

# ISO27001:2022

## Lec2

## History of 27001



1995

1999

2000

2005

2007

2013

Code of Practice

British Standard  
BS7799-1:1995  
Part 1: Code of  
Practice

British Standard  
BS7799-1:1999  
Part 1: Code of  
Practice

ISO/IEC 17799:2000  
Code of Practice for  
ISM

ISO/IEC 17799:2005  
Code of Practice for  
ISM

ISO/IEC 27002:2007  
Code of Practice for  
ISM

ISO/IEC 27002:2013  
Code of Practice for  
ISM

British Standard  
BS7799-2:1999  
Part 2: Management  
System

ISO/IEC 27001:2005  
ISMS  
- Requirements -

ISO/IEC 27001:2013  
ISMS  
- Requirements -

Department of  
Trade and  
Industry (DTI)

British Standards Institute (BSI)

International Organization of Standardization (ISO)

## what is information security ?



### Confidentiality

Maintaining confidentiality is important to ensure that sensitive information doesn't end up in the hands of the wrong people. In order to do this, access must be restricted to only authorized individuals. Some methods that could be used to protect confidentiality include encryption, two-factor authentication, unique user IDs, strong passwords, etc.

### Integrity

Maintaining the integrity of sensitive data means maintaining its accuracy and authenticity of the data. This means that sensitive data must be protected from accidental or intentional changes that could taint the data. File permissions and access controls are just a couple of things that can be implemented to help protect integrity.

### Availability

Maintaining availability means that your services, information, or other critical assets are available to your customers when needed. This doesn't just apply to lost or destroyed data, but also when access is delayed. Developing a disaster recovery plan and performing regular backups are some ways to help maintain availability of critical assets.



# **Structure of ISO27001 - Clauses (4 - 10)**

- 1) Introduction & general overview of standard.**
- 2) Scope of the standards Applicable to all types of organizations**
- 3) Definitions**
- 4) Context of the organization**
- 5) Leadership & Top Management**
- 6) Planning**
- 7) Support - Availability of resources**
- 8) Operation**
- 9) Performance**
- 10) Improvement**

# Understanding of the Organization

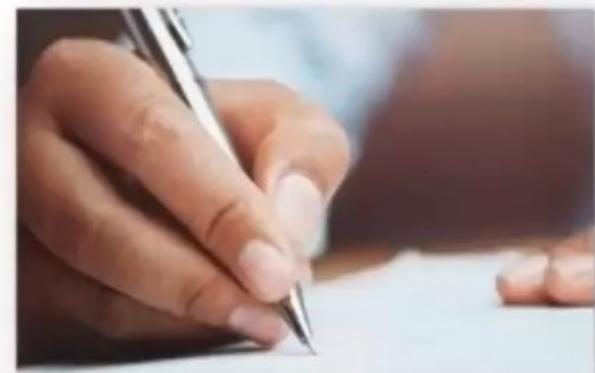
## Context of the Organization - ISO/IEC 27001, clauses 4.1 and 4.2

### 4.1 Understanding the organization and its context

context means environment in which the organization seeks to achieve its objectives

The organization shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcome(s) of its information security management system.

- Determine legal and regulatory requirements, stakeholder perceptions , social and cultural, political, financial, technological, economic, natural and competitive environment, whether international, national, regional or local.
- key drivers and trends having impact on the objectives of the organization
- Relationships with, perceptions and values of external stakeholders.



# Understanding of the Organization - Continued

## Context of the Organization - ISO/IEC 27001, clauses 4.1 and 4.2

### 4.1 Understanding the organization and its context

- An organization wishing to comply with ISO/IEC 27001 shall at least:
  1. Be able to demonstrate that its ISMS is aligned with its mission, its objectives and business strategies;
  2. Identify and document the organization's activities, functions, services, products, partnerships, supply chains and relationships with interested parties;
  3. Define the external and internal factors that can influence the ISMS;
  4. Recognize and take into account issues related to information security within their industrial sector such as risk, legal and regulatory obligations and customer requirements.
  5. Establish and document objectives for the ISMS.

- **External issues** are those outside of the organization's control. This is often referred to as the organization's environment. Analysing this environment can include the following aspects: social and cultural; political, legal, normative and regulatory; financial and macroeconomic; technological; natural; and competitive.
- **Internal issues** are subject to the organization's control. Analysing the internal issues can include the following aspects: the organization's culture; policies, objectives, and the strategies to achieve them; governance, organizational structure, roles and responsibilities; standards, guidelines and models adopted by the organization; contractual relationships that can directly affect the organization's processes included in the scope of the ISMS; processes and procedures; the capabilities, in terms of resources and knowledge (e.g. capital, time, persons, processes, systems and technologies); physical infrastructure and environment; information systems,

# Understanding of the Organization – Continued

## 4.1 Understanding the organization and its context

**Tasks to do**

- Understanding of the mission, objectives, values, strategies of the organization
- Analyzing the external environment
- Analyzing the internal environment
- Identification of the key processes and activities
- Identification of the infrastructure
- Identification and analysis of interested parties
- Determination of the ISMS objectives
- Preliminary definition of the scope

**Result**

- Brief description of the organization and its environment
- List of stakeholders and their requirements
- List of applicable legal, regulatory and contractual obligations
- Objectives and priorities related to ISMS
- Preliminary Scope



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Understand:

- Goods and services produced by the organization
- Business Processes
- Information assets

# Understanding of the Organization – Continued

## 4.1 Understanding the organization and its context

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Hardware, Software, Networks, Sites

# 4 - Context of the Organization

## Context of the Organization - ISO/IEC 27001, clauses 4.2

### 4.2 Understanding the needs and expectations of interested parties

The organization shall determine

- a. interested parties that are relevant to the information security management system; and
- b. the requirements of these interested parties relevant to information security.

Tasks to do

- Understanding of the mission, objectives, values, strategies of the organization
- Analyzing the external environment
- Analyzing the internal environment
- Identification of the key processes and activities
- Identification of the infrastructure
- Identification and analysis of interested parties
- Preliminary definition of the scope

Result

- Brief description of the organization and its environment
- List of stakeholders and their requirements
- List of applicable legal, regulatory and contractual obligations
- Objectives and priorities related to ISMS
- Preliminary Scope

- Identify all interested parties and their requirements and expectations and involve them in ISMS project

## Context of the Organization - ISO/IEC 27001, clauses 4.3 and 4.4

### 4.3 Determining the scope of the information security management system

The organization shall determine the boundaries and applicability of the information security management system to establish its scope. When determining this scope, the organization shall consider:

- a. the external and internal issues referred to in 4.1;
- b. the requirements referred to in 4.2; and
- c. interfaces and dependencies between activities performed by the organization, and those that are performed by other organizations.

