RSD (VAT included)

Total price for Telecommunication services for primary and backup WAN link is 20.885.712 RSD (VAT excl.) ~ 1 70 000 EUR, 25.062.854, 00 RSD (VAT included) ~ 204 000 EUR.

Technical specifications for telecommunications services of primary link WAN networks

It is essential that access to technology is the preferred connection meets the following requirements:

1. That the effective value of the flow on the third layer OSI reference model in each direction is equal to or greater than specified;
2. PRIMARY connection allows guaranteed quality of service (QoS);
3. Subscription price for the primary connection should not be dependent on the traffic realized;
4. The speed and access technologies for the primary connection, it is necessary to be as in Table below, a data transfer will take place through IPSec VPN tunnels;
5. In Belgrade, at locations Baccanska 14 and Padinska Skela, Zrenjaninski put bb, the supplier is required to ensure that traffic runs through L2 VLAN, and that the effective size of the package may not be less than (MTU) 1500 bytes. List of numbers of VLAN, will be submitted to the bidder by the contracting authority no later than 5 working days from the date of conclusion of the contract. In case of failure of the link in the above locations, the supplier is required to put it into operation within 4 hours;
6. The bidder undertakes to the Purchaser for all locations, at his own expense, provide the public IP address for the primary connection;
7. The bidder is obliged, at its own expense, for the needs of the customer, provide hardware devices for additional encryption of traffic on the sites of the contracting authority: Belgrade - Bačvanska 14 and Belgrade - Padinska Skela, Zrenjaninski put bb;
8. It is necessary that the expected effective data throughput per PRIMARY connection with the distribution of packet size for a typical Internet traffic (IMIX distribution), the third layer of the OSI reference model, is 100% of the specified flow rate indicated in Table below.
9. The bidder shall provide the purchaser guaranteed level of data flow in accordance with the reserved service package without aggregation or sharing resources with several other users, with a symmetrical speed of receiving and sending data, regardless of which package Purchaser benefits. The bidder is responsible for the congestion, delays, interruptions or errors in the operation in its part of the network;
10. The bidder shall provide the purchaser guaranteed maximum response network of 20 ms cumulatively in both directions, for IPSec traffic between a central location and individual location for the primary connection.

Technical specifications for telecommunications services of secondary link WAN networks

It is essential that access to technology BACKUP relationship satisfy the following conditions:

1. That the effective value of the flow on the third layer OSI reference model in each direction is equal to or greater than specified;
2. In connection allows BACKUP guaranteed quality of service (QoS);
3. Subscription price for BACKUP connection must not depend on the realized traffic;
4. The speed and access technologies for BACKUP connection it is necessary to be as in Table 5, a data transfer will take place through IPSec VPN tunnels
5. In Belgrade, at locations Baccanska 14 and Padinska Skela, Zrenjaninski put bb, the supplier is required to ensure that traffic runs through L2 VLAN, and that the effective size of the package may not be less than (MTU) 1500 bytes. List of numbers VLANs will be submitted by the Purchaser, no later than 5 working days from the date of conclusion of the contract;
6. The bidder undertakes to the Purchaser for all locations, at his own expense, provide public IP addresses for BACKUP connection;

7. The bidder is obliged to establish a VPN service BACKUP connection, no later than 30 calendar days from the date of conclusion of the contract, it would be ensured the smooth functioning WAN PARS-a. Bidder and the Purchaser are obliged to prepare a report about it;
8. The bidder is obliged, after consultation with the client, no later than 5 calendar days from the date of conclusion of the contract, the delivery of certified and signed list of staff who will perform the work, which should include: name and surname, ID number, date, place and address of the planned works. Purchaser is obliged to provide the works in the presence of its professional staff;
9. It is necessary that the expected effective data throughput by BACKUP connection with the distribution of packet size for a typical Internet traffic (IMIX distribution), the third layer of the OSI reference model, is 100% of the specified rate.

5.3 Technical summary of pilot SAPA

Administration for Enforcement of Penal Sanctions (UIKS) includes 36 Penal institutions, of which 6 are temporarily displaced from the Department of the Province of Kosovo and Metohija, Centre for professional education and training of UIKS staff, the system for the enforcement of alternative sanctions and headquarters of the administration.

