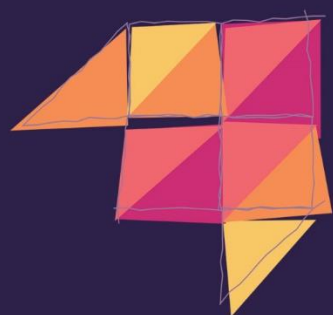


LOTA Scan

A tool for Supreme Audit Institutions

Version 2022 - Pilot



LOTA
LEVERAGING ON
TECHNOLOGICAL ADVANCEMENT



Table of Contents

Acknowledgements.....	4
Abbreviations.....	5
Glossary of common terms.....	6
Chapter 1 – Introduction to LOTA Scan	7
Overview	7
Purpose of LOTA Scan	7
What is the LOTA Scan Tool?	9
Users of the LOTA Scan Tool	11
Mainstreaming gender and inclusiveness considerations	11
Chapter 2 – Prerequisites for the LOTA Scan.....	13
Tailoring to national contexts	13
SAI leadership commitment.....	13
Availability of adequate resources.....	13
Stakeholder support	13
Checklists for ensuring quality throughout LOTA Scan.....	14
Chapter 3 – LOTA Scan Workflow	15
Phase 1 - Preliminary information and hypotheses.....	18
Phase 2 – Examine the Ecosystem	20
Phase 3 – Examine SAI’s internal environment	23
Technology focus	23
Limitations and restrictions	26
Organization and processes.....	28
Staff and resources	31
Partnerships	34
Phase 4 - Develop LOTA Scan Canvas / Report	37
Appendices.....	39
Appendix 1 – LOTA Scan Canvas Template.....	39
Appendix 2 – LOTA Scan Question Bank.....	39
Appendix 3 – Overview of Available Technologies	40
Appendix 4 –Additional links	43

Tables and Figures

FIGURE 1. THE LOTA STRATEGY PROCESS AND OUTCOMES.....	7
FIGURE 2. THE SCOPE OF THE LOTA SCAN PROCESS.	9
TABLE 1. SUGGESTED ROLES AND PROFILES FOR THE SAI'S LOTA SCAN TEAM.....	11
TABLE 2. CHECKLIST FOR ENSURING QUALITY THROUGHOUT LOTA SCAN.....	14
FIGURE 3. THE LOTA SCAN WORKFLOW.	15
TABLE 3. LOTA SCAN APPLICATION.	15

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Abbreviations

AI	Artificial Intelligence
API	Application programming interface
CA	Compliance Audit
CAAT	Computer-Assisted Audit Techniques
ERP	Enterprise Resource Planning
FA	Financial Audit
GAO	US Government Accountability Office
IDB	Inter-American Development Bank
IDI	INTOSAI Development Initiative
INTOSAI	International Organization of Supreme Audit Institutions
IT, ICT	Information Technology, Information and Communication Technology
LOTA	Leveraging on Technological Advancement
ML	Machine Learning
PA	Performance Audit
RPA	Robotic Process Automation
SAI	Supreme Audit Institution
SAM	Software Asset Management
SAP	Strategic audit plan
WB	World Bank

Glossary of common terms

Ecosystem, External environment	The environment in which SAI is operating, e.g., government organizations, state owned enterprises, audited entities
Internal environment	The internal audit environment of SAI that among others consists of people, processes, technologies
LOTA Scan or LOTA Scan Tool	The tool to assess SAI's external and internal audit environments to identify the need for technology audits and use of technology in audits, as well as required audit staff and resource capacity gaps
LOTA Pioneers	IDI's initiative that provides a platform for integrated education, reflection, and support during the execution of the assignment. The twin track is offered within the platform – LOTA Scan and LOTA Audits
LOTA Strategy	The tool to develop SAI's strategy for use of technology in audits and auditing use of technology by government as per the technology needs and capacity gaps identified in during LOTA Scan
LOTA Strategic Audit Plan	A subset of a broader Strategic Audit Plan related to technology subject matter and audit methodologies to be used in audit of technology based on LOTA scan and strategy of the SAI
SAI Leadership	The top SAI management that includes key decision makers, including Auditor General
SAI Team, LOTA Scan Team, or Team	The SAI team nominated and allocated to perform the LOTA Scan assessment
Strategic Audit Plan	A roadmap of an SAI's strategy of 'how' (methodology) and 'what' to audit (topics/themes) in the long and medium term (3-5 years) to achieve the SAI audit outputs and outcomes. It is based on the SAI's overall strategic plan and aims to fulfil SAI's audit mandate. A Strategic Audit Plan (SAP) balances available SAI resources while being responsive to stakeholder expectations, and significant current and emerging matters of public interest. It strategizes to address risks to audit quality and areas of good governance
Technology stack	The combination of technologies an organization uses to build and run an application or project. Sometimes called a "solutions stack," a technology stack typically consists of programming languages, frameworks, a database, front-end tools, back-end tools, and applications connected via APIs.

Chapter 1 – Introduction to LOTA Scan

Overview

We live in a constantly changing world and Supreme Audit Institutions (SAIs) need to adapt to changes to stay relevant. Technological advancements have been changing the way we live, and this process will only be accelerated. Even radical digitalization sceptics have started to invest in technology. With technological advancements, organizations and people must deal with enormous volumes of data and process this data faster than ever before.

Governments around the globe are also investing in technology and introducing new systems. On the one side, investments in technology can help governments to optimize their functions, automate processes, and provide better services for their citizens. On the other, digital solutions may be vulnerable to external attacks, corruption and create new levels of complexity and exclusion. This demands that SAI's obtain new skills and knowledge to cope with these new audit subjects. Therefore, it is important for SAIs to understand the technological change around them, to assess the implications of this change for their audit work, to leverage on technological advancement in SAI audits, and to be able to audit technologies employed by governments.

In response to this rapidly changing environment and technology development, IDI has developed a LOTA Scan Tool to help SAIs in making better use of technology in fulfilling their audit mandates, by planning technology-specific audits, developing technology skills and introducing new technologies into the SAI audit practice.

Purpose of LOTA Scan

The LOTA Scan Tool is a first phase of a LOTA Strategy for Audit. LOTA Strategy for Audit is a process for SAIs to analyze the current and potential future external environment, analyze internal environment, and develop LOTA strategy based on the performed analyses. As a part of LOTA strategy process:

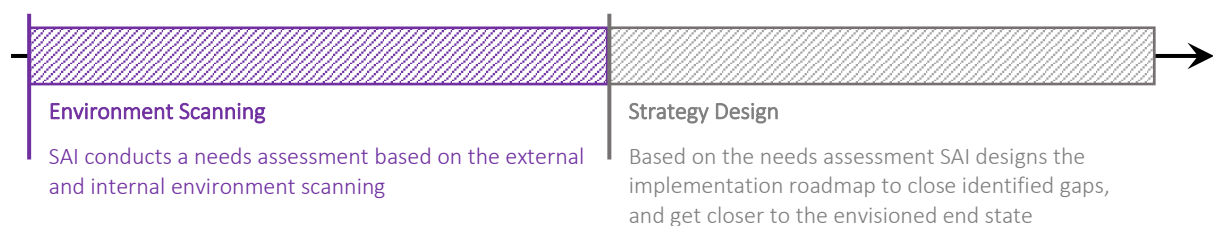


Figure 1. The LOTA Strategy process and outcomes.

- SAIs can use the **LOTA Scan Tool** to collect and analyze data about the technological advancements in their external environment e.g., level of digitalization in different areas of government as well as regulatory environment. The LOTA Scan Tool also helps SAIs in understanding their own mandates, processes, professional and organizational capacities for leveraging on technological advancement.
- Based on the results of the analyses conducted using LOTA Scan Tool, SAIs might use the LOTA Strategy Tool to **develop LOTA Strategy**. It is recommended that the LOTA Strategy is aligned with the SAI's overall strategy and the use of technology in the general governance functions of the SAI.

LOTA Scan constitutes a useful tool to identify the current situation of the external environment in terms of digitalization and the SAI needs in terms of technology capacities. This analysis makes it possible to identify areas for improvement and risks, as well as to recognize strengths and opportunities, without losing sight of the fact that the area studied, by its nature, presents accelerated progress.

One of the objectives of the LOTA Scan is to allow SAIs to obtain an objective and substantiated insights into the efficiency of their operations in the use and audit of technologies. The importance of measuring the need and current response with respect to technological change resides in that it provides Senior Management of SAI's with an assessment of the elements related to the fulfilment of objectives, productivity, specific equipment for the performance of tasks and even to the suitability of job profiles. The evaluation is possible by applying the LOTA Scan Tool.

The LOTA Scan aims to provide SAIs with a tool to analyse their internal and external environment in the use technology in audits and use of technology by governments. The LOTA Scan part related to external environment assessment helps to identify areas where technology audits are required and outlining technology-related audit projects to be included in LOTA Strategy. At the same time, external environment assessment helps to identify the technological needs of SAI for using technology in audits. In turn, the internal environment assessment helps to assess the current state at the SAI and how well SAI responds to the technological needs arising from the external environment.