#### Why we need to approve the ISMS Scope?

1. Implementing ISO 27001 is become official in the organization
2. Give authority to the project manager to enable him/her to succeed

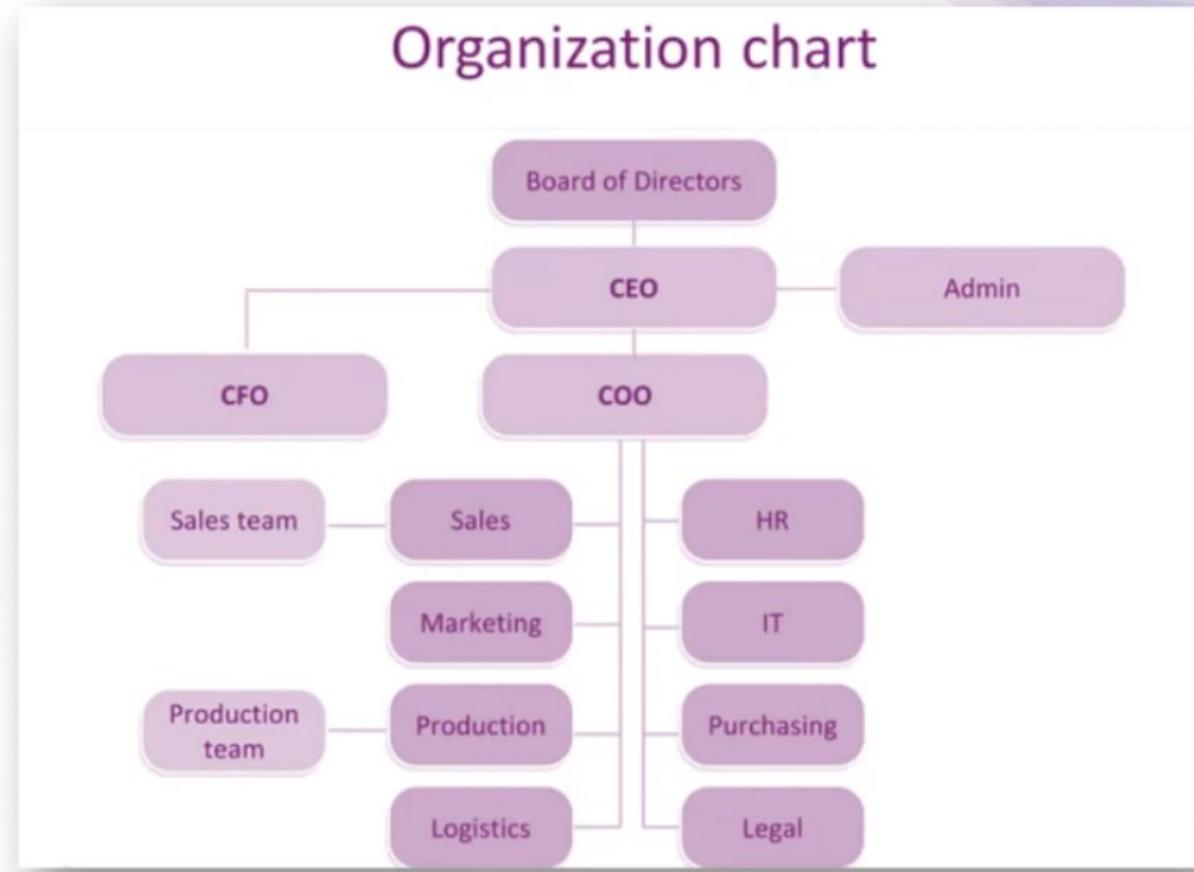


# Context of the Organization - ISO/IEC 27001, clauses 4.3 and 4.4

## 4.3 Determining the scope of the information security management system

You can implement the ISO 27001 Project on : process or processes, department(s), branch(es)

Ensure clear Scope in the ISMS Scope document (**department, product, service, physical location, information systems**)



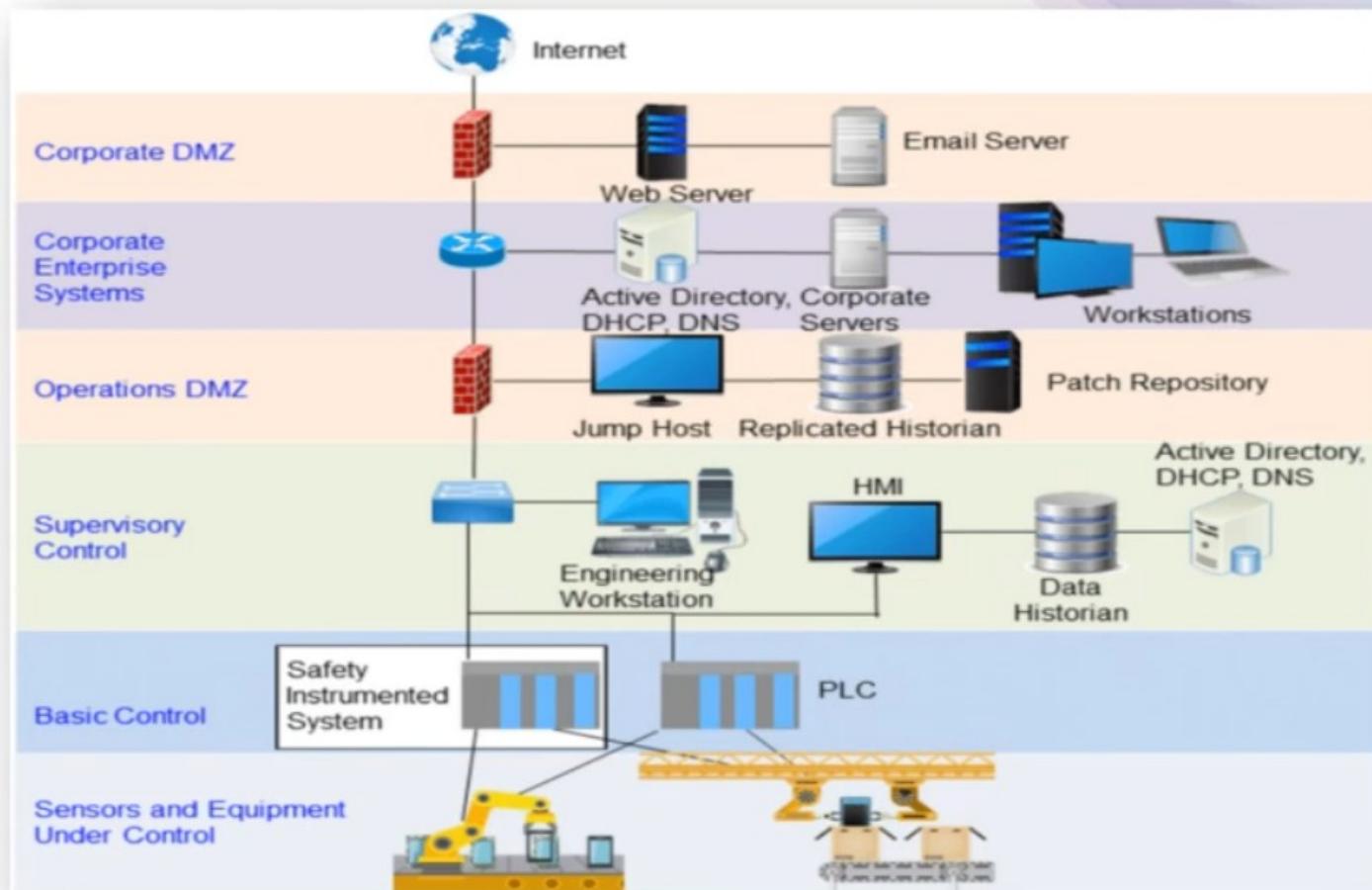
# Context of the Organization - ISO/IEC 27001, clauses 4.3 and 4.4

