

ПРОТОКОЛ ОТ ДОГОВАРЯНЕТО / Minutes of Negotiation

Към ЛО

Поръчка № 492-EP-17-CI-D-3, с предмет: Изграждане на нова версия на съществуващ софтуер за управление на мрежата (DMS) - ADMS с частична миграция на данни

Order Nr. 492-EP-17-CI-D-3, with subject: Implementation of new version of existing software for distribution grid management (DMS) – ADMS with partial data model migration.

Преговори на /Negotiations held on December 11, 2017 2:00 PM

Информацията е заличена съгл. чл. 2 и чл.4 от ЗЗЛД, във връзка с чл. 226 от ЗОП.

Schneider Electric DMS NS LLC for power engineering Novi Sad, представлява

Schneider Electric DMS NS LLC for power engineering Novi Sad, represented

во предложение с Вх.номер.: 13707/15.11.2017,
proposal with incoming No.: 13707/15.11.2017

Информацията е заличена съгл. чл. 2 и чл.4 от ЗЗЛД, във връзка с чл. 226 от ЗОП.

Техническа част:

Technical part:

След проведените преговори и извършени уточнения страните се споразумява:

After the negotiations held and the clarifications made the parties hereby agree:

1. Лицензи

1. Licenses

1.1. Всички лицензи, които се предоставят от Шнайдер, се предоставят за периода на договора, включително и при активиране на опцията за допълнителните два месеца на съпорт /6 + 2/ безплатно, като Възложителят не дължи на Изпълнителя никакви такси за поддръжката им. След приключване срока на действие на договора ADMS лицензите ще бъдат заключени за ползване.

1.1. All licenses provided by Schneider are to be provided for the period of the contract including upon activating the option for the additional two months of support (6+2) for free whereas the Contracting Authority shall not owe any maintenance costs to the Contractor. After the completion of the validity period of the contract ADMS licenses will be locked for usage.

1.2. Лиценз OASyS и OASYS real time server ще бъде заплатен от Възложителя, като Възложителят не дължи на Изпълнителя никакви допълнителни такси, вкл. за поддръжката на лиценза.

1.2. License OASyS and OASYS real time server shall be paid by the Contracting Authority as the Contracting Authority shall not owe the Contractor any additional fees, including for license maintenance.

2. Канали за комуникация – Участникът предоставя два канала за комуникация по проекта: Bugzilla и Skype.

2. Communication channels – the Bidder provides two communication channels under the project: Bugzilla and Skype.

3. Срокове

3. Deadlines

3.1 Сроковете на изпълнение на отделните фази, при сключване на договора на 02.01.2018, са както следва:

3.1. The implementation deadlines for the individual phases upon conclusion of the contract on 02.01.2018 are as follows:

3.1.1 Фаза проектиране – 31.01.2018

3.1.2 Фаза развитие на системата – 30.04.2018

3.1.3 Фаза оценка – 02.07.2018

3.1.1 Design phase – 31.01.2018

3.1.2 System Deployment phase – 30.04.2018

3.1.3 Evaluation phase – 02.07.2018

3.2 Ако бъде активирана опцията за допълнителен съпорт, с продължителност от два месеца – 31.08.2018

3.2. If activated the option for additional support with a duration of 2 months – 31.08.2018

3.3 Ако договорът бъде сключен на различна дата /различна от 02.01.2017/, гореописаните дати в т. 3.1. и т. 3.2 се отместват със съответното закъснение.

3.3. If the contract is concluded on a different date /different than 02.01.2017/, the above mentioned dates in 3.1. and 3.2. shall be moved with the respective delay.

3.4 При възникнали въпроси към, която и да е от страните, следва да бъде върнат отговор в рамките на 2 работни дни

3.4. In case of any questions to any of the parties, the reply should be received within 2 working days

3.2 Текстовете „Total period of POC system validity will be six months starting from the date of signing the Contract. But it can be extended and be part of future negotiation„ и „The PoC Pilot Phase is planned to last for 6 months. But it can be extended by two months““ придобиват следния вид Total period of POC system validity will be six months starting from the date of signing the Contract. But it can be extended by two months„ и „The PoC Pilot Phase is planned to last for 6 months. But it can be extended by two months“

3.2. The wordings „Total period of POC system validity will be six months starting from the date of signing the Contract. But it can be extended and be part of future negotiation„ and “The PoC Pilot Phase is planned to last for 6 months. But it can be extended and be part of future negotiation.” shall be changed to „Total period of POC system validity will be six months starting from the date of signing the Contract. But it can be extended by two months„ and “The PoC Pilot Phase is planned to last for 6 months. But it can be extended by two months.”

3.3 При удължаване на периода за изпълнение на проекта по желание на Изпълнителя: „SE DMS може да поиска от Клиента /Възложителя/ удължаване на периода на изпълнение, като се посочват причините за това. Ако това искане се приеме от клиента, страните се договарят да бъде променена първоначалната програма за изпълнение“ се начисляват неустойки за всеки ден просрочие в размер на 0.5% на ден не повече от 8% от стойността на договора

3.3 Upon extension of the period for project implementation at the request of the Contractor: „SE DMS may request from Client /Contracting Authority/ an extension of the execution period, indicating the supporting reasons. Should this request be accepted by Client, the parties shall agree on modifying the initial execution program“ shall be accrued penalties for each day of delay within 0.5% per day and not exceeding 8% of the contracted value

4. Документация**4. Documentation**

4.1 Участникът следва да предостави документация, на английски език, с описание на възможностите, функционалностите на системата при подписване на договора.