The LOTA Scan Tool consists of

1. LOTA Scan Guide
2. LOTA Scan Canvas
3. LOTA Scan Question Bank

The LOTA Scan Guide provides basic guidance on running the LOTA Scan project at a SAI. This includes guidance on prerequisites for conducting a LOTA Scan and the LOTA Scan workflow including key phases and analysis.

The LOTA Scan Canvas provides a template for conducting and high-level reporting on the LOTA scan. The LOTA Scan question bank lists detailed questions to be considered during the analysis. A non-exhaustive list of modern technologies, and a list of additional links that contain useful information on technology trends in government and SAIs, assessment methods are also included in the LOTA scan.

What is the LOTA Scan Tool?

LOTA Scan is a tool that may be used by SAIs to assess the environment where they operate, identify needs for technology use and audit, assess current state and identify potential gaps between the needs identified and current state. The tool consists of two major segments – external and internal environment scanning that span across 3 audit types – financial, performance, and compliance. The results of the application of LOTA Scan reflect the analysis of both segments foreseen by the methodology.

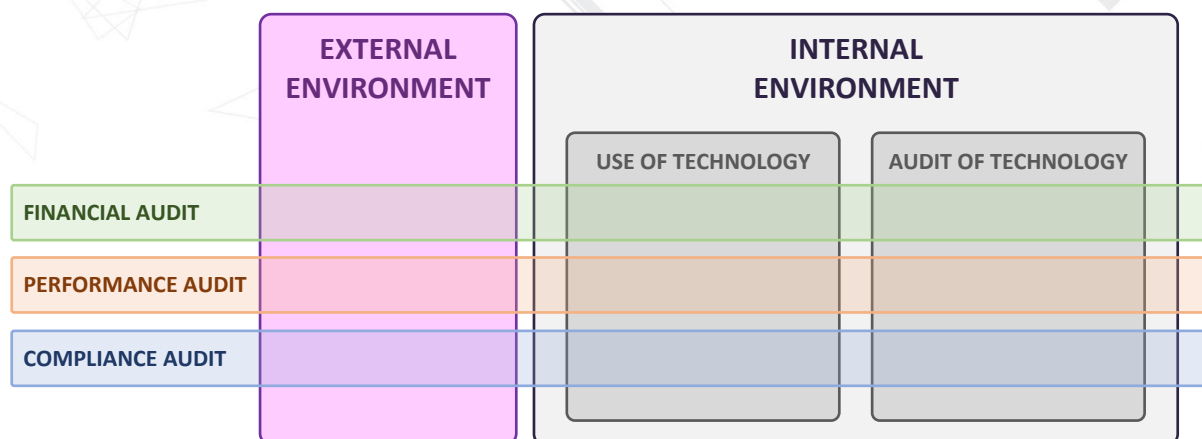


Figure 2. The scope of the LOTA Scan process.

External environment scanning entails an analysis of the need for audit of technology and obtaining a critical view of the governmental technological environment in which it operates, which can help it to point out opportunities and challenges for the use and auditing of new technologies. This work includes analysis of the process digitalization level and the availability of digital data in the government, as well as obtaining an overview of the government's digital strategy.

External environment scanning helps to answer the following questions:

- How digital are my audited entities?
- What technologies used in government should our SAI audit?
- What are the SAI benefits from using technology in audit?
- What new technology related project should be included in our Strategic Audit Plan?

Internal environment scanning entails an analysis of the current situation at the SAI. This work includes analysis of the current audit organization, audit, processes, audit tools, mandates and SAI capacities. Internal environment scanning consists of areas organized across five pillars. Each pillar has suggested questions that could be considered during the analysis. The suggested questions can be found in the appendix that contains a question bank.

Internal environment scanning helps to answer the questions including:

- Did we include technology related projects in our Strategic Audit Plan?
- How good are we at auditing technologies in the government? Why?
- Do we have required capacities to auditing technologies in the government?
- How good are we in using technology in the audits? Why?
- Do we have required capacities to use technologies in audits?
- Are we meeting the needs arising from the external environment scanning?
- Will we be able to keep up with the speed of digitalization and stay relevant?

The LOTA Scan Tool and its methodology is best described in terms of the following identified key principles:

- The LOTA Scan Tool is an approach for identifying potential technology related audit projects that could be included in the LOTA Strategic Audit Plan and assessing current SAI capacity in terms of technology skills, experience, tools for running this kind of audits.
- It is intended to help generate a shared understanding and consensus among key stakeholders about a) SAI's external operating environment, including government digital strategy and priorities, existing and future technical developments; b) SAI's internal environment, including audit needs, current setup, and potential limitations.
- Inclusive and harmonized processing, using the toolkit as a guideline, is equally critical as completing the final reporting requirements by the SAI Team. Due attention should be given to make the process inclusive and reflective, to generate ownership and consensus, and to raise awareness of the current situation and commitment to priority areas.
- The scan is not intended to rank the SAIs or to conduct any kind of benchmarking. The purpose of the scan is to identify SAI's current and future technology needs for auditing and diagnose the SAI's current setup. The tool consists of open-ended questions that are expected to be answered in a free-form text by the SAI's Scan Team to the extent that it fosters better understanding of the current situation and providing input for further strategy development.
- To produce a high-quality outcome of the scan, involvement of other relevant stakeholders from SAI that are external to the LOTA Scan Team for each phase would be critical. The different stakeholders might be required in each phase and the degree of participation of each stakeholder might vary between phases.
- This scan is not meant as one-off exercise but should be applied regularly. The outputs of the LOTA Scan can be used as an input to LOTA Strategy Development project and LOTA Strategic Audit Plan.
- The scan process is intended to raise awareness of existing and potential technology gaps in the audit process, help in leading the change, not just to collect information and evidence.
- It is critical to assess the evidence of the actual use of technology in audits and audits of technology rather than just rely on documentation.

Users of the LOTA Scan Tool

This tool is primarily for SAIs intending to identify the needs for potential technology areas that could be included in the SAI's Strategic Audit Plan and potentially areas where additional development is required. For these reasons, it is relevant, in the initial planning stage of the assessment, to define the profile of the stakeholders of the LOTA Scan assessment, develop the plan, define project milestones, reporting mechanisms, communicate it to Senior Management and convene the most relevant staff members. In general terms, it is recommended to convene people with sufficient knowledge in modern technologies and its applications in the audit work as well as people who participate in SAIs strategic planning, so that they can fully address the questions or criteria evaluated in the aforementioned pillars. In this way, it is expected that a multidisciplinary team of between two and five people will be integrated (the number will depend on each institutional context, the knowledge and/or experience of the staff convened, as well as the level of depth agreed upon for the evaluation). Please see the table below for a description of the suggested profiles and areas of responsibility.

Table 1. Suggested roles and profiles for the SAI's LOTA Scan Team.

Role	Description
SAI Leadership	Has overall responsibility for ensuring that LOTA Scan process bring the expected results that can be used for developing both - LOTA Strategic Audit Plan and LOTA Strategy
Team Supervisor	Responsible for planning the process, supervision and review of the work done, drafting, and finalizing report.
Strategy Professional	Team member with strategic thinking skills who is involved in the strategic planning of the SAI. Responsible for performing strategic analysis of trends, needs, current situation as well as contributing to the report.
Technology Professional	Team member with sound understanding of modern technologies and its applications, who brings technical know-how to the assessment. Responsible for technical assessments and contributing to the report
Audit Professional	Team member with understanding and hands on experience in audit work, preferably at the Audit Team Leader level who could support with insights on Audit process and assess how topics covered in LOTA Scan could assess current audit processes.

The table provides an illustrative team composition. The actual team size and composition depends on the SAI. In smaller SAIs, roles may be combined, e.g., the role as Team Supervisor can be assigned to the Strategy Professional. While in larger SAIs, roles may be split into more narrow capability areas and work can be split by workstreams.

Mainstreaming gender and inclusiveness considerations

Gender and inclusiveness mainstreaming refers to the integration of gender equality and inclusiveness perspective across the whole LOTA Scan process. It is a strategy that helps to make better decisions to achieve gender equality and inclusiveness including how they relate to decisions within the LOTA Scan process. A commitment to gender and inclusiveness

mainstreaming is one of the most effective ways that SAIs can support and promote gender equality and inclusiveness.

When planning for the team composition, scope, and implementation of the assessment, as well as during the execution phase, it is important to consider the following:

- How did we mainstream and take gender and inclusiveness into consideration?
- Is our team balanced in terms of gender equality and inclusiveness?
- Do we involve (e.g., feedback, interview) people from the different departments, with different roles and positions into the assessment?
- Have we adapted our approach to the local context considering the local specifics?
- Did we design our scope and execution plan having citizens and potential benefits for society in mind?
- Are relevant gender and inclusiveness issues covered in the final LOTA report?