## 4.3 Determining the scope of the information security management system

Ensure clear Scope in the ISMS Scope document (department, product, service, physical location, **information systems**)

The boundaries of information systems is can be:

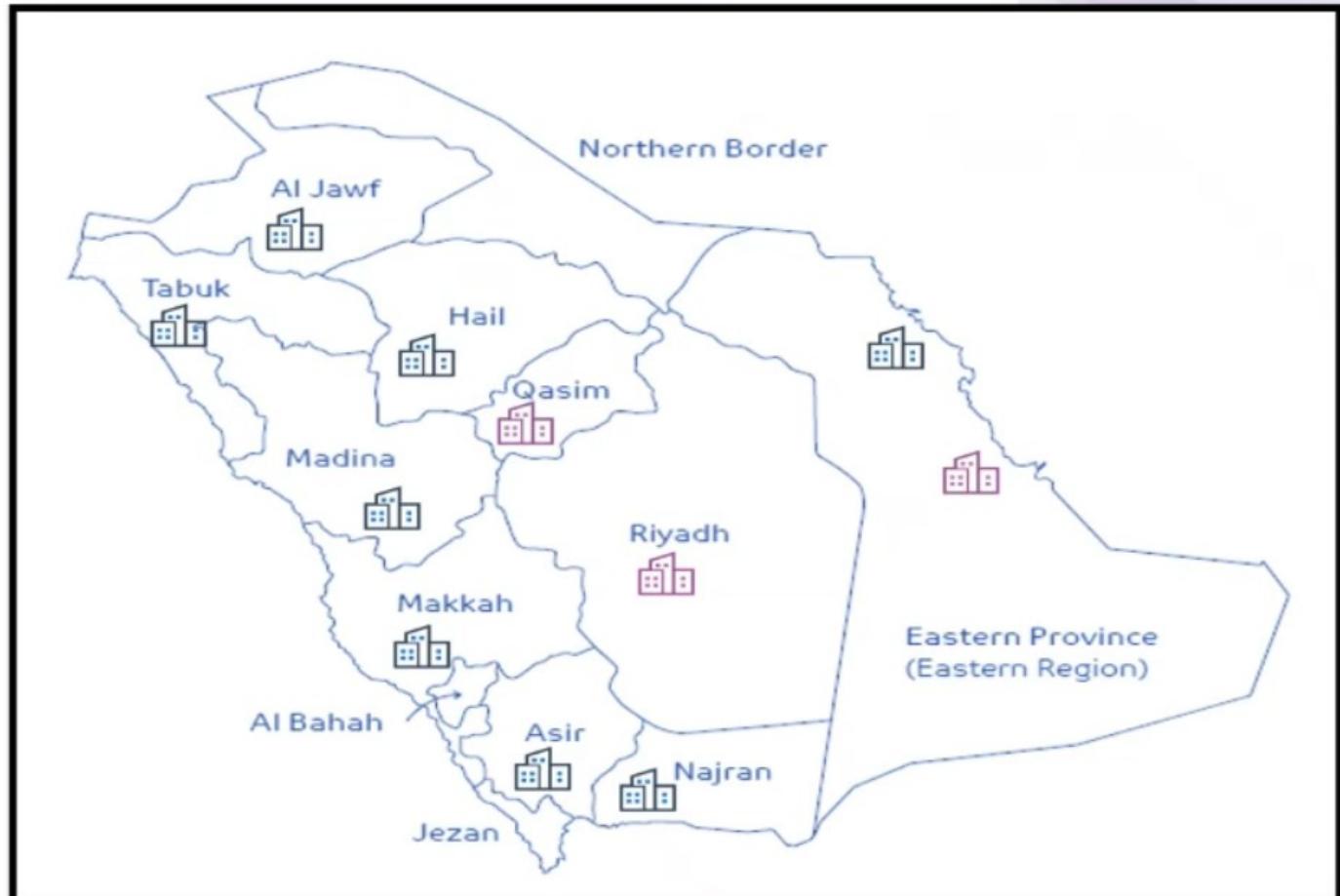
- Networks: internal networks, wireless networks, etc. ...
- OS: Windows, Linux, etc. ...
- Apps: CRM, software management payroll, ERP, utilities, database.
- Data: customer records, medical data, research and development, etc.
- Processes: Consider processes that transport, store or process information.
- Telecommunications equipment: routers, firewalls, etc.



# Context of the Organization - ISO/IEC 27001, clauses 4.3 and 4.4

## 4.3 Determining the scope of the information security management system

Ensure clear Scope in the ISMS Scope document (department, product, service, **physical location**, information systems)



## **4 - Context of the Organization - Continued**

### **Context of the Organization - ISO/IEC 27001, clauses 4.3 and 4.4**

#### **4.4 Information security management system**

The organization shall establish, implement, maintain and continually improve an information security management system, in accordance with the requirements of this International Standard.

# Context of the Organization - ISO/IEC 27001, clauses 4.3 and 4.4

## Example

The scope can be changed, minimized, extended and then it must be approved and documented



## Context of the Organization - ISO/IEC 27001, clauses 4.3 and 4.4

### 4.4 Information security management system

The organization shall establish, implement, maintain and continually improve an information security management system, in accordance with the requirements of this International Standard.