There was a plan to introduce a program to monitor inmates in 30 penal institutions:

- 9 Penal Correctional Facilities (KPZ)
- 17 District Prisons (OZ)
- 1 Penal correctional facility for juvenile (KPZ), Valjevo
- 1 medium security institution for women
- Special Prisons Hospital (SZB)
- Juvenile Reformatory (VPD) Krusevac

Since December 2013 eight major institutions:

- Special Prison Hospital (SZB), Belgrade
- Penal Correctional Facility (KPZ) Belgrade
- Penal Correctional Facility (KPZ) Padinska Skela
- Penal Correctional Facility (KPZ), Sremska Mitrovica
- Penal Correctional Facility (KPZ), Zabela-Požarevac
- Penal Correctional Facility (KPZ), Valjevo
- Penal Correctional Facility (KPZ), Niš
- Juvenile Reformatory (VPD), Krusevac

covering more than 7,000 of 10,500 people deprived of liberty, and the Headquarters of the Administration (UIKS). All are successfully using the pilot software application for Prison Administration (SAPA).

The Beneficiary owns 700 named user maintained licenses of Prozone eDocuments, Linux server, dedicated to SAPA pilot. Current versions are:

1. eDocuments ECM, ver. 4.0.8-1304081407
2. eDocWebOffice client application, ver. 1.2.8-1304081419

Beneficiary has rights to use the Prozone eDocuments version included into the maintenance contract, but because of very limited budget for the maintenance services, system was not upgraded to the latest version. The 'old' running version is still supported by Prozone. So in case of SAPA extensions, the 'old' Prozone eDocuments licenses, owned by beneficiary has to be fully reused with no charges.

SAPA application is also compatible with the latest Prozone eDocumentus version, but it requires some efforts and modifications to enable the system to run on top of the latest Prozone eDocumentus, especially because of the significant custom developed part of the system.

The Beneficiary has been licensed for unlimited number of users if the system in these institutions.

The training model was organised and implemented on "train of trainers" approach. It was completed within one month, before running of the system. The number of trainees was between 5 and 10 per module. The total number of trainers varied between 30 and 40. The organised training methodology followed the rule to train at least 2 trainees per topic. The team of trainers from Prozone was 4, usually the leaders of the team that developed the module, plus from central administration. Initially there were 500 users. Now they are about 1000.

Limited number of data was migrated. The existing data were mostly in different formats, with a lot of dirty data, collected from different institutions. The company created interface for data entry and data cleaning. Initial form for these entries was based on existing Sremska Mitrovitsa data. Parsing between existing data and the migration candidates (not always possible) was problematic. In the end the migration was done separately for each prison. Some of prisons had internal applications, their own local system or Excel based tables.

The application is java based extension of Prozone eDocumentus. It does not depend on the environment and can be migrated easily to different one. No external workflow was implemented, due to lack of need, although technically it was possible, it is running on Linux servers, with MySQL RDBMS, Tomcat application server. The other libraries that are used include Spring, Hibernate, OpenOffice, others FOSS like Jasper. Some extensions were based on ActiveX and WebDAV.

5.4 Existing pilot SAPA functionalities

Functionalities of new SAPA system can be divided into following services

- General Functions
- General affairs service
- Treatment service
- Security service
- Service for training and employment
- Health care service

The new system has to include all listed below services

5.4.1 General functions

General functions of SAPA system represents functionalities in the system used by system administrators, as well as special administrators within each institution

With general options administrators shall be able to administer whole system. SAPA should support at least the following general options:

- Correctional facility update
- Pavilions updates per correctional facility
- Allocation per pavilion updates
- People Deprived of Liberty (PDL) classifications
- Codebooks management
- General codebook updates (Citizenship, Nationality, Courts, Education, Educational programmes)
- Goods codebooks updates
- Medication codebooks updates

- Legal limitations
- Calendars (working and non-working days updates)
- Storehouse updates
- Minimum and average salary updates
- System settings

5.4.2 General affairs services

General Affairs services cover not only work with PDLs but also all functional elements of the correctional facility. Main sections in this module are Central Registry and Financial services

Central Registry

Central Registry forms a part of General Affairs Services, focusing on PDL records. It represents the entry point, being the service that creates personal files (PF), and takes care of the data updates.

The information about the prisoners contains mostly, but not exclusively, documents relevant to the prisoner's prior history, current stay and various other details, such as medical records, observations and comments by guards, psychiatrists and other involved professionals, family history, pictures, allowed privileges or limitations, etc.

During the life of the PDLs in the prison all activities related to this person need to be registered and traceable within the administration. The information is based on the personal profile, conviction and all data that is collected during the imprisonment.

SAPA shall be supposed to cover the information and data gathered from the all phases related to the Person Deprived of Liberty (PDL): from the phase PDL Admission in prison facility through the phases related to the daily live, PDL daily activities and actions, until the phase Release of PDL from prison facility.