Technology brings both benefits and risks, and that is why it is important to be aware and analyze the potential risks that technology brings to the gender equality and inclusiveness, how we include these considerations in our analysis and further into our LOTA Strategic Audit Plan.

Chapter 2 – Prerequisites for the LOTA Scan

Tailoring to national contexts

To ensure the relevance of the LOTA Scan assessment, the scope needs to take into account different national realities, capacities and levels of development. We recommend that each SAI sets its own scope, questions, and technology range considering its own realities and national circumstances. The LOTA Scan guide and question bank provide the overall guidelines and potential questions that may be considered during the assessment. However, each SAI may add questions according to a particular reality or drop questions or technology areas that are not relevant in the country context.

SAI leadership commitment

SAI Leadership plays a critical role in development of the technical aspects within the SAI. They set the tone of the technical capacity developments within the SAI. SAI Leadership needs to ensure that the SAI has systems and people in place to perform the LOTA Scan and further develop technological capacities as per the needs identified. It is recommended that the scope and plan for the scan is approved by the SAI Leadership. We also recommend that the SAI identify relevant short- and medium-term milestones and put in place mechanisms for regular reporting to the leadership on the progress, roadblocks, and findings in the scan.

Availability of adequate resources

Although the LOTA Scan Tool is configurable and adaptable to regional and country context, there are several pre-requisites that are required for the successful execution of the LOTA Scan:

- The SAI is able to allocate dedicated team members with the appropriate technology skills for the core LOTA Scan Team as per Team composition provided;
- The SAI Leadership provides full support to the project and team;
- Clear communication about the LOTA Scan and its objectives is disseminated;
- The SAI has done initial groundwork related to technology that might include initial investment in tech, people, software, or research, planning related to the use and audit of technology;
- SAI have sound technical resources that could be developed further;
- The templates, questions and the project plan are/will be adapted by SAI considering local needs and requirements;
- During the project execution, multisectoral representatives from SAI departments should be involved in the analysis.

Stakeholder support

To deliver value and benefits to all and embark on successful change processes, SAIs need to be outward-facing organizations, with a good understanding of their stakeholders. Communication and stakeholder management is key to the successful execution of the LOTA Scan and making an impactful change. Communication and stakeholder management is

therefore a key feature in the LOTA Scan process. Relevant stakeholders need to be identified and engaged throughout the process including planning, execution, and reporting.

To succeed with the LOTA Scan assessment and obtain actionable insights, it is important for SAIs to identify key internal and external stakeholders to work with throughout the LOTA Scan process. We recommend establishing strong communication lines within the team and with partnering organizations that might support SAI in performing LOTA Scan. To create ownership and leverage off each other, it is important to involve appropriate actors throughout the audit process rather than at the end of the analysis.

A stakeholder mapping or analysis prior to the engagement helps identify the influential participants and helps securing a balance of various stakeholders from different parts of organization.

Checklists for ensuring quality throughout LOTA Scan

To ensure quality throughout the process it is worth considering the following questions:

Table 2. Checklist for ensuring quality throughout LOTA Scan.

Nr.	Question
1.	Does the SAI's LOTA Scan Team have full SAI Leadership support?
2.	Is our SAI able to allocate dedicated resources for the LOTA Scan project?
3.	Does the LOTA Scan Team understand the objectives of the LOTA Scan project?
4.	Are we able to involve staff with sufficient knowledge of technology as part of LOTA Scan Team?
5.	Does the LOTA Scan Team include members of different gender, hierarchy level and background?
6.	Are we able to involve representatives from different SAI departments, genders, and backgrounds during the project execution?
7.	Is the LOTA Scan project well-communicated to all stakeholders?
8.	Are we able to ensure that the Team is unchanged throughout the process?
9.	Do we have a time bound plan for completing the process?
10.	Have we established a clear definition of scope, timing, and milestones for the scan?
11.	Did we ensure the appropriate additional stakeholders that could bring additional insights and support analysis for each section and that participation along the scan process vary by category?
12.	Have we determined the method and frequency of reporting by the LOTA Scan Team?
13.	Have we identified relevant stakeholders to be involved during the LOTA Scan execution?

Chapter 3 – LOTA Scan Workflow

This section outlines a step-by-step approach to the LOTA Scan. We recommend following all consecutive steps in order to identify needs, areas where technology audits are required, areas where use of technology in audits would bring value and analyze the current situation at the SAI. It is important that nominated SAI Team is defined in the very beginning of the process, have SAI Leadership support, and stays unchanged throughout the process.

The LOTA Scan workflow consists of four phases as illustrated in the diagram below. The phases are connected to specific project tasks under each phase. It is important to note that prior to starting Phase 1, some preparatory work related to the profiling and establishment of the LOTA Scan Team as well as initial project setup needs to be done by the SAI.

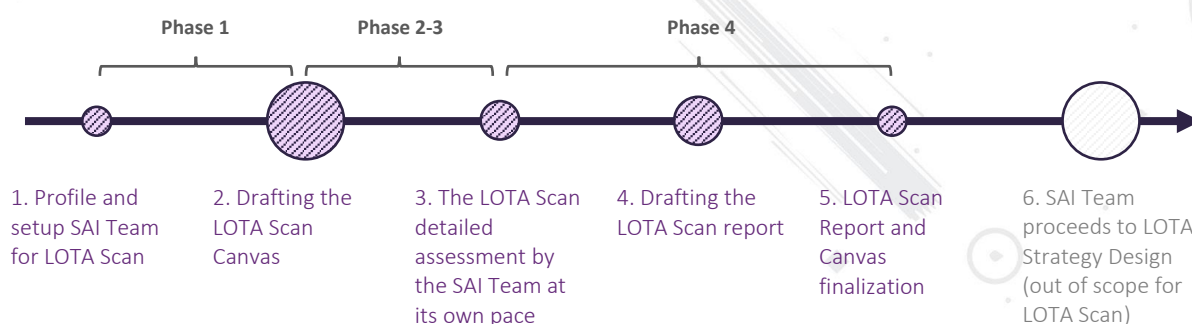


Figure 3. The LOTA Scan Workflow.

The table below illustrates the process of applying the LOTA Scan Tool. It contains a list of sequential steps, description of these steps, the outcome of each step, and the related LOTA Scan phases.

Table 3. LOTA Scan Application.

Phase	Process step	Description
Project Initiation and Setup	0. Process initiation	The LOTA Scan process initiated by SAI.
	1. Profile and establish SAI Team for LOTA Scan	SAI Leadership identifies the staff who will participate in the LOTA Scan assessment, based on the profile of participants suggested by the tool. The number, experience, responsibility, and other characteristics of team members must be determined by the SAI, but the choice determines to a large extent the results and use of the scan. Based on the information in this document, the LOTA Scan Team develops an execution plan including, milestones, reporting mechanisms, list of stakeholders, and execution timeline. <u>Outcome:</u> The SAI's LOTA Scan Team is established as per recommendations, has full leadership support. An execution plan for the LOTA Scan and initial list of relevant stakeholders are developed.

Phase	Process step	Description
Phase 1	2. Drafting the LOTA Scan Canvas	<p>The drafting of the LOTA Scan Canvas requires that the Team familiarizes themselves with technologies, trends, and potential developments in the operating environments. After collecting preliminary information, the team formulates initial hypotheses about the external and internal operating environments. The team brainstorms and sequentially populates the canvas cells, identifies areas where more detailed analysis is required, and plans the strategy for testing the formulated hypotheses.</p> <p><u>Outcome:</u> The LOTA Scan Canvas is populated with preliminary information and hypotheses based on the trends analyzed and SAI Team's knowledge.</p>
	3. LOTA Scan detailed assessment	<p>When the Canvas is populated, the team proceeds with the detailed analysis of the LOTA Scan pillars (see Phase 2 – Examine the Ecosystem and Phase 3 – Examine SAI's internal environment later in Chapter 3). The analysis needs to be conducted by the Team at its own pace; however, other stakeholders are involved in the process when and where required.</p> <p><u>Outcome:</u> The detailed information and evidence are collected to define the current situation in terms of the external and internal environments. In addition to general characteristics, the external environment analysis lists the areas where technology audits are required and outlines the audit projects that could be included in LOTA Strategic Audit Plan. The analysis of the internal environment provides an overview on the current situation at the SAI. The result of these analysis could be further used in the LOTA Strategy development and audit planning.</p>
Phase 4	4. Drafting the LOTA Scan report	<p>The report is written with an emphasis on the findings and results of the LOTA Scan. The report provides a clear overview on the technology needs of the SAI (relevant audit areas and potential technology audits – LOTA Strategic Audit Plan) in terms of use of technology in the audit and auditing technology as well as gaps between the gaps arising from external environment and the current situation at the SAI (ability to conduct required technology audits).</p> <p><u>Outcome:</u> The draft LOTA Scan report and canvas are delivered and include contents on the global technology trends, use cases how technology is used by governments and other SAIs, use cases how private audit companies use and/or audit technologies, analyses results of external (including LOTA Strategic Audit Plan) and internal environments specific to the SAI performing the scan. The draft is reviewed by SAI Leadership and feedback (e.g.,</p>

Phase	Process step	Description
		comments, additional questions, areas where more analysis required, any additional work) is provided to the team.
	5. LOTA Scan Report and Canvas finalization	<p>The SAI Team finalizes the LOTA Scan report and canvas based on the feedback and comments. At this stage, the team will also collect and document the lessons learnt. As this is a repeating exercise SAI is recommended to seek for continuous improvement and optimize the LOTA Scan process for own organizational needs.</p> <p>Moreover, IDI is also seeking to continuously improve the LOTA Scan framework and any feedback is highly appreciated at this stage.</p> <p><u>Outcome:</u> Finalized LOTA Scan report and canvas.</p>
Part of LOTA Strategy guide	6. SAI Team proceeds to LOTA Strategy Design	The outcome of the LOTA Scan will be further used in the LOTA Strategy. The LOTA Strategy steps are described in the LOTA Strategy guide (available in 2023).

