

**Artificial intelligence
systems lifecycle
management procedure**

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Artificial Intelligence
Systems Lifecycle
Management Procedure

ACBS-P12

Credits

Prepared by: Consulting firm	Reviewed by: Quality Manager	Approved by: General Manager
Name:	Name:	Name:
Signature:	Signature:	Signature:

Statement of amendments

NO	Statement of amendments	Date of Amendment	Page number
1.			
2.			
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Distribution List

NO	Administration	Responsible	Number of copies
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1- Purpose:

This procedure aims to establish a comprehensive framework for managing the life cycle of artificial intelligence systems from initial concept to retirement or safe decommissioning, ensuring:

- Compliance with local and international regulatory and legislative requirements.
- Compliance with ISO/IEC 42001:2023 standards.
- Ensuring the operational efficiency and functional safety of systems.
- Adherence to ethical standards and data protection throughout the lifecycle.
- Support for continuous improvement across all stages of the system.

2- Scope:

This procedure applies to all artificial intelligence systems in the company and covers:

- The concept and feasibility study phase.
- The design and development phase.
- The testing and deployment phase.
- The operation and maintenance phase.
- The upgrade or final shutdown phase.

3- Responsibilities:

Role	Responsibilities
Technical Manager	Overall supervision of all stages of the life cycle and approval of key decisions.
Artificial Intelligence Coordinator	Monitoring the implementation of the life cycle plan and ensuring its integration with strategic objectives.
Development Teams	Execute design, development, and model updates.
Operations Teams	Manage the system during daily operations.
Quality Officer	Verify quality compliance and conformity with standards.
Cybersecurity Officer	Protecting data and ensuring security throughout the life cycle.
System Committee	Make strategic decisions on upgrades or retirements.

4- Definitions:

Term	Definition
Life cycle	All stages that an AI system goes through, from conception to decommissioning or retirement.
Safe shutdown	The process of terminating the system or one of its components in a manner that ensures no impact on other systems or users.

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**Continuous
improvement**

Periodic review and updating to improve performance and compliance

5- Tools and models:

M	Form name	Form code	Storage period	Storage location
1	Life cycle management plan	ACBS-F55	Until updated	Technology Management
2	System Stage Log	ACBS-F56	Until update	Operation Management
3	Update and maintenance report	ACBS-F57	Until update	Quality Management
4	Shutdown and Documentation Report	ACBS-F58	Pending update	Technical Management
5	Ethical Impact Assessment Record	ACBS-F59	Pending update	Quality Management

6- Procedure Steps:

M	Step	Responsible for implementation	Form Used	Responsibility for updating
1	Generating the idea and identifying the need	Development teams	-	Technical Director
2	Preparing the feasibility study	Development Team + Cybersecurity	ACBS-F55	Technology Manager
3	Ethical and Social Impact Assessment	Quality Officer	ACBS-F59	Quality Officer
4	System Design	Development Team	ACBS-F56	Development Team
5	Prototype Development	Development Teams	ACBS-F56	Development Teams
6	System testing	Operations Teams + Quality Manager	ACBS-F57	Quality Manager

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7	Trial Deployment	Operations Teams	ACBS-F57	Operations Manager
8	Actual Deployment	Technical Manager	ACBS-F56	Technology Manager
9	Operation and Monitoring	Operations Teams	ACBS-F57	Operations Teams
10	Regular Maintenance and Improvements	Development teams	ACBS-F57	Development teams
11	Annual Performance Evaluation	Technical Manager	ACBS-F58	Technical Manager
12	Promotion or Retirement Decision	System Committee	ACBS-F58	Technical Director
13	Safe shutdown and documentation	Operating Teams + Quality Manager	ACBS-F58	Quality Manager

7- Risk Management:

Risk	Cause	L×C	Level	Preventive Action
Use of an expired system	Absence of a clear shutdown plan	4×4=16	High	Prepare a clear shutdown and maintenance plan in advance.
System downtime during updates	Weak testing	4×5=20	Critical	Perform comprehensive testing in a test environment before updating.
Data loss during shutdown	No backup	3×5=15	High	Implement periodic backup plans with recovery tests.
Ethical non-compliance	Neglect of ethical assessment	5×4=20	High	Conduct periodic ethical assessments during all phases.

