

BIS Guest Lecture

MANAGEMENT SYSTEM STANDARDS

ISO/IEC 19770

IT (Hardware and Software) Asset Management

Ashish Tiwari, Bureau of Indian Standards (BIS)



Bureau of Indian Standards (BIS)



National Standards Body in India

Established as Indian Standards Institution (ISI) as Society in 1947

Bureau of Indian Standards Act, 1986 and 2016.

Core Activities:

- Standards Formulation
- Product Certification
- System Certification
- Testing
- Training



National Standards are formulated based on the concept of Consensus through meetings by the Division Councils and the Sectional Committees under it.



Stakeholders

- Government
- Regulators
- Industry
- Laboratories
- Research & Developments
- Consumers
- Academia

WHAT IS A STANDARD?

Document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.



Aims of Standardization



- Overall Economy
- Mutual Understanding
- Variety Control
- Fitness for Purpose
- Interchangeability
- Compatibility
- Safety
- Health
- Environmental Protection
- Removal of Trade Barriers



What is a Process Standard

- Specification of the processes for a specific functional area
- Most market-significant approach is the ISO Management System Standard
 - ✓ ISO 9001 Quality Management
 - ✓ ISO/IEC 27001 Information Security Management
 - ✓ Many more



Why Have a Process Standard?

- Facilitate common industry terminology and approaches in products and services
 - ✓ Facilitate training and awareness
 - ✓ Facilitate comparability of suppliers
 - ✓ Facilitate organizational assessment against agreed baseline
- Allow independent certification



Management System Standards

- Management System Standards (MSSs) are process standards written in an ISO-specified way
- Both 27001 (Information Security Management – ISM) and 19770-1 (IT Asset Management – ITAM) are Management System Standards (MSSs) using the ISO-mandated ‘high level structure and common wording’ from ‘Annex SL’ to ISO directives
- All MSSs (since ca 2013) also comply e.g. 9001 (Quality Management) and 14001 (Environmental Management)
- 20000-1 (IT Service Management) is currently being rewritten in this way
- All look the same at the top level; differences are in the detail, via *additions*



Why Have an MSS ITAM Process Standard

- Alignment with all MSSs
 - ✓ Greater understanding by all people working with MSSs
- Specific alignment/integration with
 - ✓ Security (ISO/IEC 27001)
 - ✓ Service Management (ISO/IEC 20000-1)
- More uptake of the standard
- ISO requirement for our type of standard



MSS Examples

- ISO 9001 Quality Management
- ISO/IEC 27001 Information Security Management
- **ISO/IEC 19770-1 Software Asset Management**
- ISO/IEC 20000-1 Service Management
- ISO 55001 Asset Management
- ISO 22301 Business Continuity Management
- ISO 14001 Environmental Management
- ISO 20121 Event Sustainability Management
- ISO 22000 Food Safety Management
- ISO 34001 Security Management
- ISO 41000 Facilities Management
- ISO 45001 Occupational Health & Safety Management
- ISO 50001 Energy Management
- ... and more

IT Asset Management Overview

Ramesh Jain

PROZM Knowledge Services Pvt Ltd



Definitions



Asset: item, thing or entity that has potential or actual value to an Organization

- Note 1 to entry: Value can be tangible or intangible, financial or non-financial, and includes consideration of risks and liabilities. It can be positive or negative at different stages of the asset life .
- Note 2 to entry: Physical assets usually refer to equipment, inventory and properties owned by the organization. Physical assets are the opposite of intangible assets, which are non-physical assets such as leases, brands, digital assets, use rights, licences, intellectual property rights, reputation or agreements.

Asset Management: coordinated activity of an organization to realize value from assets

- Note 1 to entry: Realization of value will normally involve a balancing of costs, risks, opportunities and performance benefits..
- Note 2 to entry: Activity can also refer to the application of the elements of the asset management system.
- Note 3 to entry: The term “activity” has a broad meaning and can include, for example, the approach, the planning, the plans and their implementation.

*Source : ISO 55000 :2014

IT Assets

Hardware

- Tangible
- Physical Movement
- Legal, Contractual and Financial
- Maintenance & Support
- Professional Services
- Training

Desktops, Laptops, Servers, Networking Equipment, Storage, Power Equipment, Peripherals (Printers, Scanners, etc.)

Software

- Intangible (Rights to Use)
- Easy to Copy (CD/DVD/Disk Drive)
- Legal, Contractual and Financial
- Maintenance & Support
- Professional Services
- Training

Commercial Software, Free Software, Opensource Software, etc.