The following sections of the LOTA Scan Tool sequentially covers the phases of the scan. In each table related to the assessment pillars the following questions are covered:

- What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?
- Who is involved in the process, what are the responsibilities and tasks for each member?
- What risks may arise, and how do we mitigate potential risks?
- How this activity can be done, including suggested research methods, potential information sources?
- What is the expected output of this phase?

The detailed questions that may be considered are available the LOTA Scan Question Bank. It is important to remember that LOTA Scan analysis is focused on the use of technology or effective technology audits. However, it may lead to discovery of potential weaknesses outside the scope of the LOTA Scan exercise.

Phase 1 - Preliminary information and hypotheses

Phase 1 - Preliminary information and hypotheses

What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?

In the preliminary information gathering and hypotheses development phase the team will obtain a high-level understanding of the current situation. This may be done as homework (e.g., desk study) before starting the LOTA Scan. It will help the Team to develop a basic understanding of the available modern technologies, get insights into use cases how governments are using technology, how SAIs and private audit companies are using and/or auditing technologies as well as outline the current situation at the SAI. The team will also prepare an execution plan including, milestones, reporting mechanisms, list of stakeholders, and execution timeline.

The typical preparatory work would include:

- Desk study to identify, understand and summarize the modern technologies that are available;
- Desk study to identify, understand and summarize the use of technology by governments, SAIs, and private sector companies;
- High-level analysis of government investments in IT and the most recent technology development;
- High-level analysis of the SAIs investments in IT and the most recent Tech development;
- Preparation of an execution plan including, milestones, reporting mechanisms, list of stakeholders, and execution timeline.

In the appendix you may find a list with links to other sources. For the detailed questions that could be answered, please refer to the Question Bank.

The LOTA Scan proposed analysis of the preliminary information is focused on the use of technology and effective technology audits. However, it may lead to discovery of other areas that are beyond the scope of LOTA Scan exercise.

Who is involved in the process, what are the responsibilities and tasks for each member?

The analysis is performed by the SAI's core LOTA Scan Team.

What risks may arise, and how do we mitigate potential risks?

There are several risks that may lead either to incomplete or biased results:

- The analysed use cases are coming from noncomparable organizations and geographies leading to biased views on the use and audit of technologies. The team could explore and analyse cases from the comparable organizations.
- Non exhaustive and too high-level research providing an understanding, knowledge and overview on technology use and audits use cases. The team could perform a more detailed analysis of use cases to understand which technology was used, how it was implemented and what problem it solved.
- Study of the underlying technologies is not detailed enough and as a result lack of understanding of technologies, tools and its applications in the audit. The team could analyse in more detail what is the underlying technology, what benefits it provides to audit

Phase 1 - Preliminary information and hypotheses

process, how it can be implemented, what are the requirements for implement if such technology.

How this activity can be done, including suggested research methods, potential information sources?

Potential research methods include:

- Desk study: Collection of publicly available information using various sources.
- Document collection: Review of documents gathered from audited entities and other sources.
- Independent third-party reports/articles: Reports about relevant areas from academia, international bodies and industry.

In order to answer potential questions in scope the Team may collect and refer to information sources including:

- Public sources that can be found on the Internet or in public libraries, including technology trends, audit profession development, technology use cases in government, SAI, and private organizations
- The list of sources provided in the appendix to this document (not exhaustive and could be extended by the SAI Team)

The lists above are not exhaustive and the SAI Team may select research methods and information sources that are a fit for purpose in their national context.

What is the expected output of this phase?

The expected output is to develop and document a basic understanding of the modern technologies available in the market, technology trends, current and potential future implementations of new technologies by the government, as well as a summary on how technologies are used or might be used by SAIs. The goal is to create hypotheses regarding the current and potential needs for use or audit of technology by the SAI.

Phase 2 – Examine the Ecosystem

Phase 2 – Examine the Ecosystem

What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?

The objective of this phase is to obtain a deep understanding of the external environment of the SAI, allowing the construction of a critical view of the governmental technological environment in which it operates, which can help the SAI point out the need for the use (where SAI would benefit from use of technologies in audits) and auditing of new technologies (what technologies used in government should be audited by our SAI). The level of SAI digitalization is often dependent on the government level of digitalization (more digitally advanced government require SAIs to be more advanced to keep up with developments in the government and stay relevant). Therefore, the diagnosis of this ecosystem, with regard to its readiness to provide inputs for the digital transformation of SAIs, essentially needs to analyse the digital maturity of its governments. The analysis of the external digital ecosystem is intended to help generate a holistic and comprehensive view of its central government's stages of development in digital Government.

The team will perform in-depth analysis of key factors including but not limited to:

- Organization, governance, leadership, and political development;
- Legal and regulatory framework;
- Development of clear business cases and procurement of digital technologies;
- Reinforced ICT project management capacities;
- Technology and data infrastructure and availability;
- Cyber security, privacy and resilience;
- Existing and planned government systems.

The typical analysis of external environment would include:

- Gathering information on the technical developments, investments and technology related government procurements (central government and government entities);
- Analysing the governmental technology landscape, i.e., technologies that are used, and extent to which these technologies are used;
- Identifying the needs for use and/or audit of technology (where SAI would benefit from use of technologies in audits and what technologies used in government should be audited by our SAI).

For the detailed questions please refer to the Question Bank that contains questions to consider when performing LOTA Scan. The Team will provide as many details when answering each question as possible to ensure that information is sufficient for the further strategic planning.

The LOTA Scan analysis of the external environment is focused on the use of technology and effective technology audits. However, it may lead to the discovery of potential weak areas that are out of the scope of LOTA Scan.

Who is involved in the process, what are the responsibilities and tasks for each member?

The analysis in this section is performed by the SAI's core LOTA Scan Team. However, in order to perform an exhaustive analysis of the external environment several SAI

Phase 2 – Examine the Ecosystem

professionals to be involved in the analysis process and either participate in the interviews, internal workshops or provide information or evidence that would support the analysis. Ideally, the scan needs to be conducted by the various technical units of the SAI, each questioning its most representative clientele, typically at the highest possible level of government. Additional professionals that could be involved in the process among others include:

- SAI Leadership: demonstrating support to the core Team during the process and introducing the initiative to the staff;
- Technology Manager(s): providing the tech team perspective, providing insights on the government technologies;
- Audit Manager(s): providing the audit team perspective, providing feedback on the technologies in the government that audit teams faced in the audit process.

The above-mentioned professionals provide an overview on the professionals who might be involved in the analysis process. However, not all above mentioned roles may be present at the current SAI organization. The Team is responsible for finding the professionals who would be the best fit the analysis questions in scope.

What risks may arise, and how do we mitigate potential risks?

There are several risks that may lead either to incomplete or biased results:

- The possible inaccuracy of the answers obtained, which would lead to a misdiagnosis of the situation. Team could follow up on the responses and obtained more detailed information;
- Lack of access to the required information that impacts the objectivity of the analysis. Team could explore way to obtain the access to information required.;
- Unstructured approach to the analysis and an unclear view of the required outcome leading to unclear needs and problems statement. Team could develop a detailed plan, stakeholder map and hypotheses to be explored in this analysis;

How this activity can be done, including suggested research methods, potential information sources?

The potential research methods that might be used include:

- Interviews: Discussion with government staff, by phone, internet or in person, to obtain their perspectives on a programme or activity.
- Document collection: Review of documents gathered from the audited entity and other sources.
- Direct observations and inspection: Physical observation of programmes, people, property and events related to the audit to collect qualitative information.
- Surveys: Information or data collection that is used to collect evidence from a population using a standard set of questions.
- Site visits: Travel to a geographic location to perform audit methods.
- File reviews and structured observations: Information or data collection instruments used to systematically record observations and information extracted from records.
- Small group methods: Collection of information from a group of people using tools like

Phase 2 – Examine the Ecosystem

focus groups (facilitated small group conversations) and panels of experts.