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8- Performance indicators:

Indicator	Measurement method	Target	Frequency
Completion of documentation at all stages	Number of approved documents ÷ stages	≥95%	Per project
Percentage of ethical assessments carried out	Number of reports ÷ Number of systems	100	Annual
Number of malfunctions resulting from updates	Number of malfunctions	≤1	Quarterly
System safe downtime	Average time	≤48 hours	When needed
Annual improvement rate	Number of improvements ÷ Approved plans	≥90%	Annual

9- References

- ISO/IEC 42001:2023.
- ACBS System Life Cycle Policies
- ACBS System Management Plans and Updates

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Life Cycle Management Plan
Template
ACBS-F55

1- General information

NO	Item	Details	Illustrative example
1	System name		Smart Customer Recommendation System
2	System code		AI-SYS-2025-001
3	Responsible Department		Technology Department
4	System Manager		Eng. Ahmed Al-Otaibi
5	Plan Preparation Date		01/09/2025
6	Date of last update		10/10/2025
7	Release		0

2- System description

- **System purpose:** Improve customer experience and increase satisfaction rates using personalized recommendation algorithms.
- **Objectives:** Increase recommendation accuracy to $\geq 95\%$ within the first six months of operation.
- **Expected Outputs:** Accurate recommendation reports, seamless user experience, and a 10% increase in product sales within the first year.

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3- Life cycle stages

Stage	Key Activities	Expected Outputs	Responsible	Planned date
Idea and feasibility study	Needs analysis, preparation of technical and economic feasibility study	Approved feasibility report	System Coordinator	10/09/2025
Design	Architectural design of the system, determination of technical requirements	Approved design document	Development Team	09/25/2025
Development	Programming algorithms, preparing the test environment	System prototype	Development Team	10/30/2025
Test	Performance and security testing	Comprehensive test report	Quality Team	10/11/2025
Pilot Deployment	Limited System Deployment	Performance Follow-up Report	Operations Team	11/20/2025
Actual deployment	System launch in production environment	System operating efficiently	Technology Manager	12/01/2025
Operation and optimization	Monitor performance, make improvements	Periodic improvement reports	Operations Team	Ongoing
Shutdown or upgrade	Prepare a safe upgrade or shutdown plan	Documented shutdown report	System Committee	As needed

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Life Cycle Management Plan Template

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4- Performance indicators

Indicator	Target	Measurement Method	Frequency
Percentage of completion of cycle stages	100	Plan follow-up reports	Monthly
Accuracy of recommendations	≥95%	Actual performance results	Quarterly
Response time	≤200 milliseconds	Operating reports	Daily
User satisfaction	≥90%	Customer surveys	Semi-annual

5- Risks and mitigation measures

Risk	Cause	Level of risk	Preventive measure
Delay in the development phase	Shortage of human resources	High	Hire additional resources and clearly distribute tasks.
Weak test results	Incomplete preparation of the test environment	Average	Test environment configured to match the operational environment.
Operational problems after launch	Incomplete maintenance or configuration	High	Prepare a contingency plan and continuously monitor performance.

6-Review and approval

Preparation	Review	Approval
Name:	Name:	Name:
Position:	Position:	Position:
Signature:	Signature:	Signature:

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Documentation
**Artificial Intelligence
Management System**

MANUAL			
Artificial Intelligence Management System MANUAL		Code XXXX-AIMS-MANUAL	
Procedures			
NO	Procedure	Code	Forms
1	Conducting context analysis and understanding legal and ethical requirements	XXXX -AIMS-P01	XXXX -AIMS-F01 XXXX -AIMS-F02 XXXX -AIMS-F03 XXXX -AIMS-F04
2	Leadership procedure and distribution of roles, responsibilities, and powers	XXXX -AIMS-P02	XXXX -AIMS-F05 XXXX -AIMS-F06 XXXX -AIMS-F07
3	Conducting AI risk assessment and treatment and impact assessment	XXXX -AIMS-P03	XXXX -AIMS-F08 XXXX -AIMS-F09 XXXX -AIMS-F10 XXXX -AIMS-F11 XXXX -AIMS-F12 XXXX -AIMS-F13 XXXX -AIMS-F14 XXXX -AIMS-F15 XXXX -AIMS-F15-01 XXXX -AIMS-F15-02 XXXX -AIMS-F16
4	Conducting a multi-impact assessment of artificial intelligence systems	XXXX -AIMS-P04	XXXX -AIMS-F17 XXXX -AIMS-F18 XXXX -AIMS-F19 XXXX -AIMS-F20 XXXX -AIMS-F21 XXXX -AIMS-F22 XXXX -AIMS-F23 XXXX -AIMS-F24 XXXX -AIMS-F25
5	Procedure for determining and monitoring artificial intelligence objectives	XXXX -AIMS-P05	XXXX -AIMS-F26 XXXX -AIMS-F27 XXXX -AIMS-F28