4.1. The participant should provide documentation in English, with description of the options, system functionalities upon signing the contract.

4.2 Участникът следва да подготви план, материали и документация за обучението, на английски език, които да предостави преди провеждане на обученията

4.2. The participant should prepare a plan, materials and documentation for the training in English which need to be provided prior trainings were performed.

4.3 Участникът следва да предостави тестови каталог на английски език за проверка на функционалностите на ADMS върху мигрираните данни на Възложителя, преди стартиране на фазата за оценка.

4.3. The participant should provide a test catalogue in English for testing the functionalities of ADMS on the migrated data of the Contracting Authority before starting the evaluation phase.

5. Участникът следва да направи бекъп на базата данни на Възложителя, касаеща настоящия проект, след успешно мигриране на данните и след подписване на приемо-предавателен протокол.

5. The participant should prepare a backup of Contracting Authority's database concerning this project after the successful data migration and after having signed an acceptance protocol.

6. Обучения**6. Trainings**

Ще се проведе на територията на Възложителя, на група не по-голяма от 13 участника. Има възможност представители на EVN Македония да присъстват като слушатели, не и като част от групата, която ще бъде обучавана.

Training will be held on the territory of the Contracting Authority in a group not bigger than 13 participants. There is a possibility EVN MK representatives to be present as audience, not as part of the group meant to be trained.

7. Съпорт - Техническият съпорт, вкл. консултантски въпроси към Системата, се извършва изцяло от Участника.

7. Support – technical support including consultation questions to the System, shall be rendered in full by the Participant.

Търговска част:

Commercial part:

След проведените преговори и извършени уточнения страните се споразумява:

After the negotiations held and the clarifications made, the parties hereby agreed:

1. Цени

1. Prices

1.1 Първоначално оферирани цени:

1.1. Initially offered prices

1.1.1 за цялостно изпълнение на проекта – 90 458 €

/в това число – за обучения, с включени транспортни и командировъчни разходи - 14 585,08 €/

1.1.1 for the overall project implementation – € 90 458

/including – for trainings, with included transport and secondment costs - €14 585,08 /

1.1.2 за допълнителен съпорт за период от два месеца – 16 753 €

Беше договорена отстъпка в размер на 11,76%. Съответно:

1.1.2 for Additional Support for 2 months – € 16 753

A discount of 11.76% was negotiated. Respectively:

1.2 Крайни договорени цени:

1.2 Finally agreed prices:

1.2.1 за цялостно изпълнение на проекта – 79 816 €

/в това число – за обучения, с включени транспортни и командировъчни разходи - 12 869.87€/

1.2.1 for overall project implementation – € 79 816

/including – for trainings, with included transport and secondment costs - €12 869.87/

1.2.2 за допълнителен съпорт за период от два месеца – 14 782 €

1.2.2 for Additional Support for 2 months – € 14 782

2. Ценообразуване:

Всички договорени цени включват всички разходи на Участника, твърди са за срока на действие на договора, включително и при активиране на опцията за допълнителните два месеца на съпорт и не подлежат на промени.

2. Price formation:

All agreed prices include all costs of the Bidder, they are fixed during the contract validity period, including if activated the option for extra support for 2 months and are not subject to any changes.

3. Плащания

3. Payments

3.1. 50% от стойността на целия проект ще бъдат платени след завършване на System deployment phase, т.е. след инсталирането, конфигурирането, миграцията на данните, тестването и архивирането на системата.

3.1 50% of the cost of the entire project will be paid after the completion of the System deployment phase, i.e. after the installation, configuration, migration of the data, testing and backup of the System.

3.2 Останалите 50% от стойността на целия проект ще бъдат изплатени след Evaluation phase, т.е. след завършване на проекта

3.2 Other 50% of the cost of the entire project will be paid after Evaluation phase, i.e. completion of the project.

Ако Възложителят се нуждае от активиране на опцията за допълнителните два месеца на съпорт – същият ще бъде заплатен след приключването му.
If the Contracting Authority need of Additional Support for the period of two months – it will payed after it is completed.

4. Всички плащания по настоящия договор ще бъдат извършвани посредством банков превод, в рамките на 30 дни, след извършване на услугите/доставките, приемо-предавателен протокол и издаване на фактура. Плащането се извършва в Евро. Банковите такси се разделят по равно между страните.

4. All payments to this contract will be executed through bank transfer, within 30 days, after providing of services/deliveries, acceptance protocol and invoice. Payment shall be effected in EURO. Bank charges are split symmetrically between the parties.

Съгласен съм с текстовете по-горе
I agree with the text above

Място, дата: България, Пловдив, 11.12.2017
Place, Date: Bulgaria, Plovdiv, 11.12.2017

За Възложителя:
For the Contracting Authority:

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2.
30
Информацията е заличена съгл. чл. 2 и чл.4 от ЗЗЛД, във връзка с чл. 226 от ЗОП.

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Смет. Финансова сметка

19/01/2018

Technical requirements

to a procedure with subject

Implementation of new version of existing software for distribution grid management (DMS) – ADMS with partial data model migration.”