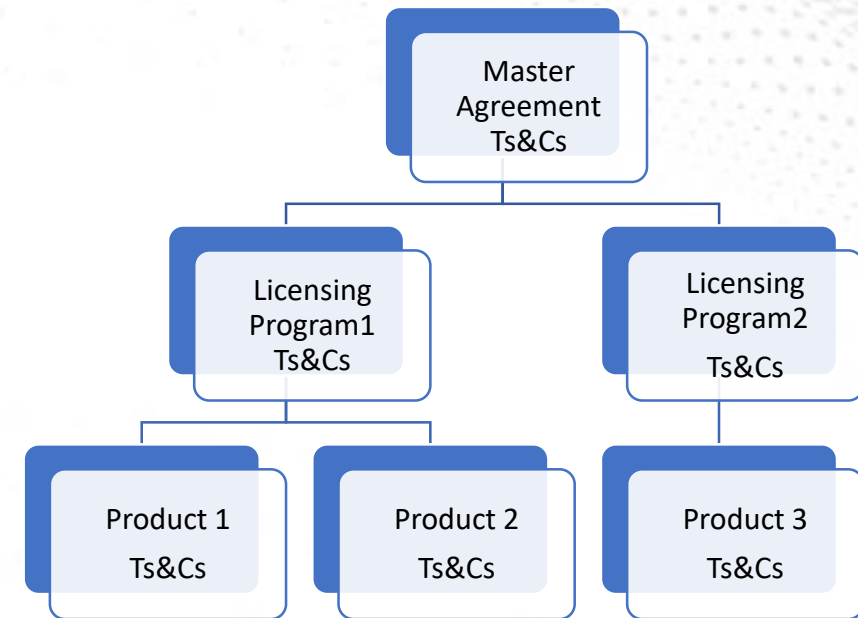


Software Asset and Agreements



- Software Installation Files - Download Links, CD/DVD, etc
- Software License Entitlement(s) details - Licenser emails, Access to License Management Portals, COA
- License Keys, Hardware Dongles, etc.
- Usage Rights and Restrictions:
 - Agreement(s) Structure and or
 - Product Use Rights / Tc & Cs / EULA
 - Licensing Units (Models & Metrics)
 - Per Device, Per User, Per Processor / Core
- Additional Rights due to Software Maintenance

Agreement Structure - Procurement



Software Maintenance & Support



IT Hardware Agreements



- The most important aspects of Hardware Asset Management are timely availability (logistics), uptime and proper functioning of the asset.
- It is the agreement / contract that governs the delivery, pricing and maintenance of the asset.
- Agreements Contracts
 - NDA CA
 - Purchase
 - Service
 - Lease
- Terms
 - Commercial
 - Delivery
 - Installation
 - Warranties, Maintenance, Support Services
 - Professional Services



Why IT Asset Management?



- Source
- Maintenance and Support
- Asset Optimization

- What you have?
- Where it is?
- What the current Value?
- Who owns it?
- Is it used optimally?
- How well they Operate?
- End of Lease
- End of Life



OBJECTIVES AND BENEFITS



- IT Assets Visibility
- IT Assets Security
- IT Asset Provisioning
- Legal and Regulatory Compliance
- IT Compliance and Audits
- IT Asset Optimization
- Release of Leased Assets
- Maintenance and Support
- Legal and Regulatory Risk Mitigation
- Planning Hardware Refresh
- Planning Software Upgrade
- IT Service Management
- Information Security Management
- Software License Compliance
- Software Asset Management
- IT Financial Management
 - Asset Value Reporting
 - TCO



IT Asset Management



Plan, Provide, Secure Maintain & Support IT
(Hardware and Software) Assets over its lifecycle and
management of asset Data*

*Data - Asset Identification, Asset Contractual, Technical, Location, User and Financial data over various lifecycle stages which can help provide meaningful insights on Financial (TCO, Taxation), Risk and Compliance as well as IT operations, maintenance and support and optimization perspective.

Asset Identification

Hardware

- Manufacturer
 - Model No and Name, Description
 - SKU / (Part No)
 - Serial Number
- Asset Id Tag
 - Bar Code / QR Code
 - RFID

Software

- Software Licensor (Publisher)
 - Product Title/Name
 - Part Number (SKU)
 - License No.

Hardware Asset Lifecycle



ASSET LIFECYCLE

Hardware Catalog

Classification of Assets and Defining Hardware Catalog – List of Authorised Hardware

Disposal

Retire

End of Life

Allocate

User Request for Asset

Onboarding Non-Catalog Hardware

Reharvest

Operate

Hardware Maintenance and Support

Purchase

Acquire (Procure)

Receive

Deploy

TOOL(S)

Data Analysis and Reporting - Compliance, Asset Optimization, Reconciliation, Stores Management, Asset Pool/Buffer, Data for Maintenance and Support Renewal, Alerts (EoS, EoL, M&S Renewal, etc).