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6	Internal and external communication procedure	XXXX -AIMS-P06	XXXX -AIMS-F29 XXXX -AIMS-F30 XXXX -AIMS-F31
7-	Documented Information Management Procedure	XXXX -AIMS-P07	XXXX -AIMS-F32 XXXX -AIMS-F33 XXXX -AIMS-F34 XXXX -AIMS-F35 XXXX -AIMS-F36 XXXX -AIMS-F37
8	Competency Management, Training, and Awareness Procedure	XXXX -AIMS-P08	XXXX -AIMS-F38 XXXX -AIMS-F39 XXXX -AIMS-F40 XXXX -AIMS-F41 XXXX -AIMS-F42
9-	System Records Management and Performance Measurement Procedure	XXXX -AIMS-P09	XXXX -AIMS-F43 XXXX -AIMS-F44 XXXX -AIMS-F45 XXXX -AIMS-F46
10	Human and technical resource support measures	XXXX -AIMS-P10	XXXX -AIMS-F47 XXXX -AIMS-F48 XXXX -AIMS-F49 XXXX -AIMS-F50
11	Planning and operation procedures	XXXX -AIMS-P11	XXXX -AIMS-F51 XXXX -AIMS-F52 XXXX -AIMS-F53 XXXX -AIMS-F54
12	Artificial Intelligence Systems Life Cycle Management Procedure	XXXX -AIMS-P12	XXXX -AIMS-F55 XXXX -AIMS-F56 XXXX -AIMS-F57 XXXX -AIMS-F58 XXXX -AIMS-F59
13	Preparation of applicability statement	XXXX -AIMS-P13	XXXX -AIMS-F60 XXXX -AIMS-F61 XXXX -AIMS-F62
14	Governance and oversight of artificial intelligence systems	XXXX -AIMS-P14	XXXX -AIMS-F63 XXXX -AIMS-F64 XXXX -AIMS-F65 XXXX -AIMS-F66

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15	Training and verification data quality management procedure	XXXX -AIMS-P15	XXXX -AIMS-F67 XXXX -AIMS-F68 XXXX -AIMS-F69 XXXX -AIMS-F70
16	Implementation of operational controls and control techniques	XXXX -AIMS-P16	XXXX -AIMS-F71 XXXX -AIMS-F72 XXXX -AIMS-F73 XXXX -AIMS-F74
17	Internal audit procedure	XXXX -AIMS-P17	XXXX -AIMS-F75 XXXX -AIMS-F76 XXXX -AIMS-F77 XXXX -AIMS-F78
18	Internal review procedure	XXXX -AIMS-P18	XXXX -AIMS-F79 XXXX -AIMS-F80 XXXX -AIMS-F81
19	System Records Management and Performance Measurement	XXXX -AIMS-P19	XXXX -AIMS-F82 XXXX -AIMS-F83
20	Nonconformity management procedure Corrective action	XXXX -AIMS-P20	XXXX -AIMS-F84 XXXX -AIMS-F85
21	Continuous improvement procedure	XXXX -AIMS-P21	XXXX -AIMS-F86 XXXX -AIMS-F87
22	Sharing knowledge and lessons learned	XXXX -AIMS-P22	XXXX -AIMS-F88 XXXX -AIMS-F89

Policies

NO	Policy	Code
1	General Policy for Artificial Intelligence Management System	XXXX -AIMS-PL00
2	Organizational Context Policy for Artificial Intelligence Management System	XXXX -AIMS-PL04
3	Leadership Policy for Artificial Intelligence Management System	XXXX -AIMS-PL05
4	Planning Policy for Artificial Intelligence Management System	XXXX -AIMS-PL06
5	Support Policy for Artificial Intelligence Management System	XXXX -AIMS-PL07
6	Operating Policy for Artificial Intelligence Management System	XXXX -AIMS-PL08
7	Performance Evaluation Policy for Artificial Intelligence Management System	XXXX -AIMS-PL09
8	Continuous Improvement Policy for Artificial Intelligence Systems	XXXX -AIMS-PL10