1. Preparation and installation of ADMS in three KEZ: X35 Burgas Center, X37 Karnobat and X38 Pomorie, of the distribution grid of EP Yug.
2. All necessary installations and system settings shall be performed by the Contractor, at the customer's site or by remote access.
3. The installation shall be performed on the Employer's hardware. The specification for the required hardware equipment (servers and workstations) shall be provided by the Contractor and approved by the Employer.
4. All installations shall be performed in the following software environment:
 - Domain - the company's primary one - with the purpose of user management under LDAP
 - Server operating system - Windows 2016
 - Work stations - Windows 10
 - Antivirus Protection - McAfee v.8.8 or more recent
 - Virtualization environment - MS Hyper-V v.2016
 - Database - MS SQL Standard edition v.2016
5. The Contractor shall provide all necessary licenses free of charge for the period of the contract. The period shall begin to run from the date of delivery of the system for use, which is certified by an acceptance protocol.
6. Microsoft licenses for the server OS, and desktop OS as well as for the databases shall be provided by the Employer.
7. Data migration for three KEZ shall be performed by the Contractor.
8. Data migration from DMS in ADMS takes place on site with the Employer or through remote access to the data.
9. The network model that will be transformed and imported must cover approximately the following number of objects in the territories of the three KEZ and with the quantities as presented in the table below:

X35,37,38	EVN BG
Substations HVMV Substation	14
Switching stations MVMV Substation	52
Transformer stations MVLV Substation	2396

Overhead lines	2153
Underground lines	2808
Switching devices	636
Feeders	230

10. After migration of the objects under item 4 both parties check the data and the parties sign an acceptance protocol.
11. The Contractor should conduct training on site with the Employer to a group of up to 13 employees. The training course must provide detailed information to the personnel of the Employer with the functionalities of ADMS, comprehensive instruction for working with all components of the system. The Contractor should prepare and submit a plan, materials and documentation for the training.
12. The Contractor shall provide documentation with a description of the functionalities of the system.
13. The Contractor shall provide test catalogue to be checked the functionalities of the ADMS on the migrated data of the Employer.
14. The contractor should provide assistance - remotely, for a period of two months and on site with the customer for a period of two weeks.
15. Optionally the Employer may request the assistance for further two months - remotely and two weeks on site with the customer
16. For the duration of the contract the Employer shall not pay to the Contractor any charges for maintenance of the licenses.
17. The Contractor shall make available channels for communication, minimum two, through which he will be responsible to provide assistance and shall answer questions related to ADMS on the part of the Employer for the time 9 a.m. - 5 p.m. CET from Monday to Friday, without the weekends and holidays.
18. For any questions arisen to any of the parties they shall be obliged to reply within 2 working days.

Schneider Electric DMS NS

Implementation of a new version of the existing software for distribution grid management (DMS) – ADMS with partial data model migration

Date: 15.11.2017

No: 34/2017/07

Rev: 3.0

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1. INTRODUCTION

This offer is provided by "Schneider Electric DMS NS LLC" (SEDMS) as supplier to to the EVN Group (Customer). The end user of the proposed solution will be EVN Bulgaria.

The object of this document is a technical and commercial offer for the Advanced Distribution Management System (ADMS) Pilot implementation at EVN Bulgaria, which will be used for the testing and Proof of Concept (PoC), based on requirements provided by EVN Group.

This phase implies installation of the PoC Pilot system at the customer site (EVN Bulgaria site), by using part of the Customer's network – pilot network described in details in Chapter 3.3. Pilot network will have sufficient data in order to provide proper work of DMS functions and demonstration of the ADMS baseline features and functionalities. The pilot network will be created by conversion of part of DMS v2 network model and it will cover area of three KEC, several HV/MV Substations with belonging MV network.

The aim of this pre project phase is to introduce the EVN BG personnel with the new ADMS system and to make the transition to it easier. The added value of pre project phase is that the Customer personnel will be able to test and get familiar with the new baseline ADMS solution, and see which functionalities are of interest for the future upgrade process.

2. PROJECT SCOPE

In the base scope of SE DMS work is included:

- The PoC design – Scope of Work definition.
- Network model conversion of part of EVN distribution network, as defined in the chapter 3.3.
- Deployment services of the the PoC Pilot system.
- Training on site.
- Evaluation of the ADMS solution with aim to verify that ADMS solution support business goals and process in EVN Group.
- Optional - During this evaluation period SE DMS and the Customer can agree possible workshops in order to define architecture, integrations, customizations, trainings, documentation, and overall project flow of future ADMS Enterprise system.

Out of the scope of SE DMS work:

- Hardware and network equipment.
- Third party SW licenses (MS Windows licenses and other).
- Any customization, if not accepted in written form by SE DMS.
- Any interfaces and adapters for integration, if not accepted in written form by SE DMS.

3. ARCHITECTURE

The Architecture chapter presents an architecture overview and hardware specification of the the POC Pilot Project system that will be deployed at site – EVN Bulgaria.

3.1. SYSTEM SOLUTION

The proposed POC Pilot system architecture has the following services which are interconnected by Ethernet LANs:

- ADMS RT service– core of ADMS real-time management and controlling advanced DMS applications in real time.
- Historian RT – Historian for all ADMS applications. It is based on Microsoft SQL Server and stores time-series data (analogue values, statuses, and calculated values), alarms and events, switching manipulations, network model repositories, etc. It collects data from the real time ADMS services and provides trending and reporting functionalities for the dispatchers/operators
- ADMS Simulation – standalone server for operator's "what if" analysis (DMS simulation in real time) and various "offline" DMS advanced application and network analysis.
- ADMS staging – configuration of SCADA points and development of network model using DNB application or by import of static data from external GIS system.
- Web service – host web applications (services) and together with hardware load balancers provide access for web users;
- Domain controller – servers that responds to security authentication request.