SAPA must support the registration of various different types of PDL and the related data variants. Depending on the type of PDL the attributes of the person may be different.

SAPA system shall provide at least the following functionalities

- Person updates
- Change of basic data
- Announced arrivals updates (Upon sentence pronouncement)
- Opening of new personal file (case)
- Sentence entry
- Change of penalty
- Setting of the hardest offence
- Linking of sentences
- Sentence suspension
- Calculation of the release date
- Change of visits to PDL (data referring to persons permitted to visit PDLs)
- Escape and suspension updates
- Escort entry
- Death of a PDL
- Release of a PDL
- Transfer of a PDL (transferred to another facility or a country to serve the sentence)
- Search of PDLs

• Reporting

Financial Services

Financial Services Section of the General Affairs is in charge of the facility finances. Part of the operations of this section that directly relate to PDLs (not the facility itself) will be executed through the functions of the new system. The main functions of this module is registration of evidence of the PDLs working profile and payments; The PDL account balance is credited when paid work is carried out by the PDL. Debiting and crediting is carried out by the Prison Administration employees on the bases of information gathered from the system.

SAPA system shall provide at least the following functionalities

- Records of valuables (On arrival to a facility, PDL's valuables are received and kept until release from the facility)
- Discharge of valuables
- Opening and entry of deposits
- Closing of deposit
- Income entry (Update of PDL's cash deposit)
- Salary calculation
- Expenses entry
- PDL's Deposit balance export (automated and customised creation of deposit statements belonging to a PDL)
- PDL's expenses import (allows automated and customised import of PDLs' expenses from canteen)
- Reporting

Part of this module is Canteen functionality. PDLs can purchase goods in canteens distributed by pavilions/wards (each pavilion has one canteen, which means that each PDL can purchase goods in one canteen only). A PDL uses funds from own deposit account for purchase of goods, limited to an average salary in Serbia. There is already developed application for canteens (developed by AEPs) that will be integrated with the new system

SAPA system shall provide at least the following functionalities

- Updates and availability of PDL data
- User authentication and authorisation
- Canteen data updates
- Product identification
- Purchasing process
- Purchase blocking
- Purchase cancellation
- Receipt printing
- Reporting
- Product ordering
- API for integration with external canteens application

5.4.3 Treatment services

Treatment Services follow the inmates throughout their stay in the institution, plan their treatment, enter comments, provide proposals for change of treatment and similar. Treatment Services rely directly on personal files created by CR

The system must provide a flexible, systematised registration of incidents of any kind per PDL. The incident registration needs reconciliation with guard schedule management. It needs to provide insight in what guards were on duty during or before the incidents, and thus provide intelligence in discovering potential links between types and frequency of incidents and guards/PDL's groups.

SAPA should store details about present and past PDL cell allocations and cell partners. Historical evidence data must provide insight in PDL relations with other PDL's and PDL groups during the prison life. System must support system of 'quaectionaries' in offline mode (entering data into quaectionary without direct access to the system then upload and import data from quaectionary once the employer has a access to the system SAPA system shall provide at least the following functionalities

- Completion of aggregate file
- Treatment setting for PDL
- PDL Search
- Treatment Review List
- Summary of correctional officers' (Correctional officer's) duties
- Entry of periodical report on PDL
- Entry of interviews with PDLs
- Disciplinary proceedings initiation
- Entry of permitted leaves of absence
- Education
- Club updates
- Clubs
- Attendance records
- Scoring

5.4.4 Security services

Security services coordinate activities of all other services related to the movement of PDLs. They are responsible for security of both employees and PDLs. This module must provide detailed insight in who is visiting the PDL and when.

SAPA system shall provide at least the following functionalities

- View of announced arrivals
- Admission
- View of the list for escorts
- Entry of escort data
- Events update
- Notes entry
- Visitors data updates

5.4.5 Service for training and employment

- Leave records
- Reporting
- Weapons management

Training and Employment services provide training and employment for PDLs during their stay in a correctional facility. Employed inmates receive remuneration for the services they perform.

The system must provide a module with a centralised system of work positions for PDL's, keeping track of their employment specifics such as work place, hours worked. It should enable easy calculation of their salary and amount allowed to spend.

SAPA system shall provide at least the following functionalities

- Job systematisation
- Work units
- Job advertisements
- Employment
- Working hours entry
- Scoring
- Facility Storeroom updates

5.4.6 Health care service

PDLs are provided with adequate healthcare within correctional facilities (in the form of special services, infirmaries and dispensaries), and the Special Prison Hospitals, but a person can be treated outside the facility if such need arises.