#### How to achieve this control ?

Prepare a business case to **convince** the management and take their commitment on the ISO 27001 Implementation



## Formalize a team to include

- **Project Sponsor:** provide the appropriate support and resources  
**(Could be a committee)**
- **Project Manager:** Define a project plan, monitor, manage the project on day to day  
(Should know skills in Project Management, have knowledge of information security, effective communication skills, analytical skills, leadership)
- **Project Team:** Implement the ISO 27001 Standard



## 4 - Context of the Organization - overall

### Context of Organization

#### Issues

#### Interested Parties

Internal  
Issues

External  
Issues

Customers

Suppliers

Regulatory

# 5 - Leadership and Management Commitment

## 5.1 Leadership and commitment

Top management shall demonstrate leadership and commitment with respect to the information security management system by:

- A .ensuring the information security policy and the information security objectives are established and are compatible with the strategic direction of the organization
- B. ensuring the integration of the information security management system requirements into the organization's processes
- C. ensuring that the resources needed for the information security management system are available
- D. communicating the importance of effective information security management and of conforming to the information security management system requirements
- E. ensuring that the information security management system achieves its intended outcome(s);
- F. directing and supporting persons to contribute to the effectiveness of the information security management system
- G. promoting continual improvement
- H. supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

## 5 - Leadership and Management Commitment - Continued

### ISO/IEC 27001, clause 5.2 - Policy

Top management shall establish an information security policy that:

- A. is appropriate to the purpose of the organization
- B. provides a framework for setting information security objectives
- C. includes a commitment to satisfy applicable requirements
- D. includes a commitment to continual improvement of the ISMS

The information security policy shall:

- E. be available as documented information
- F. be communicated within the organization
- G. be available to interested parties, as appropriate.

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### Quick Tips when start developing Policies

- 1- Create a policy that reflect the organization's business situation, culture, issues and concerns relating to information security.
- 2- Be simple in choosing the concepts (pretend to be a normal user - not cybersecurity officer)
- 3- High level statements
- 4- Answer the "WHY" Question.

Created on 10/20/2021 Last updated on 10/20/2021 10:57:22 AM

ABC Company

### Cyber Security Policy

XXX -PL###

Version X.X

19 June 2021

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## ISO/IEC 27001, clause 5.2 - Policy

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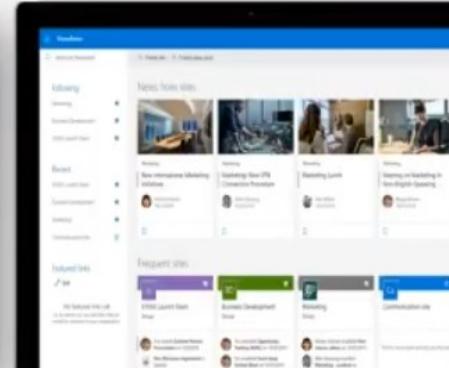
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### Communicate the policy through

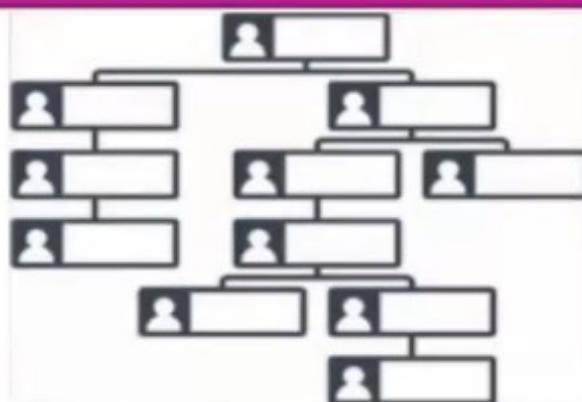
- 1- Print it and publish on the company premise
- 2- SharePoint
- 3- Email
- 4- Orientation and Awareness sessions



# 5 - Organizational roles, responsibilities & authorities

## ISO/IEC 27001, clause 5.3

- Top management shall ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organization
- Top management shall assign the responsibility and authority for:
  - A. Ensuring that the information security management system is established and implemented in accordance with the requirements of ISO/IEC 27001
  - B. Reporting on the performance of the ISMS to top management



## ISO/IEC 27001, clause 5.3

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- Top management shall assign the responsibility and authority for:
  - A. Ensuring that the information security management system is established and implemented in accordance with the requirements of ISO/IEC 27001
  - B. Reporting on the performance of the ISMS to top management

What should you do?

Define the roles and responsibilities of key stakeholders related to the ISMS.

Information Asset owners

Process Owners

Talent Management Department

Internal Audit Department

Top Management

IT Department and Personnel

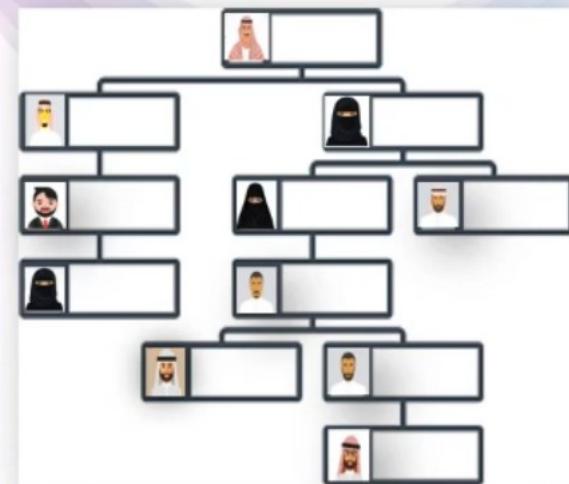
Risk Owners

HR Department and Personnel

All Users

Legal Department

Etc.