These services are deployed within virtual machines and they can be considered as separate servers. They can all be implemented in one physical machine, as shown on Figure 3-1:

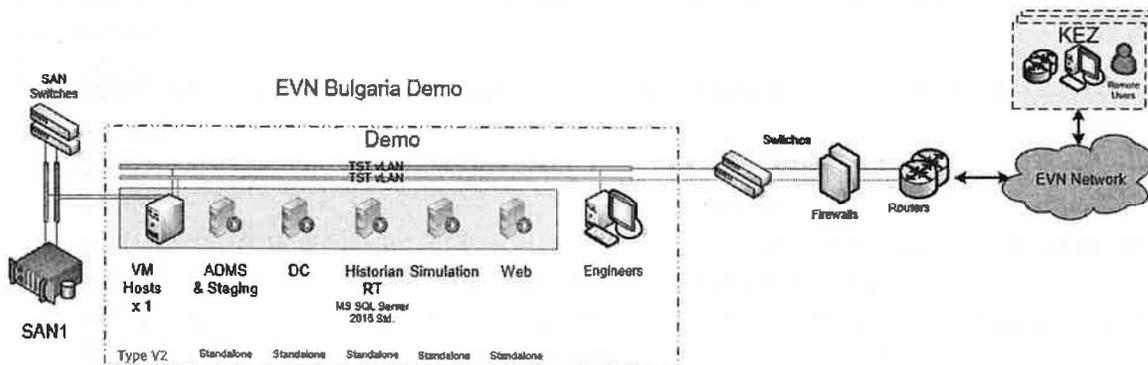


Figure 3-1 System architecture

There could be up to five Engineers' workstations with ADMS client applications (DMD and/or Network Builder) hosted on this server.

3.2. HARDWARE SPECIFICATIONS

Proposed hardware requirements for the PoC Pilot ADMS solution, (CPU, RAM capacity and dataspace) is evaluate and scaled based on following parameters:

- Network sizing – the proposed system is scaled to support full EVN Bulgaria distribution network model, since POC test system will stay operational after the upgrade of the full system is started (subject to the new proposal). It will be used as Project Development System (PDS) in the scope of the upgrade of the full system.
- Number of users as dispatchers, external users (estimated number is 5).

NOTE: Hardware or any other equipment is not in the scope of SEDMS. SEDMS is providing only general HW specification, whereas specific hardware solution is subject to SEDMS approval

Servers specification:

Recommended specification of these servers is presented in Table 3.1 **Error! Reference source not found.** The proposed ADMS solution uses virtualization and it does not allow CPU or memory over-commitment, i.e. physical servers (VM hosts) are sized to provide dedicated virtual cores and dedicated virtual memory to each ADMS service. The following server configurations correspond to the proposed Test system architecture

Table 3.1 - Servers specification

Servers (Hosts)						
Type	Model	CPU	Threads	RAM [GB]	Disk	OS
V2	V2	Intel Xeon E5 2x10c	40	320	2x147GB RAID 1	Windows Server 2016

All servers should have two 300 GB HDD in RAID 1 configuration.

NOTE: In addition to previous, please find below minimal hardware specification which can be used just to testing purposes during the Test phase. It is necessary to note that in case of the future system upgrade to enterprise solution, test deployed on this hardware should be migrated to hardware specified in first part of this section.

Table 3.2 – Minimal Servers specification

Servers (Hosts)						
Type	Model	CPU	Threads	RAM [GB]	Disk	OS
V2	V2	Intel Xeon E5 2x8c	32	160	2x147GB RAID 1	Windows Server 2016

The installation shall be performed on the Employer's hardware. The specification for the required hardware equipment (servers and workstations) shall be provided by the Contractor and approved by the Employer.

All installations shall be performed in the following software environment:

- Domain - the company's primary one - with the purpose of user management under LDAP
- Server operating system - Windows 2016
- Work stations - Windows 10
- Antivirus Protection - McAfee v.8.8 or more recent
- Virtualization environment - MS Hyper-V v.2016
- Database - MS SQL Standard edition v.2016

	Optimal conf.	v. cores	RAM GB	HDD space GB	note
1	ADMS & Staging	16	48	160	
2	DC	0	0	0	will be used existing AD
3	Historian RT	4	32	160	
4	Simulation	10	32	160	
5	Web	6	32	160	
	total	36	144	640	

	Minimum conf.	v. cores	RAM GB	HDD space GB	note
1	ADMS & Staging	12	32	120	
2	DC *	0	0	0	will be used existing AD
3	Historian RT	4	32	120	
4	Simulation	8	32	120	
5	Web	4	32	120	
	total	28	128	480	

End-User PC Workstation specification

Recommended configuration for an end-user PC workstation should include:

- CPU: Intel Core i5-65xx 3.x GHz
- Memory: 8 GB DDR4 nECC RAM
- Graphic adapter: NVIDIA NVS 510 2 GB, 4 x mini Display port, DirectX 11
- Windows 10 (64bit)

3rd party software specification

All 3rd party software listed in the table below is not in the SE DMS scope and will have to be provided by EVN Group. 3rd party software specification is detailed in the following table:

License	Quantity
Windows Server 2016 Standard 16-core license	3

Windows Server 2016 Standard 2-core license	6
Windows Server 2016 deviceCAL	Equal to the # of workstations (assumed 5)
Windows Server 2016 Standard 16-core license	3
Windows 10 Pro 64bit	Equal to the # of workstations (assumed 5)
MS SQL Standard 2016	2

3.3. NETWORK MODEL

From ADMS side, the entire distribution network is modeled with a single static network model, referred to as Network Model (NM). It contains all necessary data about the network topology, as well as all necessary input data for all ADMS modules as SCADA, DMS and OMS. It represents the entire distribution network from the high-voltage supply lines, down to the low voltage (secondary) side of the distribution service transformers.