- Desk study: Collection of publicly available information using various sources.

In order to answer questions, the Team may collect and refer to the information sources including:

- Publicly available information on the Internet;
- Government ICT Strategy and Cyber Security documents;
- Tech- related legal and regulatory frameworks;
- Public information systems register that contains public information systems;
- Public procurement database that contains technology-related procurements;
- Previous audits on technology that contains assessment of the technologies used, architecture diagrams;
- Previous audits that may indicate the use of technology by government entities, e.g., financial audits may indicate the use of accounting software;
- Technology-related vacancies in government entities that indicate technology skills required.

The lists above are not exhaustive and SAI Team may select research methods and information sources that are a fit for purpose in their opinion and situation.

What is the expected output of this phase?

The expected output is to get and document a thorough understanding of the current and future technology development in the government and indicate the need for technology use and audits (where SAI would benefit from use of technologies in audits and what technologies used in government should be audited by our SAI). After completing this section, the SAI's LOTA Scan Team will have a clear view on the areas where auditors could leverage on technological advancements and where technologies could be audited.

Phase 3 – Examine SAI's internal environment

Phase 3a - Technology focus

Phase 3a - Technology focus

What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?

In the technology focus phase, the team will examine the current capability and focus on technology at the SAI. This analysis will help the team to clearly understand what the current interest, strategic direction, and appetite for technology are, where SAI sees value for use and audit of technology, and the current focus and use of technologies. The Team will perform in-depth analysis of the current technology use at their SAI, how technology is used and might be used in different types of audits and identify areas where the SAI sees value for use and audit of technology based on the needs arising from the assessment of the external environment.

The typical analysis of technology focus would include:

- General inventory and assessment of technology use cases in audit projects by the SAI;
- Analysis of different technology uses in the audit process at the SAI;
- Identification and analysis of internal tools made by SAI for the audit process;
- Analysis of technology use by audit types;
- Analysis of the areas where SAI sees value in the use and audit of technology based on the needs arising from the assessment of the external environment.

For the detailed questions that could be used refer to the Question Bank. The Team will provide as much details as possible when answering each question in order to ensure that information is sufficient for further strategic planning.

Who is involved in the process, what are the responsibilities and tasks for each member?

The analysis is performed by the SAI's core LOTA Scan Team. However, in order to perform an exhaustive analysis of the technology focus, several SAI professionals should be involved in the analysis and either participate in interviews and internal workshops or provide information that would support the analysis.

The additional SAI staff that could be involved in the process include:

- SAI Leadership: demonstrating support to the team during the process and introducing the initiative to the staff;
- Audit Methodology Specialist(s): outlining how technology is integrated into the audit methodology;
- Technology Manager(s): providing the tech team perspective, providing feedback on the current technology landscape;
- Audit Manager(s): providing the audit team perspective, providing feedback on the current use and audit of technology.

However, not all above mentioned roles may be present at the current SAI organization. The Team is responsible for finding the staff who would be the best fit for the analysis questions in scope.

What risks may arise, and how do we mitigate potential risks?

Phase 3a - Technology focus

There are several risks that may lead either to incomplete or biased results:

- No inventory of the tools developed and/or used at the SAI potentially leading to an incomplete overview on technology use. This can be mitigated by creating a list of all the technologies in the technology stack and the hardware in use before starting to answer the Scan questions.
- No inventory of the technology use cases at the SAI potentially leading to an incomplete overview on technology use. In this case, the team may interview the relevant persons in charge and get a better understanding before starting to answer the scan questions.
- Lack of understanding of the technological aspects to identify use cases and value for the technology use or audits. The Scan team may involve the relevant experts within SAIs to have the best understanding of technical questions.
- Lack of understanding of the technological aspects to identify the right technological solutions for audit challenges. The team may revert to Phase 1 and perform a more detailed analysis of available technologies.

How this activity can be done, including suggested research methods, potential information sources?

The potential research methods that might be used include:

- Interviews: Discussion with one or more people, by phone, internet or in person, to obtain their perspectives on a programme or activity.
- Document collection: Review of documents gathered from audited entities and other sources.
- Direct observations and inspection: Physical observation of programmes, people, property and events related to the audit to collect qualitative information.
- Surveys: Approach to information or data collection that is used to collect evidence from a population using a standard set of questions.
- Site visits: Involves travel to a geographic location to perform audit methods.
- File reviews and structured observations: Information or data collection instruments used to systematically record observations and information extracted from records.
- Small group methods: Collection of information from a group of people using tools like focus groups (facilitated small group conversations) and panels of experts.

In order to answer questions in scope the Team may collect and refer to information sources including:

- SAI strategy and operational plans;
- Documentation related to technology vision and strategy at SAI;
- Inventory of the tools developed and/or used;
- Inventory of the technology use cases at the SAI;
- Previous audit reports where technology was used or audited;
- Internal technology assessment reports;
- Internal guidelines and procedures on working with technology.

The lists above are not exhaustive and the SAI Team may select research/information methods that are fit for purpose in their opinion and situation.

What is the expected output of this phase?

Phase 3a - Technology focus

The expected outcome is to get and document a thorough understanding of the current interest and appetite for technology, where SAI's see value for use and audit of technology, the current focus and use of technologies.

Phase 3b - Limitations and restrictions

Phase 3b – Limitations and restrictions

What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?

In this phase we recommend that the team examine SAI limitations and restrictions i.e. mandate, challenges, and legislation related to the use and audit of technology by the SAI. This analysis will help the team to understand to what extent the current mandate and legislation allows the use and audit of technology and if any regulatory changes are required to enable the SAI to use and audit technologies. The team will perform in-depth analysis of the current mandate, legislation and challenges arising from those.

The analysis of limitations and restrictions can include:

- Analysis of the relevant country laws and regulations;
- Analysis of the relevant country specific and internal policies;
- Analysis of the relevant industry standards, including auditing standards.

For the questions that could be answered in this section please refer to the Question Bank.

Who is involved in the process, what are the responsibilities and tasks for each member?

The analysis is performed by the SAI's LOTA Scan Team. However, in order to perform an exhaustive analysis of the relevant laws, regulations, policies, and standards, additional SAI staff could be involved in the analysis and either participate in the interviews, internal workshops or provide information that would support the analysis.

The consulted SAI staff could include the following:

- SAI Leadership: demonstrating support to the core Team during the process and introducing the initiative to SAI staff;
- Legal Officer: assist LOTA Scan Team in the review and interpretation of the relevant laws and regulations as well as provide insights on the weaknesses identified in the law related to the authority of the SAI and steps taken to overcome those challenges.

However, not all the above-mentioned roles may be present in the SAI. The team is responsible for identifying the staff most suitable for the analysis questions.

What risks may arise, and how do we mitigate potential risks?

There is a risk that may lead either to incomplete or biased results:

- The analysis is not covering full regulatory landscape leading to risk of not identifying potential restrictions of technology use and audit. Team may review the list of involved stakeholders and inventory of relevant regulations.

How this activity can be done, including suggested research methods, potential information sources?

Phase 3b – Limitations and restrictions

Potential research methods that might be used include:

- Interviews: Discussion with one or more people, by phone, internet or in person, to obtain their perspectives on a programme or activity.
- Document collection: Review of documents gathered from audited entities and other sources.

In order to answer questions, the team may solicit and refer to the following information sources:

- Relevant country laws, regulations and standards;
- Relevant country specific and internal policies;
- Relevant industry standards, including auditing standards;

The lists above are not exhaustive and the SAI team may consider other research methods and information sources that are a fit for purpose.

What is the expected output of this phase?

The expected output is to obtain and document a thorough understanding of the current legal and regulatory restrictions, SAI mandate restrictions, and limitations related to data access, processing and storing.

Phase 3c - Organization and processes

Phase 3c - Organization and processes

In this phase the team maps how the SAI is structured and operates. This will help the team understand how their SAI functions by describing the organizational structure, hierarchy, roles and responsibilities, leadership and governance, communication, and internal processes. The team will perform in-depth analysis of its organization and audit processes to identify opportunities for areas where use of technology or audits of technology would bring value for audits conducted by SAI. Technological changes and innovations that occur in the external environment can lead to the fact that current audit processes at SAI become obsolete and place a SAI at a significant irrelevance risk. SAIs will perform an organization and audit process analysis prior to introducing any new technology into audit processes or starting audits of technologies to ensure that introduced changes bring value and maximize impact. The typical organization and process analysis would include:

- Analysis of the audit (and IT audit, if any) departments' organizational structure, hierarchies, roles, and responsibilities related to technology audits, use of technology in audits and interdepartmental coordination;
- Identification of the audit-related processes to be analysed;
- Collection of required information;
- Mapping out relevant organizational and audit processes;
- Analysis of the internal and audit processes in scope;
- Identification of potential needs for organization and process transformation.