# 6 - Planning

## 6.1 Actions to address risks and opportunities

### Def# - **Vulnerability, Threat and Impact**

Vulnerability means weakness of an asset or control that can be exploited by one or more threats. (Could be intrinsic or extrinsic)

Examples of vulnerability:

- 1- Unpatched Systems or software
- 2- Undefined proper roles and responsibilities in information security
- 3- No awareness of staff related to information security
- 4- Lack of software testing
- 5- Lack of backup process

### Def# - **Vulnerability, Threat and Impact**

Threat means a potential cause of an unwanted incident, which can result in harm to a system or organization

Examples of threats:

- 1- Natural events (flood, earthquake, volcano, etc.)
- 2- Loss of power supply
- 3- Data Theft
- 4- Data Corruption
- 5- Server Failure / Crash

# 6 - Planning - Continued

## 6.1 Actions to address risks and opportunities

### Def# - Vulnerability, Threat and Impact

Impact means what is the effect after the occurrence of breaching C,I,A

Examples of impact on confidentiality:

- 1- Confidential information leakage
- 2- Invasion of privacy of employees
- 3- Lawsuits and penalties

Examples of impact on Integrity:

- 1- Incorrect results
- 2- Manipulated Data

Examples of impact on Availability:

- 1- System/ Service Unavailable
- 2- Operation Disruptions
- 3- Financial loss

# 6 - Planning - Continued

## 6.1 Actions to address risks and opportunities

### Definition of Information Security Risk as per ISO/IEC 27000, clause 3.61

- Information security risk is associated with the potential that threats will exploit vulnerabilities of an information asset or group of information assets and thereby cause harm to an organization.
- Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated "likelihood" of occurrence.
- As per ISO 27005 Standard, Risk Formula is Impact X Likelihood

- Residual Risk: Risk remaining after risk treatment.
- Risk Acceptance: Informed decision to take a particular risk.
- Risk Analysis: Process to comprehend the nature of risk and to determine the level of risk.
- Risk Assessment: Overall process of risk identification, risk analysis and risk evaluation.
- Risk Evaluation: Process of comparing the results of risk analysis with risk criteria to determine whether the risk and/or its magnitude is acceptable or tolerable.
- Risk Management: Coordinated activities to direct and control an organization with regard to risk.
- Risk Treatment: Process to modify risk.

# 6 - Planning - Continued

## 6.1 Actions to address risks and opportunities

### 6.1.1 General

- When planning for the information security management system, the organization shall consider the issues referred in 4.1 (Understanding the organization and its context) and the requirements referred to in 4.2 (Understanding the needs and expectations of interested parties) and determine the risks and opportunities that need to be addressed to:
  - a) Ensure the information security management system can achieve its intended outcome(s)
  - b) Prevent, or reduce, undesired effects; and
  - c) Achieve continual improvements,

The Organization shall plan:

- d) Actions to address these risks and opportunities; and
- e) How to:
  - 1) integrate and implement the actions into its information security management system processes; and
  - 2) evaluate the effectiveness of these actions.

# 6 - Planning - Continued

## 6.1 Actions to address risks and opportunities

### 6.1.2 Information security risk assessment

- The organization shall define and apply an information security risk assessment process that:
  - a) Establishes and maintains information security risk criteria that include:
    1. The risk acceptance criteria; and
    2. Criteria for performing information security risk assessments;
  - b) Ensures that repeated information security risk assessments produce consistent, valid and comparable results;
  - c) Identifies the information security risks
    1. apply the information security risk assessment process to identify risks associated with the loss of confidentiality, integrity and availability for information within the scope of the information security management system; and
    2. identify the risk owners;

# 6 - Planning - Continued

## 6.1 Actions to address risks and opportunities

### 6.1.2 Information security risk assessment

- The organization shall define and apply an information security risk assessment process that:
  - d) analyses the information security risks:
    - 1) assess the potential consequences that would result if the risks identified in 6.1.2 c) 1) were to materialize;
    - 2) assess the realistic likelihood of the occurrence of the risks identified in 6.1.2. c) 1 ); and
    - 3) determine the levels of risk;
  - e) evaluates the information security risks:
    - 1) compare the results of risk analysis with the risk criteria established in 6.1.2. a); and
    - 2) prioritize the analysed risks for risk treatment.

The organization shall retain documented information about the information security risk assessment process.

# 6 - Planning - Continued

## 6.1 Actions to address risks and opportunities

### 6.1.3 Information security risk treatment

- The organization shall define and apply an information security risk treatment process to:
  - a) select appropriate information security risk treatment options, taking account of the risk assessment results;
  - b) determine all controls that are necessary to implement the information security risk treatment option(s) chosen

NOTE Organizations can design controls as required, or identify them from any source.

- c) compare the controls determined in 6.1.3 b) above with those in Annex A and verify that no necessary controls have been omitted;
- d) produce a Statement of Applicability that contains the necessary controls (see 6.1.3. b) and c)) and justification for inclusions, whether they are implemented or not, and the justification for exclusions of controls from Annex A;
- e) formulate an information security risk treatment plan; and
- f) obtain risk owners' approval of the information security risk treatment plan and acceptance of the residual information security risks.

The organization shall retain documented information about the information security risk treatment process.

## 6 - Planning - Continued

### 6.2 Information security objectives and planning to achieve them

- The organization shall establish information security objectives at relevant functions and levels. The information security objectives shall:
  - a) be consistent with the information security policy;
  - b) be measurable (if practicable);
  - c) take into account applicable information security requirements, and results from risk assessment and risk treatment;
  - d) be communicated; and
  - e) be updated as appropriate.

The organization shall retain documented information on the information security objectives. When planning how to achieve its information security objectives, the organization shall determine:

- f) what will be done;
- g) what resources will be required;
- h) who will be responsible;
- i) when it will be completed; and
- j) how the results will be evaluated.