Network model that will be converted and imported by SEDMS is limited to the following numbers of objects and size represented in table below:

Table 3.3 – EVN Bulgaria network model which will be converted to ADMS

	EVN BG
Подстанции HVMV Substation	14
Възлови Станции MVMV Substation	52
Трафопоствое MVLV Substation	2396
Въздушни линии Overhead lines	2153
Кабели Underground lines	2808
Комутационно оборудване Switching devices	636
Изводи Feeder	230

All missing data necessary for ADMS network model will be defaulted in data entering process.

As a result of defaulting process, certain power functions will be operational, but their results might be different than expected, or they might not be operational in all parts of MV or LV network.

Regular communication procedure between SEDMS and EVN Group will be established, with all questions and uncertainties propagated to EVN Group from SEDMS data entering department.

EVN Group should clarify all data issues (including bad / missing data) raised by SEDMS NS during data entering activities, and provide answers in timely fashion. If EVN Group fail to do so, it can influence SEDMS NS ability to deliver the network model scope mentioned above, and could lead to the project scope change, or schedule adjustments, even leaving some deliverables out of scope.

Data migration from DMS in ADMS takes place on site with the Employer or through remote access to the data.

After migration of the objects both parties check the data and the parties sign an acceptance protocol.

4. DELIVERABLES

Deliverables chapter present necessary services and software licenses that needs to be provided in order to complete the POC Pilot Project as part of the ADMS Software upgrade project. Each of the project deliverables is presented below.

During the Proof of Concept Pilot Project, the Customer will be able to test, analyse and observe the operation of ADMS system on a pilot network with aim to verify that ADMS solution support business goals and process in EVN Group. Functionalities will be available in simulation mode only.

4.1. LICENSES

This section summarizes and specifies all required ADMS and third party licenses for the proposed PoC Pilot solutions including:

- ADMS Server licenses required to support the proposed architectures,
- ADMS Client licenses which allows clients to connect to the ADMS server (Dispatchers, Web users, field clients and client for network model editing),
- ADMS Platform and other features licenses
- DMS applications – contains list of all proposed ADMS functions DMS power functions,
- Network operation applications – Outage Management System (Optional) and outage related applications (FLISR), Work Order Management (Optional) suite for managing activities of field crews on maintenance and repair works.
- History application
- OASyS infrastructure and OASyS Real Time services- licenses required to support all aspect of data collecting and monitoring, including field device polling, supervisory controls, and alarm processing,
- Microsoft Licenses – necessary Microsoft product licenses as SQL, Windows Server and etc. (In Vector scope),
- Third-party licenses – others third-party licenses and libraries incorporated in proposed ADMS system solution.

Most of the applications follow the same principle as the applications from the previous software version, with many improvements and advanced possibilities added.

All ADMS licenses necessary for the proper operation of the PoC Pilot System will NOT be charged to the EVN Group during the period of contract's validity. The Contractor shall provide all necessary licenses free of charge for the period of the contract. The test period will last for 2 months with the option of extension for 2 months and shall begin to run from the date of delivery of the system for use, which is certified by an acceptance protocol.

OASyS infrastructure and OASyS Real Time server- licenses will be charged.

Microsoft licenses for the server OS, and desktop OS as well as for the databases shall be provided by the Employer and other third party software.

4.1.1. ADMS System Licenses

The following ADMS licenses will be delivered to the EVN Group free of charge for the period of the contract:

License Name	Quantity
ADMS Clients Licenses	
Dynamic Mimic Diagram Client (Operation Workstations)	5
Network Builder Client (Editing Workstations)	5
Web Users	5
ADMS Server Licenses	
DMS RT Server (Hot and Standby)	1
DMS Simulation/Staging Server (Standalone)	1
DMS Staging Server (Standalone)	1
Historian RT Server (Standalone)	1
DMS WEB Server (Standalone)	1
Landbase Server	1
DMS Functions Set	1

4.1.2. ADMS Platform and other features

The necessary ADMS Platform, which contains the basic features of ADMS, and presents a platform on which all other suites and applications are run, will be delivered free of charge for the period of the contract:

Table 4.2 - ADMS Platform and other features

No	License	Description
1.	ADMS Platform	<p>Contains features of:</p> <ul style="list-style-type: none"> • Model and display building and presentation, • Commanding (without validation), • Alarming and Tagging, • Model promotion (introducing, verifying and propagating model changes across the ADMS zones), <p>Tuning and monitoring tools.</p>
2.	MV Network Model	Medium–Voltage Network Model (including Graphical Model of electric and non-electric elements) for standard radial or weakly meshed medium-voltage distribution networks, with feeders, supplying distribution transformers (MV/LV), excluding low-voltage network.
3.	LV Network Model	Low–Voltage Network Model (including Graphical Model of electric and non-electric elements) for radial or grid low-voltage networks directly supplying residential, commercial and industrial end customers.
4.	Temporary Elements	Temporary Elements are a feature of ADMS system where the user can introduce a limited set of temporary changes to the electrical

		model, for the purpose of temporarily altering its connectivity. Temporary elements are typically introduced by load operators which order their placement by a field crew, in order to temporarily isolate a part of the network being repaired, or temporarily re-energize consumers whose supply cannot be restored by other means.
5.	Tracing	Tracing performs simple graph analysis on user request. Given the network graph previously processed by Topology Analysis, it performs topological tracing from a user-selected point in the network, and highlights the elements encountered on the path. Methods of tracing include: trace up, trace down and trace in both directions.

