



**Local Source Code
Review (LSCR)
NLE2022 – Program**

Issue date: Oct 04, 2021

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The Code review program covers the following sections:

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
Setup & Dry Run	<ul style="list-style-type: none">• Source Code Review - Schedule Definition• Source Code Review - Environment Configuration• Design of Source Code Review presentation <p>On site: Setup and Dry Run, Day P1 to P5, TD: 15 Sep 2021 to 30 Sep 2021</p> <p>*P1 to P5: Preparation days *TD: Tentative dates</p>	Activities on site: 1 to 5 days	Preparation days P1 to P5 (Variable, according to availability and pandemic restrictions)

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
<p>Common Activities/Procedures and Activity Summary</p>	<ul style="list-style-type: none"> • Overview of the LSCR activity (COMELEC), O1, TD: 04 Oct 2021 • General overview about Electoral Solution, O1, TD: 05 Oct 2021 • Functional E2E Demo, O2, TD: 05 Oct 2021 • Guided Software Review Execution, TD: 06 Oct 2021 to 10 Dec 2021 • Compilation Process Overview, Variable • E2E (Full Demo), TD: 13 Dec 2021 to 15 Dec 2021 • Unguided Sessions, TD: 10 Jan 2022 to 16 Mar 2022 	<p>Timeline estimated for the review process: 8-10 weeks, following this order:</p> <ul style="list-style-type: none"> • AES Overview (1 day) • Server side: EMS (2 to 3 weeks) • Server side: CCS & Listener (3 to 4 weeks) • Server side: Transmission Router and Public Site (1 week) 	<p>*****Dates are tentative*****</p> <p>Defined days in third column are relative to the Source Code presentation of the component. Defined days on the second column are specific to the general activity. Kindly notice this plan might differ due to unforeseen circumstances, in which the sessions might be moved sooner and/or later accordingly.</p> <p>NOTE: During the scheduled sessions, there will be no compilation of code on demand nor on the participant workstations. This will be scheduled in agreement with the Commission, so the compilation and testing of the requested reviewed items will have a specified timeframe. Any code compilation will be executed on the SME workstation.</p>

Local Source Code Review (LSCR) NLE2022- Program

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	*O1 to O2 Overview days	<ul style="list-style-type: none"> • Client side: VCM (2 weeks) • Demonstrations (1 week) • Unguided sessions (12 weeks) 	
Server Software Review (EMS)	<p>Procedures to be reviewed (Week 1): ADay 1 to ADay 5 Tentative Days (TD):06 Oct 2021to08 Oct 2021</p> <ul style="list-style-type: none"> • EMS Overview: ADay 2, TD:06 Oct 2021 • Change main password & PKI: ADay 2, TD:06 Oct 2021 	<p>Schedule:</p> <ul style="list-style-type: none"> • 2.5 to 3 Weeks • From Monday to Friday • Number of Sessions: 12 (1 session per day - business days) • Sessions time: 	<ul style="list-style-type: none"> • EMS / Agent <ul style="list-style-type: none"> ○ Week 1 <ul style="list-style-type: none"> ▪ Day 1 <ul style="list-style-type: none"> • Hash code generation (M3.1 code-version 7.5.0) • Overview & Architecture • Change main password & PKI • Setup of the election system (update the election information) #1

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> • Setup of the election system: ADay 1/3, TD:06 Oct 2021 to 07 Oct 2021 • Import electoral data: ADay 3, TD:07 Oct 2021 • Import Security Password: ADay 4, TD: 07 Oct 2021 • Post-load process: ADay 4, TD: 07 Oct 2021 • Ballots (Design and Logical Ballot Generation): ADay 5, TD:08 Oct 2021 • Review Questions (Differed to the next Friday). TD:15 Oct 2021 	<ul style="list-style-type: none"> ○ Full day: 7 hours or ○ Half day: 4 hours 	<ul style="list-style-type: none"> ▪ Day 2 <ul style="list-style-type: none"> • Setup of the election system (update the election information) #2 • Import electoral data <ul style="list-style-type: none"> ○ MySQL database from COMELEC ○ Extra files ▪ Day 3 <ul style="list-style-type: none"> • Import Security Password (import external certificates) • Post-load process ▪ Day 4 <ul style="list-style-type: none"> • Ballot Designer • Logical Ballot Generation ▪ Day 5 <ul style="list-style-type: none"> • Pending items. • Review Questions