For detailed questions that could be answered, please refer to the Question Bank. The LOTA Scan proposed analysis of the organization and processes is focused on the use of technology or effective technology audits. However, it may lead to the discovery of potential organizational weaknesses that are out of the scope for the LOTA Scan exercise.

Who is involved in the process, what are the responsibilities and tasks for each member?

The analysis is performed by the SAI's LOTA Scan Team. However, to perform an exhaustive analysis of the organization and processes several SAI staff could be involved in the analysis and either participate in the interviews, internal workshops or provide information or evidence that would support the analysis.

The additional professionals that could be involved in the process among others include:

- SAI Leadership: demonstrating support to the core Team during the process and introducing the initiative to the staff;
- HR Manager(s): providing insights on the organizational structure, structure of departments and teams;
- Audit Methodology Specialist(s): mapping key organizational and audit processes, providing insights on the tech integrations in the audit process, communication between teams, split of the roles and responsibilities between teams;
- Technology Manager(s): providing the tech team perspective, providing feedback on the current cooperation between teams, indicating current weak areas;

Phase 3c - Organization and processes

- Audit Manager(s): providing the audit team perspective, providing feedback on the current cooperation between teams, indicating current weak areas in the process.

The above-mentioned professionals provide an overview of the staff who might be involved in the analysis. However, this is indicative, and not all above mentioned roles may be available in the SAI. The Team is responsible for finding the professional who would be the best fit for the analysis questions in scope.

What risks may arise, and how do we mitigate potential risks?

There are several risks that may appear in this stage:

- SAI staff involved in the analysis do not represent the whole organization and some processes may be left out.
- The organization and process analysis are not regarded as an important issue (e.g., not recognized by SAI Leadership as a priority) and there is no real SAI ownership.
- Resistance and hesitation from SAI staff in provision of the information and/or evidence due to internal fear of changes, judgement, or criticism.
- Team unable to access all documents required for the analysis either due to resistance from information providers or due inexistence of such documents.
- Incomplete documentation and/or analysis due to fact that some facts and details are well known to the Team and seem obvious to be documented.
- Biased results of the analysis due to lack of the external view and independent judgement.

How this activity can be done, including suggested research methods, potential information sources?

Potential research methods that might be used include:

- Interviews: Discussion with one or more people, by phone, internet or in person, to obtain their perspectives on a programme or activity.
- Document collection: Review of documents gathered from the audited entity and other sources
- Direct observations and inspection: Physical observation of programmes, people, property and events related to the audit to collect qualitative information.
- Surveys: collect evidence from a population using a standard set of questions.
- Site visits: travel to a geographic location to perform analysis.
- File reviews and structured observations: Information or data collection instruments used to systematically record observations and information extracted from records.
- Small group methods: Collection of information from a group of people using tools like focus groups (facilitated small group conversations) and panels of experts.

To answer the questions, the team may collect and refer to the information sources including:

- Previous assessment and analyses (by internal or external teams)
- Organizational chart, role and responsibility description (e.g., RACI matrix)
- Strategy and Operational plan, SAI legislation
- Budget documentation
- Documented organizational and audit processes

Phase 3c - Organization and processes

- Sample of audit projects where technology was used

The lists above are not exhaustive and the SAI Team may select research methods and information sources that are fit for purpose in their opinion and situation

What is the expected output of this phase?

The expected output is to document a thorough understanding of the SAI, including the audit departments, leadership and governance, roles and responsibilities in audits, communication between different organization structures, and audit processes related to audit of technology and use of technology in audits. Moreover, it is important to analyse how the current organization and processes respond to the technology needs identified in "Phase 2 - External environment" and identify potential gaps.

Phase 3d - Staff and resources

Phase 3d - Staff and resources

What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?

Next, the Team will examine the SAIs audit staffing and resources related to the audit of technologies. This includes the SAIs infrastructure, hardware, and software as well as an in-depth analysis of the audit staffing, the technology skills that are in-house or lacking, technology related recruitment and training efforts done by SAI to ensure availability of technological capabilities and resources in the organization.

The analysis would include:

- Inventory and analysis of the current tech and non-tech staff and the skills inherent in the audit department for the audit of technology and use of technology in SAI audits;
- Analysis of the recruitment and training strategy of the SAI to ensure the expertise needed for technology audits and effective use of technology in audits;
- Inventory and analysis of the available technology resources, including software licenses, hardware and reliable infrastructure related to technology audits and use of technology in audits.
- Analysis of the current methods/ practices to overcome the shortage of audit resources related to technology audits and use of technology in audits.
- Identification of the potential needs in terms of staffing and resources related to technology audits and use of technology in audits.

For detailed questions refer to the Question Bank.

Who is involved in the process, what are the responsibilities and tasks for each member?

The is performed by the SAI's LOTA Scan Team. However, in order to perform an exhaustive analysis of the resources, several SAI professionals will be involved in the analysis process and either participate in the interviews, internal workshops or provide information or evidence that would support the analysis.

The additional professionals that could be involved in the process among others include:

- SAI Leadership: demonstrating support to the core Team during the process and introducing the initiative to the staff;
- HR Manager(s): providing insights on the staffing, performance and training processes, supporting collection on role descriptions, trainings, skills, and an inventory of the tech skills, trainings, skill levels;
- IT Manager(s): providing insights on the software licenses, hardware and infrastructure available, contracts with external IT service providers, supporting data collection on assets available and mapping the infrastructure of the SAI, outlining software that is being used in the audit process;
- Audit Manager(s): providing insights on the staffing, skills and other resources from the audit perspective.

The above-mentioned professionals provide an overview on the professionals who might be involved in the analysis process. However, not all above mentioned roles may be

Phase 3d - Staff and resources

present at the current SAI organization. The Team is responsible for finding the professional who would be the best fit for the analysis questions in scope.

What risks may arise, and how do we mitigate potential risks?

There are several risks that may lead either to incomplete or biased results:

- Trainings and competencies are not formally documented, as a result there is no complete inventory. Team may create own inventory of past, existing and future trainings and competencies.
- Trainings are not followed by assessment and periodic review in terms of capacity development.
- People bring out competence that they do not really possess or individual hesitation to come out with IT skills. Team may want to have interviews with individuals in addition to inventory review.
- No well-established software asset management (SAM) process, as result software licenses are not accounted. Team may create own inventory of relevant software and licences.
- No well-established asset management process for hardware and infrastructure items as a result hardware is not accounted and monitored. Team may create own inventory of relevant hardware.

How this activity can be done, including suggested research methods, potential information sources?

Potential research methods include:

- Interviews: Discussion with one or more people, by phone, internet or in person, to obtain their perspectives on a programme or activity.
- Document collection: Review of documents gathered from audited entities and other sources.
- Direct observations and inspection: Physical observation of programmes, people, property and events related to the audit to collect qualitative information.
- Surveys: data collection that is used to collect evidence from a population using a standard set of questions.
- Site visits: Involves travel to a geographic location to perform audit methods.
- File reviews and structured observations: Information or data collection instruments used to systematically record observations and information extracted from records.
- Small group methods: Collection of information from a group of people using tools like focus groups (facilitated small group conversations) and panels of experts.

In order to answer questions the team may collect and refer to the information sources including:

- Inventory of the technical skills and certification among the existing staff;
- Role description for the technical positions related to audit processes;
- Staffing plans, including recent and planned technology related recruitments along with performance;
- Training plans and inventory, including past and planned technology related trainings as

Phase 3d - Staff and resources

well as training subjects, contents;

- Performance assessment procedures, development plans and career paths for the technology professionals in audit;
- Inventory of the software, hardware and other infrastructure items where technologies related to audits could be outlined;
- Inventory of internally developed audit tools and applications;
- IT strategy and future IT development plans related to audits.

The lists above are not exhaustive and the SAI Team may select research methods that are a fit for purpose in their opinion and situation.

What is the expected output of this phase?

The expected output of is to document a thorough understanding of the current staffing at the SAI related to technology audits and use of technology in audits, the technological skills present or lacking in the SAI, recruitment and training undertaken to ensure availability of technological capabilities in the organization, availability of resources such as software licenses, hardware, and reliable infrastructure. Moreover, it is important to analyse how current staffing and resources respond to the technological needs identified in "Phase 2 - External environment" and identify potential gaps.

Phase 3e - Partnerships

Phase 3e - Partnerships

What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?

In the next phase, the team explores the SAI's partnerships (procurements, partnerships with other organizations, contractors, outsourcing related to audits) related to technology audits and use of technology in audits. This analysis will help the team obtain an overview of past, present, and planned partnerships to support the SAI in the use of technology in the audits and/or auditing technologies. The team will perform an analysis of how the partnerships may contribute to knowledge development and more effective audits, as well as to analyse potential risks related to these agreements. The partners analysed in this section among other include educational institutions, research facilities, INTOSAI bodies, IDI, other SAIs, civil societies, other government institutions, service providers and commercial organizations.