4.1.3. DMS applications

DMS applications are used for analysis, optimization, forecast and what-if (study) analyses of the MV

Table 4.3 - DMS applications

distribution and LV network and will be delivered free of charge for the period of the contract:

No.	License	Description
1.	State estimation	State Estimation provides an assessment of loads of all network nodes, and all other state variables (current phasors of all sections and transformers, active and reactive power losses in all sections and transformers, etc.).
2.	Load Flow	Load Flow application is used for the calculation of steady states of radial and weakly meshed primary MV power grids (networks), as well as state of secondary LV power grids. The network state consists of: complex voltages, currents, flows of real and reactive power, voltage drops, losses, etc. Usually, among all state variables, the state vector is defined as a set of all network nodes' complex voltages. The state vector is sufficient for calculation of any other network state variable.
3.	Performance Indices	Performance Indices (is used for detection of violations, alarm states, reports of the overall performances of the network state (power injection, losses, consumption, voltage situation and deviations, overloads, etc.).
4.	DER Management	Set of functionalities used for monitoring and control of distributed energy resources (DERs).
5.	Load Relief	Provides optimal switching plan to transfer specified amount of circuit loading to adjacent circuits.
6.	Volt/Var Optimization	Optimization of voltages, load and power losses by control of voltage regulators and capacitor banks
7.	Relay Protection	Analysis of operation, sensitivity and coordination of protection relays and other protection devices – fuses and re-closers.
8.	Operation Losses	Calculation of energy losses in the network based on ADMS-recorded data in history. Requires <i>Historian</i> license.
9.	Energy Losses	Predicts losses in the network based only on the load and network model.

10.	Breaker-Fuse Capacity	Checks operational capacity of circuit breakers and fuses.
11.	Contingency Analysis	Assesses whether the network could 'survive' and operate within technical limits in case of outages.
12.	Harmonic Analysis	Calculation of various parameters that define the level of higher harmonics (current and voltages).
13.	Network Reconfiguration	Determines optimal locations of tie switches in the network, based on several criteria.
14.	Fault Calculation	Calculation of network state with short circuits.
15.	Reliability Analysis	Calculates reliability indices based on ADMS-recorded history of outages. Lighter variant of OMS Reliability Analysis.
16.	Dynamic Equipment Rating	Calculation of thermal ratings of transformers, lines and cables based on loading and ambient temperature.
17.	Capacitor Placement	Calculates optimal locations of capacitors for reduction of losses and reactive compensation.
18.	Network Reinforcement	Determines candidate locations for conductor reinforcement in order to reduce voltage drops and minimize overloads.
19.	Voltage Regulator Placement	Determines optimal locations for placement of additional voltage regulators in order to reduce the voltage drop.
20.	Network Automation	Determines switch locations which are optimal candidates for introduction of remote control.
21.	Customer Connection	Analysis of impact of new LV or MV customer connection on network loading and short circuits.
22.	Short-Term Forecast	Assessment of network state in equal time intervals (15, 30 or 60 minutes) for up to 7 days ahead.
23.	Long-Term Forecast	Provides load forecast in equal time intervals (one year), for a larger area in period of one to several years.
24.	LV Load Flow	Functions description correspond to matching DMS functions, applicable on Low Voltage network.
25.	LV Performance Indices	Performance Indices (is used for detection of violations, alarm states, reports of the overall performances of the network state (power injection, losses, consumption, voltage situation and deviations, overloads, etc.).
26.	LV Fault Calculation	Calculation of network state with short circuits.
27.	LV Relay Protection	Analysis of operation, sensitivity and coordination of protection relays and other protection devices – fuses and re-closers.
28.	LV Energy Losses	Functions description correspond to matching DMS functions, applicable on Low Voltage network.

Table 4.4 - Network operation applications, which will be delivered free of charge for the period of the contract:

4.1.4. Network operation applications

No.	License	Description
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1.	OMS module (Optional)	Package for managing outages and incidents. Includes the traditional outage management system features: <ul style="list-style-type: none"> • Incident management, • Trouble call management, • Customer callback management, • Tripped device prediction, Outage and incident-related reports and statistics.
2.	OMS Reliability Analysis	Calculation of reliability indices on the basis of collected historic information about outages.
3.	FLISR - Fault Location	Calculates probable locations of a fault by analyzing the fault pattern and available real-time information.
4.	FLISR - Element Isolation	Determines switching operations needed for isolating and tagging selected element in case of fault or maintenance works.
5.	FLISR - Supply Restoration	Determines an optimal plan of switching actions for restoring supply on a de-energized part of network.
6.	FLISR - Return to Normal State	Determines an optimal plan for returning a part of the network to its normal state. Not a mandatory part of Integrated FLISR.
7.	Load Shedding	Plans and executes fixed or rotational load shedding under emergency conditions, as well as restoring load after restoring system conditions.
8.	Large Area Restoration	Determines the plan for restoration supply of large parts of the distribution network or (sub)transmission network.
9.	Basic Switching Management (SOM) (Optional)	Creation, simulation and execution of switching plans for planned and unplanned switching in network from the control room. (not applicable on the Field client).
10.	Advanced Switching Management (WOM) (Optional)	Supports wider business process which also involves corporate users, supporting management of work requests and safety documents.
11.	Switching and Validations (Optional)	Switching and Validations allows dispatchers to have an insight into the possible consequences of any switching instruction at any time. This framework consists of wide set of tools used for creation, display, modification, maintenance, validation and execution.

4.1.5. History

Table 4.5 - History

Suite of features for recording, retrieving and reporting values and events from ADMS

No.	License	Description
1.	Historical Trending	Provides retrieval, trending and basic reporting of previously recorded time-series values.
2.	Snapshot	Load the previous network state in a simulation context.
3.	Playback	Play a sequence of previously recorded events in a simulation context.