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<p>Procedures to be reviewed (Week 2): ADay 6 to ADay 10 TD: 11 Oct 2021 to 15 Oct 2021</p> <ul style="list-style-type: none"> • Ballots (Sample and Serialized): ADay 6/7 TD: 11 Oct 2021 to 12 Oct 2021 • Generation Files (EMS Agent - VCM): ADay 7/8, TD: 12 Oct 2021 to 13 Oct 2021 • Generation Files (CCS): ADay 8/9, TD: 13 Oct 2021 to 14 Oct 2021 • Production Kits VCM and CCS: ADay 10, TD: 15 Oct 2021 		<ul style="list-style-type: none"> ○ Week 2 <ul style="list-style-type: none"> ▪ Day 6 and 7 <ul style="list-style-type: none"> • Ballot Generation Process <ul style="list-style-type: none"> ○ Sample ○ Serialized ▪ Day 8 and 9 <ul style="list-style-type: none"> • Voting Device Files Generation (Agent) ▪ Day 10 <ul style="list-style-type: none"> • CCS Memory Generation • Production Kits VCM and CCS • Review Questions • Client Tools <ul style="list-style-type: none"> ○ Week 3 <ul style="list-style-type: none"> ▪ Day 11 <ul style="list-style-type: none"> • Host Agent • Review Questions

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> • Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a special session). Day 10, TD:15 Oct 2021 <p>Procedures to be reviewed</p> <p>(Week 3): ADay 11 to ADay 12 TD: 18 Oct 2021 to19 Oct 2021</p> <ul style="list-style-type: none"> • Host Agent: ADay 11, TD: 18 Oct 2021 • Entity Relationship models (databases): ADay 12, TD: 19 Oct 2021 • Review Questions (Short questions can be asked during the reviewing, 		<ul style="list-style-type: none"> ▪ Day 12 <ul style="list-style-type: none"> • Entity Relationship models (databases)

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<p>complex questions will be answered on Friday (in a special session). Day 15 TD: 22 Oct 2021</p>		
<p>Server Software Review (CCS/Listener)</p>	<p>Procedures to be reviewed (Week 3): ADay 13 to ADay 15 TD: 20 Oct 2021 to 22 Oct 2021</p> <ul style="list-style-type: none"> • OS Overview: ADay 13, TD: 20 Oct 2021 • Install CCS: ADay 13, TD: 20 Oct 2021 • Restore CCS (HOTP and Restore Process): ADay 14, TD: 21 Oct 2021 • Installer (Overview): ADay 15, TD: 22 Oct 2021 	<p>Schedule:</p> <ul style="list-style-type: none"> • 3 Weeks • From Monday to Friday • Number of Sessions: 15 (1 session per day - business days) • Sessions time: <ul style="list-style-type: none"> ○ Full day: 7 hours or 	<ul style="list-style-type: none"> • OS/Installer <ul style="list-style-type: none"> ○ Week 1 <ul style="list-style-type: none"> ▪ Day 1 <ul style="list-style-type: none"> • Overview & Architecture • Install CCS <ul style="list-style-type: none"> ○ Environment Configuration ○ Installation Process ▪ Day 2 <ul style="list-style-type: none"> • Restore CCS <ul style="list-style-type: none"> ○ HOTP ○ Restore Process ▪ Day 3

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> • Installer (Install and configure database): ADay 15, TD: 22 Oct 2021 • Review Questions (Short questions can be asked during the activity, complex questions will be answered on Friday (in a special session). ADay 15, TD:22 Oct 2021 <p>Procedures to be reviewed (Week 4): ADay 16 to ADay 20 TD: 25 Oct 2021to 29 Oct 2021</p> <ul style="list-style-type: none"> • Overview CCS: ADay 16, TD:25 Oct 2021 • Master Switch: ADay 16, TD:25 Oct 2021 	<ul style="list-style-type: none"> ○ Half day: 4 hours 	<ul style="list-style-type: none"> • Overview & Architecture • Install and configure database (servers) • CCS <ul style="list-style-type: none"> ○ Week 2 <ul style="list-style-type: none"> ▪ Day 4 <ul style="list-style-type: none"> • Overview • Master Switch • Token validations ▪ Day 5 <ul style="list-style-type: none"> • Monitoring <ul style="list-style-type: none"> ○ Transmission ○ Results • Review Questions ▪ Day 6 <ul style="list-style-type: none"> • Settings Threshold <ul style="list-style-type: none"> ○ Rules ○ HOTP