# 6 - Planning - Continued

## 6.1 Actions to address risks and opportunities

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# 6 – Planning - Continued

## 6.2 Information security objectives and planning to achieve them

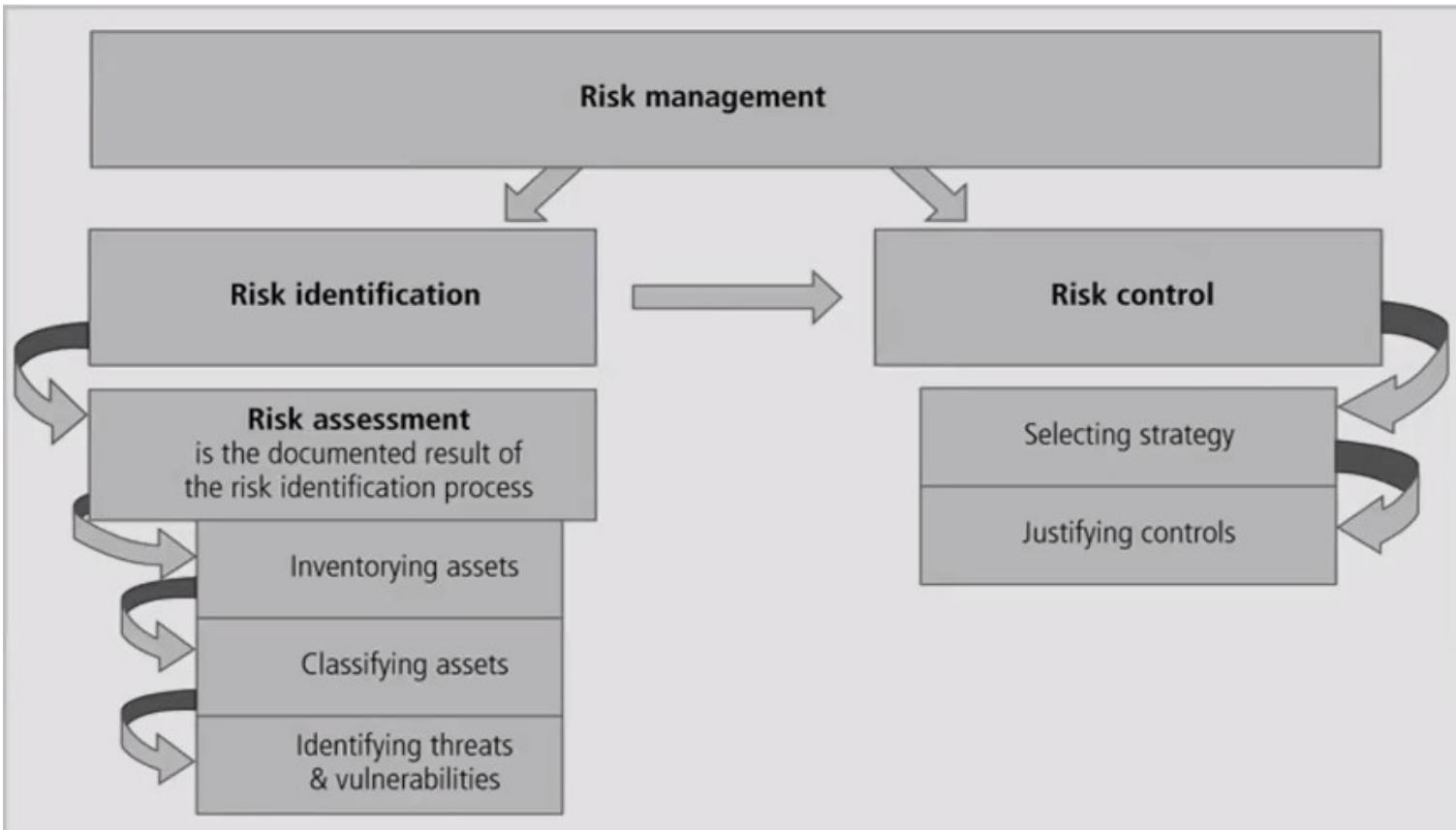
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# Overview of Risk Management



**FIGURE 1-2** Components of risk management

## II.1. Risk Identification

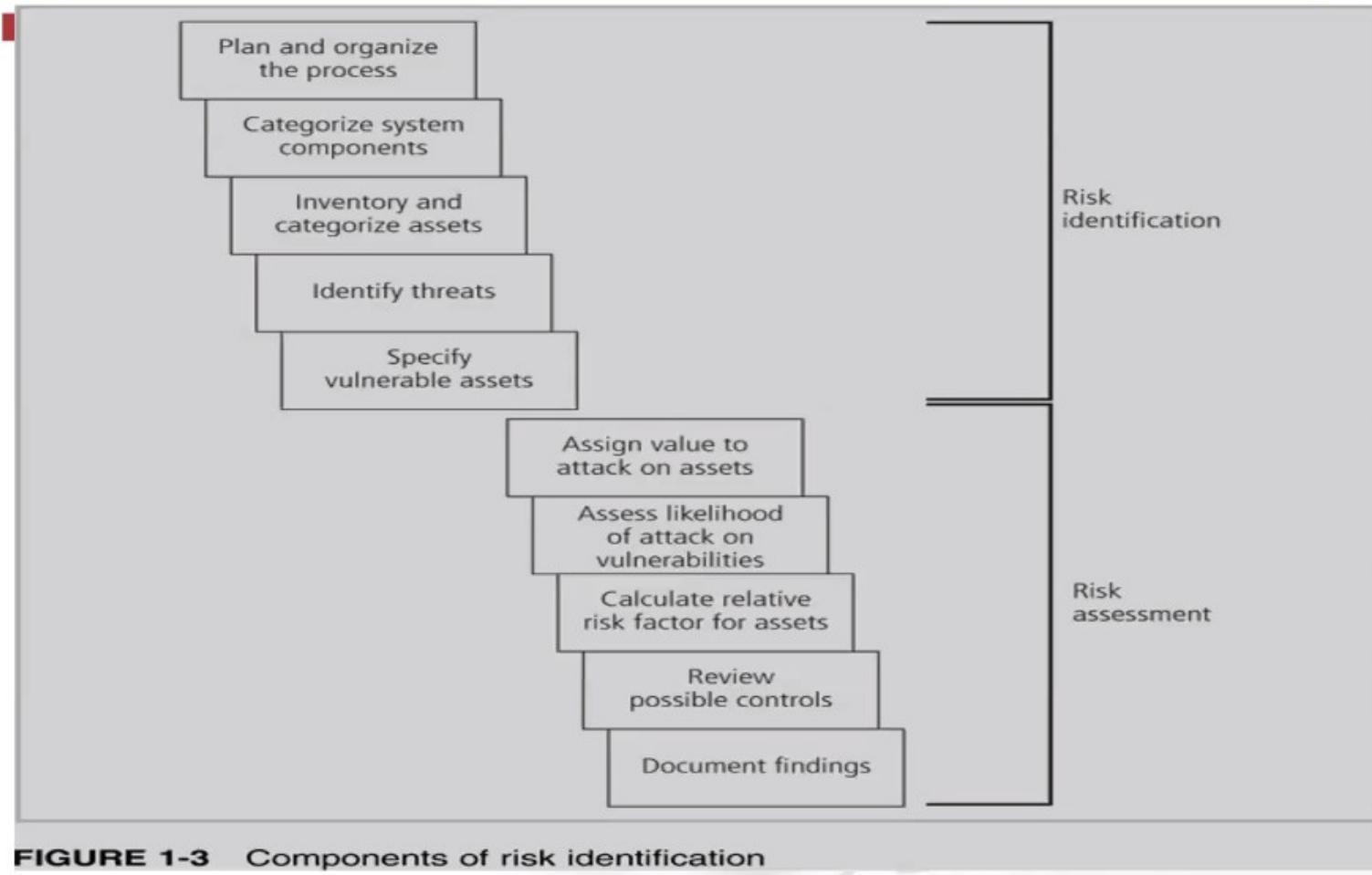
Identify, classify, and prioritize information assets