4.1.6. OASyS SCADA Licenses

Table 4.6 - OASyS SCADA Licenses

OASyS Licenses included in the delivery in this phase are detailed in the following Table:

License Name	Quantity
OASyS Real Time Services - Testing - Hot	1
OASyS Historical Services - Testing - Hot	1
OASyS Real Time Server Infrastructure	2
OASyS Real Time Client Infrastructure	5

4.1.7. Microsoft SQL licenses

MS SQL licenses necessary for proper functioning of ADMS POC system are given in the table below.

Table 4.7 - Microsoft licenses

These licenses are not in the scope of delivery of SEDMS. They will be purchased by EVN Group.

Server licenses	
MS SQL Standard 2016	2 licenses (4 cores)

4.2. SERVICES

List of services which will be delivered as part of the first phase of project are presented below:

- Project Management - Project Management - SE DMS shall nominate a person who will be responsible for overall management during PoC Pilot Project, EVN Bulgaria project.
- Project Design (Statement of Work - Design of the PoC Pilot project – period during which SE DMS and client will agree in details the configuration of the Test System and implementation plan.
- Pilot Model Creation as
 - Conversion of the Pilot Network Model according to assumption presented in Chapter 3.3.
 - Symbology,
 - Data fine tuning.
- Pilot System deployment on sites (at EVN Bulgaria premises and hardware) - Installation and testing of the PoC Pilot system on sites.
- Training (Advance DMS training) - On-site trainings for the Customer's personnel
- Remote Support during PoC phase – During the period of two months, SE DMS will provided remote support to EVN Bulgaria Personnel.
- Onsite support – SE DMS will provide two weeks of onsite support during the evaluation period.

The Contractor shall make available channels for communication, minimum two (Bugzilla and Skype for Business), through which he will be responsible to provide assistance and shall answer questions related to ADMS on the part of the Employer for the time 9 a.m. - 5 p.m. CET from Monday to Friday, without the weekends and holidays.

4.3. PROJECT DELIVERY PLAN

The high level project delivery plan outlines the tasks and activities of the PoC Phase; the duration; start and end dates for each individual task and the project as a whole. The PoC Pilot Phase is planned to last for 6 months. But it can be extended and be part of future negotiation.

SE DMS has estimated necessary efforts for the PoC Pilot system deployment, Design sessions, training and testing of future ADMS system deployment.

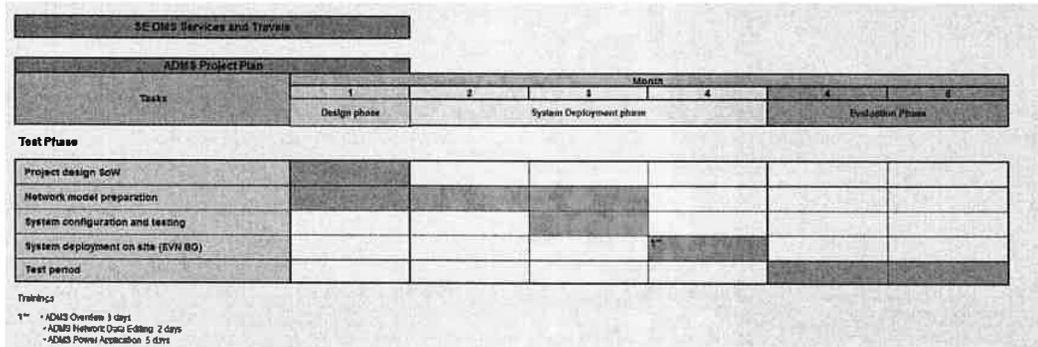


Figure 4-1 - High Level Project Plan

4.4. PROJECT DELIVERY MILESTONES

Proof of Concept Pilot project will be implemented according to the following project milestones given below:

Milestone number	Milestone	Duration (months)	Cumulative (months)
MS 1	Contract signature	0	0
MS 2	PoC Project design sessions SoW	1	1
MS 3	Pilot Network model building (model conversion, building displays, network model verification and testing)	2	2
MS 4	Pilot System Deployment	1	4
MS 5	Evaluation period	2	6

*Note- Duration period has the starting date which can be seen in the project delivery plan table, in the Chapter 4.3. The test period (evaluation phase) shall begin to run from the date of delivery of the system

for use, which is certified by an acceptance protocol. Total period of POC system validity will be six months starting from the date of signing the Contract. But it can be extended and be part of future negotiation.

The Contractor shall provide documentation with a description of the functionalities of the system.

The Contractor shall provide test catalogue to be checked the functionalities of the ADMS on the migrated data of the Employer.

Any extension of the services due to any cause not attributable to SE DMS will be charged separately, using in force per-diem tariffs.

SE DMS may request from Client an extension of the execution period, indicating the supporting reasons. Should this request be accepted by Client, the parties shall agree on modifying the initial execution program.

4.5. TRAINING

The Two-Week Training course will be oriented towards providing Client personnel with a thorough understanding of the ADMS capabilities, comprehensive instruction in the operation of all ADMS components. The trainings will provide the users with enough knowledge to test and operate the pilot system in the real-time and study mode.

Two-Week Training courses planned for the PoC Pilot Phase are:

1. ADMS Overview
2. ADMS Basic Training
3. ADMS Network Data Editing SE DMS will prepare the training material and send the documents to the Customer in timely manner. One session is intended for maximum 13 students. The exact training scope will be agreed during the Project design – Scope of Work on the beginning of the test phase.