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> • Token Validation: ADay 16, TD:25 Oct 2021 • Monitoring (Transmission & Results): ADay 17, TD:26 Oct 2021 • Settings threshold (Rules and HOTP): ADay 18, TD:27 Oct 2021 • Rezero: ADay 18, TD:27 Oct 2021 • Canvassing Module: ADays 19, 20, TD:28 Oct 2021 to 29 Oct 2021 • Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a 		<ul style="list-style-type: none"> • Rezero ▪ Day 7 <ul style="list-style-type: none"> • Canvassing Module #1 <ul style="list-style-type: none"> ○ Partial ○ COC ○ Post Election ▪ Day 8 <ul style="list-style-type: none"> • Canvassing Module #2 <ul style="list-style-type: none"> ○ SOV ○ Adjudication & Tie resolution ○ Canvassing report ○ Week 3 <ul style="list-style-type: none"> ▪ Day 9 <ul style="list-style-type: none"> • Under Investigation <ul style="list-style-type: none"> ○ Why? ○ Types ○ Rules

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<p>special session). ADay 20, TD:29 Oct 2021 (If applied)</p> <p>Procedures to be reviewed (Week 5): ADay 21 to ADay 25 TD: 01 Nov 2021to 05 Nov 2021</p> <ul style="list-style-type: none"> • Under Investigation: ADay 21, TD:01 Nov 2021 • Retransmission (Queue): ADay 22, TD:02 Nov 2021 • Exports (Scripts): ADay 22, TD:02 Nov 2021 • File Transfer: ADay 23, TD:03 Nov 2021 • Listener (Overview): ADay 24, TD:04 Nov 2021 		<ul style="list-style-type: none"> ○ Resolution ○ Historical <ul style="list-style-type: none"> ▪ Day 10 <ul style="list-style-type: none"> • Retransmission • Queue • Exports • Review Questions • Scripts ▪ Day 11 <ul style="list-style-type: none"> • File transfer • Listener <ul style="list-style-type: none"> ○ ▪ Day 12 <ul style="list-style-type: none"> • Overview & Architecture • Transmission <ul style="list-style-type: none"> ○ Reception Package description. ○ Decode.

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> • Transmission (Reception package and decode): ADay 24, TD:04 Nov 2021 • Security (Sign validation & cipher): ADay 25, TD:05 Nov 2021 • Save Result Package: ADays 25 and 26, TD: 05 Nov 2021 to 08 Nov 2021 • Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a special session). ADay 25, TD:05 Nov 2021 (If applied) 		<ul style="list-style-type: none"> ▪ Day 13 <ul style="list-style-type: none"> • Security <ul style="list-style-type: none"> ○ Sign validation & Cipher • Save Result Packages #1 ○ Week 4 <ul style="list-style-type: none"> ▪ Day 14 <ul style="list-style-type: none"> • Save Result Packages #2 • VVPAT Reception5 ▪ Day 15 <ul style="list-style-type: none"> • Review Questions • Client Tools ▪ Day 16 <ul style="list-style-type: none"> • Validator+3K • Review Questions

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<p>Procedures to be reviewed</p> <p>(Week 6): ADay 26 to ADay 28 TD: 08 Nov 2021to 10 Nov 2021</p> <ul style="list-style-type: none"> • Save Result Package: ADays 25 and 26, TD: 05 Nov 2021 to 08 Nov 2021 • VVPAT reception: ADay 26, TD: 08 Nov 2021 • Validator+3K: ADay 27, TD:10 Nov 2021 • Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a special session). ADay 30, TD:12 Nov 2021 (If applied) 		