Goal: protect assets from threats

Identify threats

Identify vulnerabilities of each asset

Identify controls that will limit possible losses in the event of attack



**FIGURE 1-3** Components of risk identification

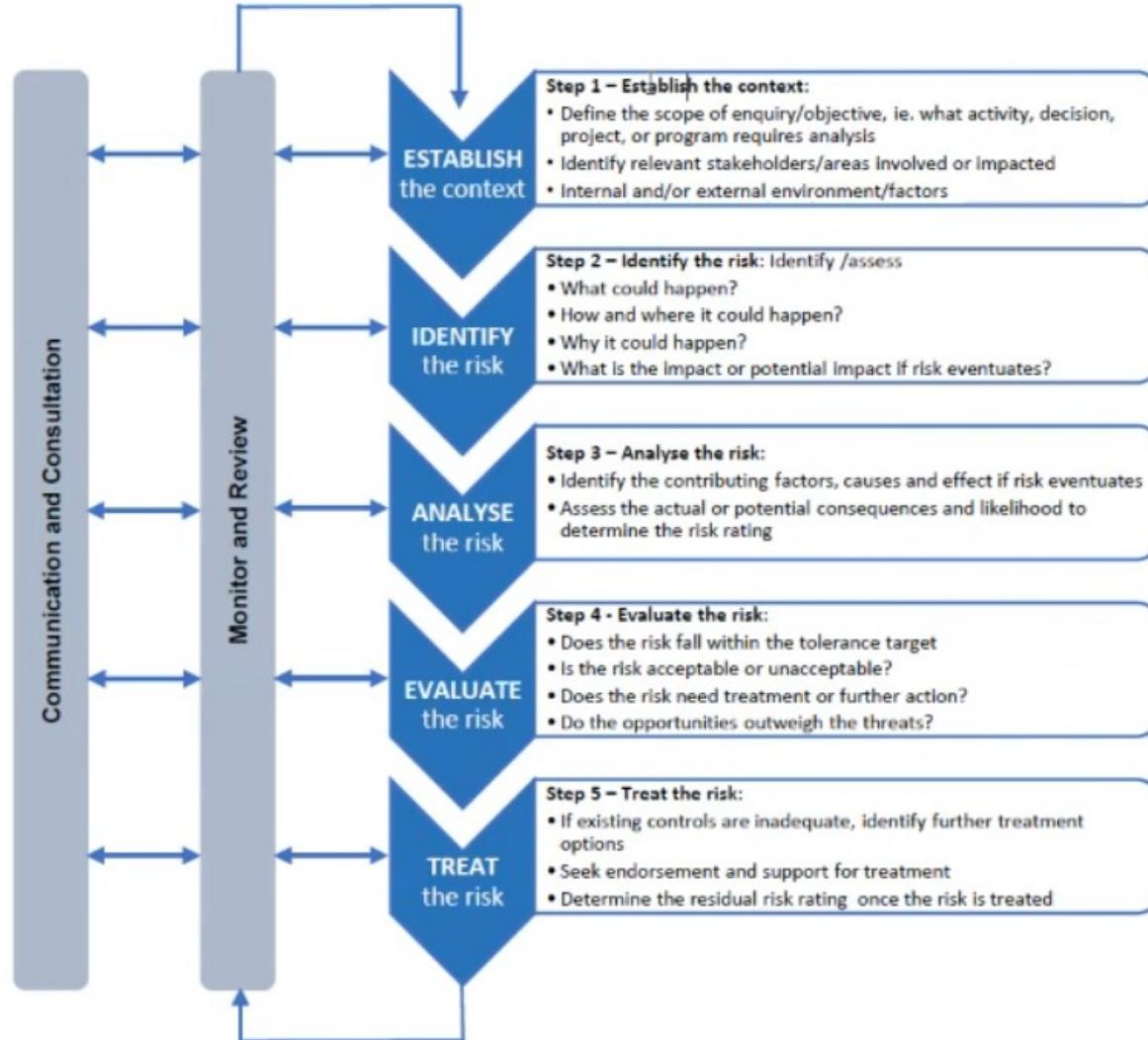


Figure 3: Risk Management Process

## II. 1 Risk Assessment

### Risk assessment:

- Process of assigning a risk rating or score to each information asset
- Goal is to determine the relative risk of each vulnerability using various factors

### Likelihood:

- Probability that a specific vulnerability will be successfully attacked
- Many asset/vulnerability combinations have external references for likelihood values

## Example of a weighted factor analysis worksheet

Information Asset	Criteria 1: Impact to Revenue	Criteria 2: Impact to Profitability	Criteria 3: Public Image Impact	Weighted Score
<i>Criterion Weight (1-100)</i> <i>Must total 100</i>	30	40	30	
EDI Document Set 1— Logistics BOL to outsourcer (outbound)	0.8	0.9	0.5	75
EDI Document Set 2— Supplier orders (outbound)	0.8	0.9	0.6	78
EDI Document Set 2— Supplier fulfillment advice (inbound)	0.4	0.5	0.3	41
Customer order via SSL (inbound)	1.0	1.0	1.0	100
Customer service request via e-mail (inbound)	0.4	0.4	0.9	55

The screenshot shows the Microsoft Excel ribbon at the top. The 'Home' tab is selected. The ribbon includes the following tabs: File, Home, Insert, Page Layout, Formulas, Data, Review, View, and Foxit PDF. Below the tabs is the 'Tell me what you want to do...' search bar. To the right of the ribbon are several icons: AutoSum, Sort & Find & Filter, and Share.

F17	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Risk Cybersecurity Risk Register																			
S. No.	Ver. No.	Release Date	Prepared By				Action	Reasons for Change											
1	1	26/12/2022					Initial started point	NO											
2																			
3																			
4																			
10																			
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12																			
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Cut Copy Format Painter Paste

Times New Ro 11 A A Wrap Text General Conditional Format as Table Normal Bad Good Insert Delete Format

Font Alignment Number Styles Cells Editing

Sort & Find & Filter Select

A	B	C	D	E	F	G	H	Risk A
1	Main Asset	Asset Value (AAV)		Level of threat (T)			Impact On C / I / A	
2	Risk-ID			Threats	The level of Impact: 5- Catastrophic 4 - Critical 3 - High 2 - Medium 1 - Low	Vulnerabilities		
3	Asset Value above 3 are considered for Risk assessment	Highest Asset value for a asset category					C - Confidentiality I - Integrity A - Availability	
4	1 Firewall FortiGate - AntiMalware	3	Malicious code	4	The Information Security team of Company name observed that anti-virus is not installed on all the sampled servers. Also, the anti-virus on the workstations is not updated or properly maintained. Moreover, Users can disable the anti-virus.	ACI		
5			Improper internal audit		The Information Security team of Company name observed that Company name PCI DSS inventory is not updated	AI		