The Contractor should conduct training on site with the Employer to a group of up to 13 employees. The training course must provide detailed information to the personnel of the Employer with the functionalities of ADMS, comprehensive instruction for working with all components of the system. The Contractor should prepare and submit a plan, materials and documentation for the training. The training should be on EVN Bulgaria data base model.

5. COMMERCIAL CONDITIONS

5.1. SALES PRICE

The following table presents a breakdown of the SE DMS price for the base offer for the Proof of Concept Pilot Project for EVN Bulgaria site:

Cost type	EVN BG
Software Licenses	
ADMS Licenses –limited to the period of 6 months	0.00 EUR
Third party licenses (OASyS)	13,782.91 EUR
SW TOTAL	13,782.91 EUR
Services	
Installation/Commissioning/Testing (incl. traveling costs)	34,534.33 EUR
Data migration and fine tuning– conversion from V2 to ADMS	10,802.50 EUR
Evaluation phase - support 2 weeks onsite (incl. traveling costs)	16,753.58 EUR
Services TOTAL	62,090.41 EUR
Training	
Training (incl. traveling costs)	14,585.08 EUR
Training TOTAL	14,585.08 EUR
TOTAL ADMS POC Pilot solution	90,458.39 EUR

5.2. PRICE FOR OPTIONAL FUNCTIONALITIES – NOT INCLUDED IN THE DELIVERY

Option 1 – Additional support

The following table presents a breakdown of the SE DMS price for the optional service - Additional support during the period of two months in case of extension of PoC Pilot evaluation period. During this period following support will be provided:

- Remote Support– During the period of two months, SE DMS will provided remote support to EVN Bulgaria Personnel.
- Onsite support – SE DMS will provide two weeks of onsite support (one engineer per week) per company –EVN Bulgaria. In total 4 weeks of the onsite support.

Services	EVN BG
Additional Support – two months	16,753.58 EUR
Services TOTAL	16,753.58 EUR

The prices include withhold tax for licenses but exclude withhold tax for services, and exclude any other present or future taxes (including without limitation sales and value added taxes under the applicable law). All other taxes and other costs under the applicable law shall be borne and paid by the Customer.

5.3. PAYMENT TERMS

Customer shall be obliged to make corresponding payments to SE DMS under issued invoices for partial deliveries, by bank transfer 30 days upon the date the invoice has been issued by SE DMS or, in case of advance payments, within 30 days from the milestones date given below in Chapter 5.4.

Customer shall be obliged to enter into a License Agreement with SE DMS for licenses ordered and paid by Customer. The License Agreement will contain, without limitation, the following covenants: Grant of License for Users, Ownership, Copyright, Restrictions, Confidentiality, Limited Warranty, Limitation of Liability and Termination.

5.4. PAYMENT MILESTONES

Customer shall be obliged to make payments to SE DMS according to the following milestones:

Payment of Licenses:

- 100% of the Contract price, as a final payment against delivery and installation of software, within 30 days.

Payment of services:

- 30% of the Contract price, within 30 days after acceptance of the Design Phase
- 50% of the Contract price, within 30 days after deployment of the POC system
- 20% of the Contract price, as a final payment against completion of the Evaluation period.

5.5. SOFTWARE

SE DMS is the owner and/or licensed user of the software employed and owner of the software developed there from and will grant to Client a non-exclusive and non-transferable right to use the software on the computers and systems included in the project for an unlimited period of time.

Any amendment, reproduction, adaptation, transformation, distribution, disclosure or public notification requires the prior express written consent of SE DMS.

SE DMS retains ownership of all intellectual property pre-existing & developed during the Offer and Contract performance.

5.6. CONFIDENTIALITY

All information supplied by SE DMS to Client with the proposal or during the project is the sole property of SE DMS for which reason some of this information may be marked as confidential. The content of this confidential information may be technological or financial and may cover any technology, procedures, know-how, technical data, patents, formulas, methods, etc., including also the innovations that may subsequently be developed on the basis of such technology.

Client shall use reasonable efforts (and, in any event, efforts that are no less than those used to protect its own Confidential Information) to protect from disclosure such information that is confidential of the other.

This undertaking shall be valid 5 years from the date of this Offer.

5.7. FORCE MAJEURE

SE DMS will not be liable for the failure to comply with the obligations corresponding to the same under the Contract if the same is caused by an element of force majeure.

To the effects of the present Contract and its execution, it is understood by Force Majeure those natural phenomenon, unavoidable accidents, fire, revolt or popular riot, military or terrorism acts, as well as any imposition, order or act of any control system (state, autonomic or local), governmental agency or administrative or judicial authority, or any other cause or similar circumstance of unforeseeable and inevitable nature, and that does not depend on the will of the parts, escaping to its control, that motivates the impossibility to execute anyone of the activities object of the present Contract. The part that was affected by some of the anticipated causes of greater force will notify the other as soon as it is possible and in any case in the maximum term of 5 days since it knew it, describing the cause and the time, that can anticipate, will last the same one, in the possible detailed form more.

The fulfillment of the obligations affected because of force majeure will be suspended during the period of duration of this cause, not being responsible the parts for the derived consequences of such events, reason why they will not respond for that reason.

After the completion of the cause of force majeure, the parts will decide the measures necessary to recover the lost time, adopting all those that are to their reach so that the execution of the totality of the obligations of the Contract is resumed in the best conditions and with the smaller delays to the cease of the cause. Nevertheless, if the cause extended by a period superior to 60 days from its beginning, anyone of the parts will be able to solve the present Contract.

5.8. VALIDITY PERIOD

Validity period of this offer is 60 days.

Dr Nenad Katic
Schneider Electric DMS NS
SGIT Sales Director