The analysis would include:

- Inventory of relevant past, current, and planned formal and informal partnership agreements and contracts related to technology audits and use of technology in audits;
- Analysis of relevant past, current and planned formal and informal partnership agreements and contracts related to technology audits and use of technology in audits;
- Interviews and analysis of the work done with the past and existing partners in relation to technology audits and use of technology in audits;
- Analysis of the relevant past and existing outsourcing experience related to technology audits and use of technology in audits.

For questions that could be answered in this section please refer to the Question Bank that contains questions to consider when performing LOTA Scan.

The LOTA Scan proposed analysis of the partnerships is focused on the use of technology or effective technology audits. However, it may lead to the discovery of other potential partnership, sourcing, contracting and procurement issues that are out of the scope of LOTA Scan exercise.

Who is involved in the process, what are the responsibilities and tasks for each member?

The analysis is performed by the SAI's core LOTA Scan Team. However, in order to perform an exhaustive analysis of the partnerships, several SAI staff could be involved in the analysis process and either participate in the interviews, internal workshops or provide information or evidence that would support the analysis.

SAI staff that could be involved include:

- SAI Leadership: demonstrating support to the core Team during the process and introducing the initiative to the staff;
- Audit Support/Administration Department: providing list of relevant past, existing and planned contracts, if responsible for the contracts in scope;
- International Relations Manager(s): providing list and details on the relevant cooperation.

Phase 3e - Partnerships

- Staff: key staff that are involved in partnerships and contracts providing the insights into cooperation and deliverables;

The above-mentioned professionals provide an overview on the professionals who might be involved in the analysis process. However, not all above mentioned roles may be present at the current SAI. The Team is responsible for finding the professional who would be the best fit for the analysis questions in scope.

What risks may arise, and how do we mitigate potential risks?

There are several risks that may appear:

- No inventory of the partnerships, contracts or procurements. Team may collect information and create own inventory of the partnerships, contracts or procurements.
- There are no proper documentations for the transactional type of the partnerships, e.g., single use, short term contracts. Team may conduct interviews with involved stakeholders to analyse the nature of such partnerships.

How this activity can be done, including suggested research methods, potential information sources?

Potential research methods include:

- Interviews: Discussion with one or more people, by phone, internet or in person, to obtain their perspectives on a programme or activity.
- Document collection: Review of documents gathered from audited entities and other sources.
- Direct observations and inspection: Physical observation of programmes, people, property and events related to the audit to collect qualitative information.
- Surveys: Approach to information or data collection that is used to collect evidence from a population using a standard set of questions.
- Site visits: Involves travel to a geographic location to perform audit methods.
- File reviews and structured observations: Information or data collection instruments used to systematically record observations and information extracted from records.
- Small group methods: Collection of information from a group of people using tools like focus groups (facilitated small group conversations) and panels of experts.

To answer the questions the team may collect and refer to the following information sources i:

- Documents (partnership framework, outsourcing agreements, contracts) and procurement records
- Risk management procedures for the partnership, framework, outsourcing agreements and contracts related to technology audits and use of technology in audits;
- Procurement procedures and procurement related risk management;
- Inventory and list of relevant partners related to technology audits and use of technology in audits.

The lists above are not exhaustive and the SAI Team may select research methods that are fit for purpose in their opinion and situation.

Phase 3e - Partnerships

What is the expected output of this phase?

The expected output document a thorough understanding of the past, current and planned partnerships related to technology audits and use of technology in audits. Moreover, it is important to analyse how current partnerships respond to the technological needs identified in "Phase 2 - External environment" and identify potential gaps.

Phase 4 - Develop LOTA Scan Canvas / Report

Phase 4 - Develop LOTA Scan Canvas / Report

What are the objective and tasks of this phase, detailed questions to be answered, and analysis to be done?

In the LOTA Scan Canvas and report development phase, the team develops and finalizes the report and canvas concluding the analysis done in the LOTA Scan process. The report provides information that is required to make decisions related to leveraging on and auditing technological advancements. The report will be written in a way that ensures that stakeholders and decision makers get the necessary information for making to make informed decisions on how to strengthen the capacity and performance of the SAI in terms of auditing technology and using technology as an integrated part of its audits. The final LOTA Scan Report is essential for SAI leadership because it will be used in organizing, planning, coordinating, and controlling further LOTA efforts such as development of LOTA Strategy and planning audits at the SAI.

The typical work done in this section would include:

- Development of the draft LOTA Scan report;
- Update of the information in the LOTA Scan Canvas;
- Review of the draft report and canvas and/or a facilitated workshop;
- Finalization of the LOTA Scan Report and LOTA Scan Canvas;
- Documentation of the lessons learned;
- Signoff from the SAI Leadership.

This LOTA tool also contains the LOTA Scan Canvas (link) LOTA Scan Canvas Template) and a LOTA Scan report template link. The report template can be adopted and used by the SAI's core LOTA Scan Team as per local needs and requirements. The report template provides only high-level outline of the expected content.

Who is involved in the process, what are the responsibilities and tasks for each member?

The work is performed by the SAI's LOTA Scan Team. However, if information is missing or there is a need to follow up on questions, additional SAI staff might be involved in the process to provide additional information or evidence that would support the analysis. It is recommended that the SAI Leadership is involved in the process to ensure quality, signoff on the work done, and to ensure that analysis has outlined all the information required for the LOTA Strategic Audit Plan and further planning processes at the SAI.

What risks may arise, and how do we mitigate potential risks?

There are several risks that may lead to incomplete or biased results:

- During report writing or canvas update it may be concluded that there is lack of evidence or missing information to support the findings and conclusions. The team may request additional information or to follow up questions to ensure relevant evidence.
- There is a risk that collected information was misunderstood or provided information was incorrect or misleading.
- Lack of actionable insights that might lead to the situation where results of the report are not used in the SAI.
- There is no signoff from leadership on the work done.

Phase 4 - Develop LOTA Scan Canvas / Report

How this activity can be done, including suggested research methods, potential information sources?

The work based on the analysis that was performed in Phases 1-3. The outline and template for the canvas and report may be found in the Appendixes 1-2.

The work on the canvas and report would include the following steps:

- Adapt the report template as per local needs and requirements;
- Write a rough draft of the report based on the collected and analysed information to summarize the detailed view on the current situation;
- Update the LOTA Scan Canvas based on the collected and analysed information to summarize the high-level view on the current situation;
- Participate in the facilitated workshop to discuss and challenge the findings and conclusions;
- Revise and edit your report, proofread and check for mistakes;
- Get signoff from SAI leadership.

What is the expected output of this phase?

The expected output is to document and summarize the information collected and analysed through the Phases 1-3 of LOTA Scan. The canvas and report that will be produced will serve as an input for the further LOTA Strategy steps. The canvas and report will outline the needs for use of technology and technology audits, areas where technology audit is required, technology-related audit projects, current situation at the SAI, and identified potential capacity gaps.

Appendices

Appendix 1 – LOTA Scan Canvas Template

Please see the separate file for the LOTA Scan Canvas Template.

Appendix 2 – LOTA Scan Question Bank

Please see the separate file for the LOTA Scan Question Bank.

Appendix 3 – Overview of Available Technologies

Modern Technology	Definition	Risk Considerations	Resources
Artificial Intelligence (AI)	<p>A mixture of cognitive automation, machine learning, reasoning, hypothesis generation and analysis, natural language processing, and intentional algorithm variations that produce comprehension and analysis equalling or surpassing the competence of humans</p> <p><i>Institute of Electrical and Electronics Engineers Standards Association</i></p>	<ul style="list-style-type: none"> - Biased algorithms - Cybersecurity - Vulnerabilities may be exploited for cyber-attacks. 	<p>http://intosaijournal.org/artificial-intelligence-preparing-for-the-future-of-audit/</p> <p>http://intosaijournal.org/eurosai-it-working-group-ai/</p> <p>Artificial Intelligence: An Accountability Framework for Federal Agencies and Other Entities U.S. GAO</p>
Machine Learning <i>(Subset of Artificial Intelligence)</i>	<p>Detection, correlation, and pattern recognition generated through machine-based observation of human operation of software systems along with ongoing self-informing regression algorithms for machine-based determination of successful operation leading to useful predictive analytics or prescriptive analytics capability.</p> <p><i>Institute of Electrical and Electronics Engineers Standards Association</i></p>	<ul style="list-style-type: none"> - Biased or poor data - Security vulnerabilities 	<p>http://intosaijournal.org/auditing-machine-learning-algorithms/</p> <p>https://www.cpajournal.com/2019/06/19/machine-learning-in-auditing/</p>
Robotic Process Automation (RPA)	<p>Preconfigured software instance that uses business rules and predefined activity choreography to complete the autonomous execution of a combination of processes, activities, transactions, and tasks in one or more unrelated software systems to deliver a result or service with human exception management</p>	<ul style="list-style-type: none"> - Change Management - Logical Access Controls - Cybersecurity risks 	<p>chrome-extension://efaidnbmnnnibpcapcpgiclfindmkai/viewer.html?pdfurl=https%3A%2F%2Fhigherlogicdownload.s3.amazonaws.com%2FISACA%2Fa085a583-e841-4dbe-a215-60cf6d98e036%2FUplodedImages%2FRPA_and_the_Auditor_ISACA_S</p>