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
Server Software Review (Transmission Router)	<p>Procedures to be reviewed (Week 6): ADay 29 to ADay 30 TD: 11 Nov 2021to 12 Nov 2021</p> <ul style="list-style-type: none"> • Transmission Router (Overview), ADay 29, TD: 11 Nov 2021 • Reception package description, ADay 29, TD: 11 Nov 2021 • Security, ADay 30, TD: 12 Nov 2021 • Distribution packages, ADay 30, TD: 12 Nov 2021 • Retransmission, ADay 30, TD: 12 Nov 2021 • Review Questions (Short questions can be asked 	<p>Schedule:</p> <ul style="list-style-type: none"> • 0.5 Week • From Wednesday to Friday • Number of Sessions: 3 (1 session per day - business days) • Sessions time: <ul style="list-style-type: none"> ○ Full day: 7 hours or ○ Half day: 4 hours 	<ul style="list-style-type: none"> • Transmission Router <ul style="list-style-type: none"> ○ Week 1 <ul style="list-style-type: none"> ▪ Day 1 <ul style="list-style-type: none"> • Overview & Architecture • Reception Package description. ▪ Day 2 <ul style="list-style-type: none"> • Security • Distribution packages • Retransmission ▪ Day 3 <ul style="list-style-type: none"> • Review Questions

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<p>during the reviewing, complex questions will be answered on Friday (in a special session). Day 30, TD:12 Nov 2021 (If applied)</p>		
<p>Server Software Review (Public Site - ENR)</p>	<p>Procedures to be reviewed (Week 7): ADay 31 to ADay 35 TD: 15 Nov 2021to 18 Nov 2021</p> <ul style="list-style-type: none"> • Public Site (Overview), ADay 31, TD: 15 Nov 2021 • Generation, ADay 31, TD: 15 Nov 2021 • Publication, ADay 32, TD: 16 Nov 2021 • Review Questions (Short questions can be asked 	<p>Schedule:</p> <ul style="list-style-type: none"> • 0.5 Week • From Monday to Wednesday • Number of Sessions: 3 (1 session per day - business days) • Sessions time: 	<ul style="list-style-type: none"> • Public Site / ENR <ul style="list-style-type: none"> ○ Week 1 <ul style="list-style-type: none"> ▪ Day 5 <ul style="list-style-type: none"> • Overview & Architecture. • Generation. ○ Week 6 <ul style="list-style-type: none"> ▪ Day 1 <ul style="list-style-type: none"> • Publication. ▪ Day 2 <ul style="list-style-type: none"> • Review Questions.

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<p>during the reviewing, complex questions will be answered on Fridayt (in a special session). ADay 35, TD:19 Nov 2021 (If applied)</p>	<ul style="list-style-type: none"> ○ Full day: 7 hours or ○ Half day: 4 hours 	
<p>Voting Machine Software Review (VCM)</p>	<p>Procedures to be reviewed (Week 8): ADay 36 to ADay 40 TD: 22 Nov 2021to 26 Nov 2021</p> <ul style="list-style-type: none"> • Overview: ADay 36, TD:22 Nov 2021 • Processes: ADay 36 to ADay 40, TD:22 Nov 2021 to 26 Nov 2021 <ul style="list-style-type: none"> ○ Machine states workflow ○ Production ○ Data redundancy 	<p>Schedule:</p> <ul style="list-style-type: none"> • 3 Weeks • From Monday to Friday • Number of Sessions: 15 (1 session per day - business days) • Sessions time: <ul style="list-style-type: none"> ○ Full day: 7 hours or 	<ul style="list-style-type: none"> • Front End <ul style="list-style-type: none"> ○ Week 1 <ul style="list-style-type: none"> ▪ Day 1-5 <ul style="list-style-type: none"> • Overview • Machine states workflow • Production • Data redundancy • EB member registration • Open polls ▪ Day 5 <ul style="list-style-type: none"> • Pending items. • Review Questions

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> ○ EB member registration ○ Open polls ● Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a special session). ADay 40, TD:26 Nov 2021 <p>Procedures to be reviewed (Week 9): ADay 41 to ADay 45 TD:29 Nov 2021 to 03 Dec 2021</p> <ul style="list-style-type: none"> ● Processes: ADay 41 to ADay 45, TD:29 Nov 2021 to 03 Dec 2021 <ul style="list-style-type: none"> ○ Voting 	<ul style="list-style-type: none"> ○ Half day: 4 hours 	<ul style="list-style-type: none"> ○ Week 2 <ul style="list-style-type: none"> ▪ Day 6-10 <ul style="list-style-type: none"> ● Voting ● Votes ● Close polls ● Result package signing ● Transmission ● Rezero (FTP, Pre-LAT, OTP) ● Memory replacement ▪ Day 10 <ul style="list-style-type: none"> ● Pending items. ● Review Questions ○ Week 3 <ul style="list-style-type: none"> ▪ Day 11-15 <ul style="list-style-type: none"> ● Encryption keys generation