Each PDL has a medical record that is kept by the prison administration and provides insight into various medical information: health, drugs, diets, treatments, etc.

The medical record must provide support of what kind of medicaments are allowed, based on the physician advice and given by the prison-pharmacies to the PDL. There is no official form/template for this information at this moment. There is some support to enter/store this information in the current database.

A prison has one or more pharmacies in relation to the size of the prison. The Pharmacy is providing services to distribute medicines to the PDLs based on physician prescriptions.

The system must support registration of visits to medical treatments inside and outside the facility.

The attributes must support information about date, time, type of treatment and contact information of "health specialists", physicians, etc.

SAPA system shall provide at least the following functionalities

- View persons who need a medical examination
- Main medical data updates
- PDL search
- Illness history
- Examination data entry
- Internal referrals
- Issuing referrals for specialist examinations
- Therapy prescription

- Dispensation of medication
- Vaccination
- Therapy renewal
- Therapy termination
- View and entry of daily medication allowance
- Annual requisition of medical goods
- Entry of supplied goods

5.4.7 Reports

SAPA system shall include at least the following reports (all reports must be developed based on data stored in SAPA system):

Headcount reports

RP-1 Headcount per facility for a period

RP-2 Headcount per category and correctional facility for a period

RP-3 Headcount of inmates serving alternative sanctions for a period

Statistical Reports

RP-4 Total number of inmates per category for a period

Convicted Persons (Inmates)

RP-5 Structure of inmates by gender for a period

RP-6 Inmate structure as per admission type and gender for a period

RP-7 Repeat offenders by gender, for a period

RP-8 Inmate structure per release method and gender for a period

RP-9 Released repeat offenders per gender and period

RP-10 Criminal offence structure for a period

RP-11 Inmate structure per length of sentence for a period

RP-12 Inmate structure per age for a period

RP-13 Inmate structure per length of sentence for a period

Juvenile Delinquents

RP-14 Number of delinquents serving sentence in a juvenile correctional facility and prison sentences for a period

RP-15 Structure of juvenile delinquents per age for a period

RP-16 Age of juvenile delinquents on the day, per gender

RP-17 Structure of offences admitted in a period

RP-18 Length of juvenile delinquents' sentences admitted in a period

RP-19 Discharge structure in a period

Persons Sentenced for Misdemeanour (PSM)

RP-20 Number of PSMs for a period

RP-21 Length of PSM sentences admitted in a period

RP-22 Age structure of PSMs admitted in a period

RP-23 Sentence structure of PSMs admitted in a period

RP-24 Structure of PSM-foreign citizens admitted in a period

Persons in Custody (PC)

RP-25 Number of PCs in a period

RP-26 PCs per discharge method in a period

RP-27 Structure of PCs-foreign citizens in a period

Treatment

RP-28 Structure of convicted persons per category

RP-29 Structure of inmates (convicted persons) under the increased supervision regime in a period

RP-30 Inmate structure per education level in a period

RP-31 Educational programme structure in a period

RP-32 Labour engagement in a period

Healthcare

RP-33 Number and type of medical examinations in a period

RP-34 Number and types of specialist medical examinations outside facility in a period

RP-35 Number and types of illnesses in a period

RP-36 Number and types of infectious diseases in a period

Incidents

RP-37 Number and type of injuries in a period

RP-38 Number and types of self-inflicted injuries in a period

RP-39 Number and types of suicide attempts in a period

RP-40 Number and suicide methods in a period

RP-41 Number of participants and reasons for hunger strikes in a period

RP-42 Number of deceased persons in a period

Addictive disorders

RP-43 Number of registered smokers in a period

RP-44 Number of registered alcoholics in a period

RP-45 Number of registered drug addicts in a period

Special privileges, purpose leaves and escorted leaves

RP-46 Number and type of special privileges in a period

RP-47 Number and type of purpose leaves from institutions in a period

RP-48 Type and number of escorted leaves from institution in a period

Disciplinary offences, restraints and searches

RP-49 Type and number of disciplinary offences in a period

RP-50 Number of proceedings and structure of disciplinary penalties in a period

RP-51 Use of restraining measures in a period

RP-52 Reasons for use of restraining measures in a period

RP-53 Escapes, suspensions and delays in a period

RP-54 Conflicts between PDLs in a period

RP-55 Number of searches conducted in a period

RP-56 Type and amount of prohibited substances and objects found in searches in a period

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