## You shall have an Enterprise Risk Management Methodology

The information security risk criteria should be established considering the context of the organization and requirements of interested parties and should be defined in accordance with Enterprise Risk Management



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##### [2.4 ERM Benefits](#)

##### [2.5 Critical Success Factors and Limitations](#)

#### [3. ERM GOVERNANCE](#)

##### [3.1 ABC ERM Governance Structure](#)

##### [3.2 Roles and Responsibilities](#)

##### [3.3 ERM Governance - Principles](#)

##### [3.4 ERM Governance - Enablers](#)

##### [3.4.1 Governance](#)

##### [3.4.2 Culture](#)

##### [3.4.3. Risk Strategy](#)

##### [3.4.4. Objective Setting](#)

##### [3.5 ABC Risk Universe](#)

#### [3.6 Risk Assessment](#)

##### [3.6.1 Risk Response Plan And Risk Escalation](#)

#### [4. ERM PROCESS](#)

##### [4.1 ERM Process Overview](#)

##### [4.2 Component 1 - Event Identification](#)

##### [4.2.1. Overview](#)

##### [4.2.2 Procedures](#)

##### [4.3 Component 2 - Risk Assessment](#)

##### [4.3.1. Overview](#)

##### [4.3.2 Procedures](#)

##### [4.4 Component 3 - Risk Response](#)

##### [4.4.1 Overview](#)

##### [4.4.2 Procedures](#)

##### [4.5 Component 4 - Control Activities](#)

##### [4.5.1 Overview](#)

##### [4.5.2 Procedures](#)

##### [4.6 Component 5 - Information and Communication](#)

##### [4.6.1 Overview](#)

##### [4.6.2 Procedures](#)

##### [4.7 Component 6 - Monitoring](#)

##### [4.7.1 Overview](#)

##### [4.7.2 Procedures](#)

#### [5. ANNEXURES](#)

##### [5.1 Annexure 1: Document Templates](#)

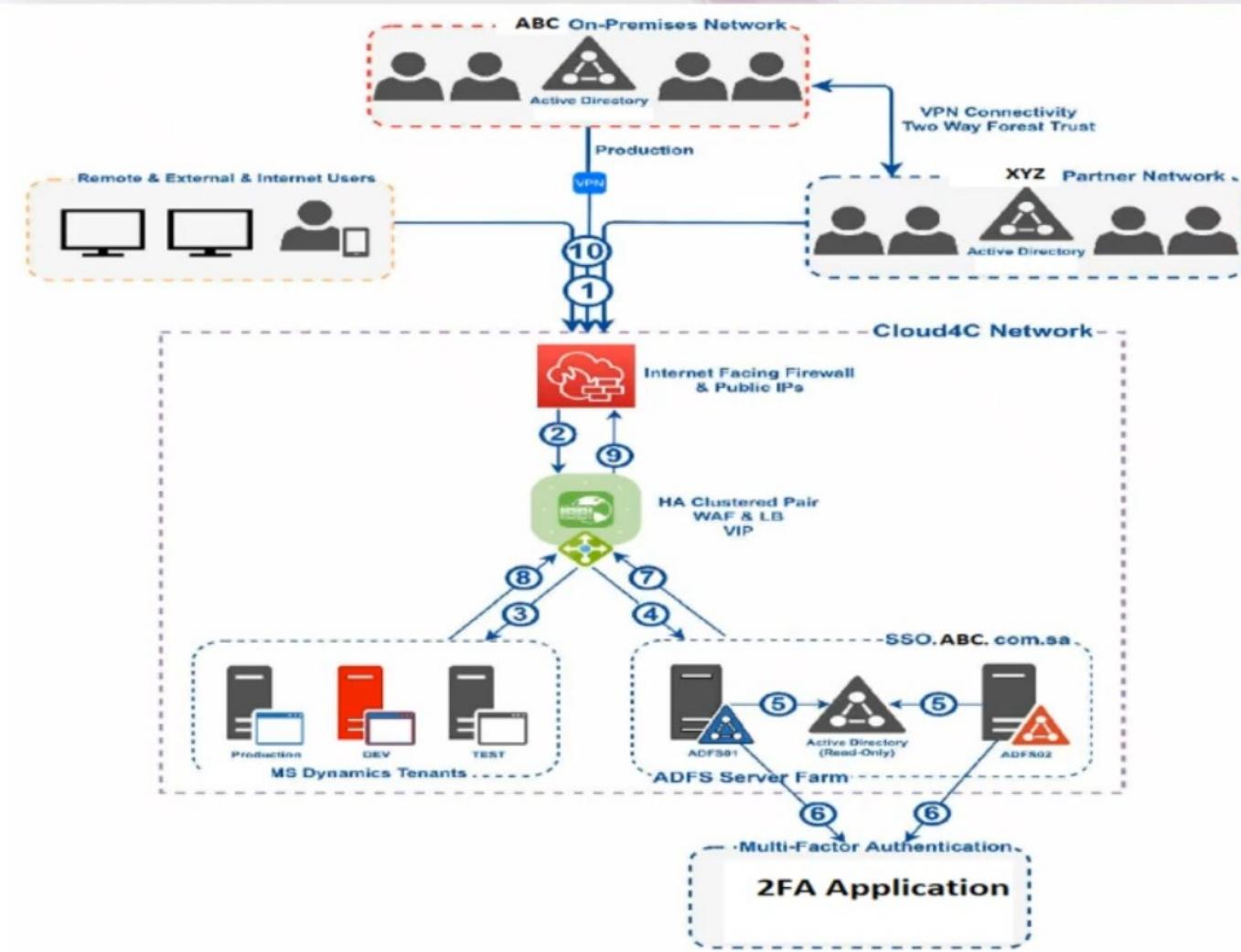
##### [5.2 Annexure 2: Timeline Summary](#)

## Assignment#2:

There is an Active Directory Federation Service Project needs to be implemented as shown in the figure. The project will connect two companies (ABC and XYZ) to have Forest Trust and to access the ABC ERP system.

P.S: based on the NCA regulations, The cloud service provider shall reside inside KSA

- Identify and classify two assets
- Define at least two threats
- Define at least two vulnerabilities
- Define at least Two Information Security Risk Scenarios that might be exist in the following diagram
- Define at least two impacts
- Define two risk treatment actions with their risk owner



# THANKS!