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> ○ Votes ○ Close polls ○ Result package signing ○ Transmission ○ Rezero (FTP, Pre-LAT, OTP) ○ Memory replacement ○ Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a 		<ul style="list-style-type: none"> • Assemblies and executables protection • SAES extractor • Ballot Verifier • HAT ▪ Day 15 <ul style="list-style-type: none"> • Pending items. • Review Questions

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<p>special session). ADay 45, TD:03 Dec 2021</p> <p>Procedures to be reviewed (Week 3): Day 46 to Day 50 TD: 06 Dec 2021to 10 Dec 2021</p> <ul style="list-style-type: none"> • Security: ADay 46 to ADay 50, TD: 06 Dec 2021 to 10 Dec 2021 <ul style="list-style-type: none"> ○ Encryption keys generation ○ Assemblies and executables protection ○ SAES extractor ○ Ballot Verifier ○ HAT 		

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a special session). ADay 50, TD: 10 Dec 2021 		
Source Code Compilation	<p>Procedures to be reviewed: Variable, ADays 34 to ADay 35 and ADay 49 to ADay 50 TD: Up to 10 Dec 2021</p> <ul style="list-style-type: none"> Candidate Code - Modifications Review: <ul style="list-style-type: none"> Back End: ADays 34 to 35, TD: Up to 19 Nov 2021 	<p>Schedule:</p> <ul style="list-style-type: none"> 1/2 Week From Monday to Friday Number of Sessions: N (1 session per day - business days) Sessions time: 	<p>Demo of the Trusted Build process for EMS, CCS, VCM including:</p> <ul style="list-style-type: none"> Source code verification (Final version) Overview of compilation procedure (Trusted Build) Generate EMS version using reviewed source code files. Generate CCS version using reviewed source code files. Generate Docker images for the solution. Generate CCS OS image. Hash validator.

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	<ul style="list-style-type: none"> ○ Front End: ADay 49 to 50, TD: Up to 10 Dec 2021 	<ul style="list-style-type: none"> ○ Full day: 7 hours or ○ Half day: 4 hours 	<ul style="list-style-type: none"> ● VCM Artifacts.
Demonstrations (Full-E2E)	<p>Procedures to be reviewed (Week 1): ADay 51 to ADay 53</p> <p>Suggested TD: 13 Dec 2021 to 15 Dec 2021</p> <ul style="list-style-type: none"> ● EMS: EMS Setup: ADay 51, TD: 13 Dec 2021 ● EMS: Data generation VCM & CCS: Day 51, TD: 13 Dec 2021 ● CCS: CCS Setup: ADay 52, TD: 14 Dec 2021 ● VCM: VCM Setup: ADay 52, TD: 14 Dec 2021 	<p>Schedule:</p> <ul style="list-style-type: none"> ● 1/2 Week ● From Monday to Friday ● Number of Sessions: 3 (1 session per day - business days) ● Sessions time: <ul style="list-style-type: none"> ○ Full day: 7 hours or 	<p>To be conducted by COMELEC personnel</p>

Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
	<ul style="list-style-type: none"> • VCM: Voting: ADays 52, 53, TD: 14 Dec 2021 to 15 Dec 2021 • VCM/CCS: Transmission & Reception / CCS Transmission staggered: ADay 53, TD: 15 Dec 2021 • CCS: Canvassing process: ADay 53, TD: 15 Dec 2021 • Review Questions (Short questions can be asked during the reviewing, complex questions will be answered on Friday (in a special session). Day 53, TD: 15 Dec 2021 	<ul style="list-style-type: none"> ○ Half day: 4 hours 	

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Software Review (with COMELEC / Political parties)	Description	Estimated time	Observations
<p>Unguided Sessions</p>	<p>Procedures to be reviewed: Day 54 to Day N TD: 10 Jan 2022 to 16 Mar 2022</p> <ul style="list-style-type: none"> • Unguided Review 2021: Day 53 to N, TD:10 Jan 2022 to 16 Mar 2022 	<p>Schedule:</p> <ul style="list-style-type: none"> • Weekly • From Monday to Friday • Number of Sessions: 5 (1 session per day - business days) • Sessions time: <ul style="list-style-type: none"> ○ Full day: 7 hours or ○ Half day: 4 hours 	<p>Break days to be defined by COMELEC</p>

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