Modern Technology	Definition	Risk Considerations	Resources
	<i>Institute of Electrical and Electronics Engineers Standards Association</i>		<p>FL - Final-09302020_2 .pdf&clean=2259124&chunk=true</p> <p>https://www.cpajournal.com/2019/08/14/exploring-the-use-of-robotic-process-automation-rpa-in-substantive-audit-procedures/</p>
Blockchain	<p>Shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. The ledger is secured by encryption.</p> <p><i>IBM</i></p>	<ul style="list-style-type: none"> - Weak blockchain application development protocols - Legal framework for arbitration - Differences in data privacy legislation across countries. 	<p>https://www.isaca.org/resources/isaca-journal/issues/2019/volume-1/blockchain-explained-and-implications-for-accountancy</p> <p>Blockchain: Emerging Technology Offers Benefits for Some Applications but Faces Challenges U.S. GAO</p>
The Internet of Things (IoT)	<p>The network of devices that contain the hardware, software, firmware, and actuators which allow the devices to connect, interact, and freely exchange data and information.</p> <p><i>National Institute of Standards and Technology (NIST)</i></p>	<ul style="list-style-type: none"> - Data Privacy - Susceptibility of devices to cyber attacks 	<p>https://nvlpubs.nist.gov/nistpubs/ir/2019/NIST.IR.8228.pdf</p>
Cloud computing	<p>Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released</p>	<ul style="list-style-type: none"> - Data privacy - Data leakage or loss - Inadequate cloud security controls - Limited physical access to servers 	-

Modern Technology	Definition	Risk Considerations	Resources
	<p>with minimal management effort or service provider interaction.</p> <p><i>National Institute of Standards and Technology (NIST)</i></p>		

Appendix 4 –Additional links

Category	Author	Name	Link
Application and Setup	INTOSAI Development Initiative (IDI)	Guidance on Supreme Audit Institutions' Engagement with Stakeholders	https://www.idi.no/elibrary/well-governed-sais/sais-engaging-with-stakeholders/697-idi-sais-engaging-with-stakeholders-guide/file
Technology in Audit	Ebua Otia, J., Bracci, E.	Digital transformation and the public sector auditing: The SAI's perspective	https://onlinelibrary.wiley.com/doi/epdf/10.1111/faam.12317
Technology in Audit	Bell Lindsay, J., Doult, A., Ide C.	Emerging Technologies, Risk, and the Auditor's Focus	https://corpgov.law.harvard.edu/2019/07/08/emerging-technologies-risk-and-the-auditors-focus/
Technology in Audit	Center for Audit Quality (CAQ)	Emerging Technologies: An Oversight Tool for Audit Committees	https://www.thecaq.org/emerging-technologies-oversight-tool-audit-committees/
Technology in Audit	International Auditing and Assurance Standards Board (IAASB)	Technology Disruption in Audit and Assurance	https://www.ifac.org/system/files/meetings/files/20210126-IAASB-Agenda-Item-1-A-Disruptive-Technologies-Research-Summary_0.pdf
Technology in Audit	Veltkamp, C., Jagesar, W.	The Impact of Technological Advancement in the Audit	https://www.compact.nl/articles/the-impact-of-technological-advancement-in-the-audit/
Technology in Audit	International Auditing and Assurance Standards Board (IAASB)	Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics	https://www.ifac.org/system/files/publications/files/IAASB-Data-Analytics-WG-Publication-Aug-25-2016-for-comms-9.1.16.pdf
Technology in Audit	Mohan, A.	Evolving Technologies in the External Audit Industry	https://www.beroeinc.com/blog/evolving-technologies-external-audit-industry/
Technology in Audit	The Institute of Internal Auditors	Data Analysis Technologies	https://www.iaa.nl/SiteFiles/IIA_leiden/GTAG%2016%20Data%20Analysis%20Technologies.pdf
Auditing Technology	U.S. Government Accountability Office (GAO)	An Accountability Framework for Federal Agencies and Other Entities	https://www.gao.gov/products/gao-21-519sp
Auditing Technology	INTOSAI Development Initiative (IDI), INTOSAI Working Group on IT Auditing (WGITA)	Handbook on IT Auditing for Supreme Audit Institutions	https://www.intosaicommunity.net/wgita/wp-content/uploads/2018/04/it-audit-handbook-english-version.pdf
Government Technology	OECD Observatory of Public Sector Innovation	Case Study Library	https://oecd-opsi.org/case_type/opsi/

Government Technology	Deloitte	The future of government technology	https://www2.deloitte.com/us/en/insights/industry/public-sector/future-government-technology.html
Government Technology	Granicus	6 Key Trends Shaping Government Technology	https://granicus.com/blog/government-technology-key-trends/
Government Technology	Intalio	THE ROLE OF AI TECHNOLOGY AND ADVANCED ANALYTICS IN PUBLIC SECTOR	https://www.intalio.com/role-of-technology-public-government-sector/
Government Technology	OECD	Technology governance	https://www.oecd.org/sti/science-technology-innovation-outlook/technology-governance/
Government Technology	Abiad, A., Khatiwada, S.	5 Ways Technology is Improving Governance, Public Service Delivery in Developing Asia	https://blogs.adb.org/blog/5-ways-technology-improving-governance-public-service-delivery-developing-asia
Government Technology	Harbert, T.	Practical Uses of the Internet of Things in Government Are Everywhere	https://www.govtech.com/network/practical-uses-of-the-internet-of-things-in-government-are-everywhere.html
Government Technology	The NYU Dispatch	5 Examples Of Using AI/Deep Learning For The Government And Public Sector	https://wp.nyu.edu/dispatch/5-examples-of-using-ai-deep-learning-for-the-government-and-public-sector/
Government Technology	Abell, T., Husar, A., May-Ann, L.	Cloud Computing as a Key Enabler for Digital Government across Asia and the Pacific	https://www.adb.org/sites/default/files/publication/707786/sdwp-077-cloud-computing-digital-government.pdf
Government Technology	Welp Magazine	A Breakdown Of ERP for Government	https://welpmagazine.com/a-breakdown-of-erp-for-government/
Government Technology	Fernandez, D., Zainol, Z., Ahmad, H.	The impacts of ERP systems on public sector organizations	https://www.sciencedirect.com/science/article/pii/S1877050917311791
Government Technology	Corydon, B., Ganesan, V., Lundqvist, M.	Transforming government through digitization	https://www.mckinsey.com/industries/public-and-social-sector/our-insights/transforming-government-through-digitization
Government Technology	Bracken, M., Greenway, A., Kenny, A.	From Information to Actionable Intelligence: Adapting Governments to Data Analytics	https://publications.iadb.org/en/information-actionable-intelligence-adapting-governments-data-analytics
Government Technology	Porrúa, M., Lafuente, M., Roseth, B., et al.	Digital Transformation and Public Employment: The Future of Government Work	https://publications.iadb.org/en/digital-transformation-and-public-employment-future-government-work

Government Technology	García Zaballos, A., Puig Gabarró, P., Iglesias Rodríguez, E.	Digital Infrastructure in Trinidad and Tobago: Analysis, Challenges, and Action Plan	https://publications.iadb.org/en/digital-infrastructure-trinidad-and-tobago-analysis-challenges-and-action-plan
Government Technology	World Bank GovTech	GovTech: Fundamentals and Key Concepts	https://olc.worldbank.org/content/govtech-fundamentals-and-key-concepts
Assessment Methodologies	World Bank	Digital Government Readiness Assessment (DGRA) Toolkit V.31	https://openknowledge.worldbank.org/bitstream/handle/10986/33674/Digital-Government-Readiness-Assessment-DGRA-Toolkit-V-31-Guidelines-for-Task-Teams.pdf?sequence=1&isAllowed=y
Assessment Methodologies	Gartner	5 Levels of Digital Government Maturity	https://www.gartner.com/smarterwithgartner/5-levels-of-digital-government-maturity
Assessment Methodologies	OECD	OECD Digital Government Toolkit	https://www.oecd.org/governance/digital-government/toolkit/
Assessment Methodologies	World Bank	GovTech Maturity Index : The State of Public Sector Digital Transformation	https://openknowledge.worldbank.org/handle/10986/36233
Assessment Methodologies	UAE Telecommunications and Digital Government Regulatory Authority	The Digital Government Maturity Model Framework	https://u.ae/en/about-the-uae/digital-uae/uae-digital-government-maturity-model#:~:text=The%20Digital%20Government%20Maturity%20Model%20Framework