Hardware Asset Security and Tracking



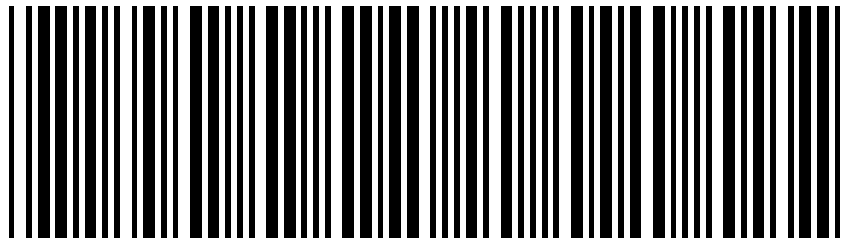
- Asset entering the organization
 - Asset Identification
- Asset in Operations
 - Asset discovery
 - Asset Utilization
- Asset moving out of organization
- Asset Location Id
 - Definitions and Identification
- Security
 - Locations
 - Asset Types
- Asset Id Tag
 - Simple Label
 - Barcode/QR Code
 - RFID



Individual Asset Unique Identification

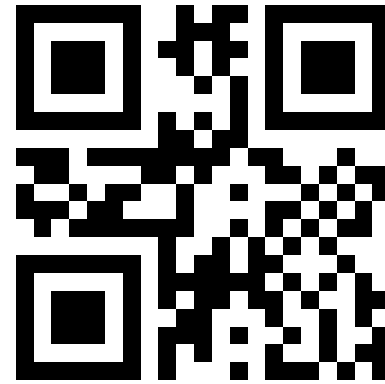


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BOND NUMBER : YRT98765

MACHINE READABLE ONLY?


- Unique Asset ID: Alphanumeric/Numeric
- Sequential Numbers
- Unique ID converted into Barcode / QR Code (Quick Response Code)

- Size of the Label
- Placement on Equipment Surfaces - Plain, Curved
- Asset Tag Material Type and Adhesive Strength
- Tampering - Laminated, Destructive

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[Asset Details](#) Events Depreciation Warrant



MacBook Air 8 GB 128GB
13INCH
A00035464

Serial No
C1MST84BH3QD

Purchased from
Croma Store Lower Parel

Purchase Date
01/18/2017

Cost
₹66,900.00

Brand
Apple

Model
MacBook Air

Site
[IN-MUM](#)

Location
IN-MUM-0002

Category
Computer equipment

13:27

[Asset Details](#) Events Depreciation Warrant

No content

Assigned to
[Ramesh Jain](#)

Status
Checked out

Custom fields

Internal Model
MacBook Air

Sub Category
Laptop

PO Number
PO6547

PO Date
01/18/2017

Cost Centre
56239

Invoice Number
SLF02A027040180611

Invoice Date
18/01/2017


Part No or SKU
MMGF2HN/A

Actions

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[Back](#) A00035464 [Edit](#)

[Asset Details](#) Events Depreciation Warrant



MacBook Air 8 GB 128GB
13INCH
A00035464

Serial No
C1MST84BH3QD

Purchased from
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Purchase Date
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Cost
₹66,900.00


Brand
Apple


Model
MacBook Air


Site
[IN-MUM](#)


Location
IN-MUM-0002


Category
Computer equipment


 Check in


 Lease


 Lost / Missing


 Repair


 Broken


 Dispose

 Donate

 Sell

 Delete

 Email

 Replicate

Cancel

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RFID

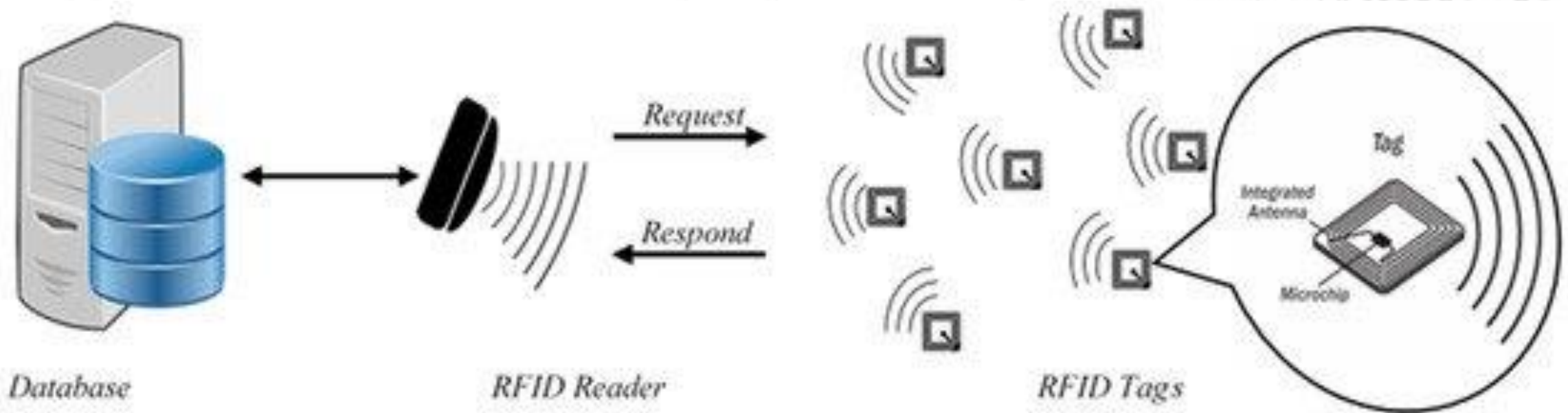
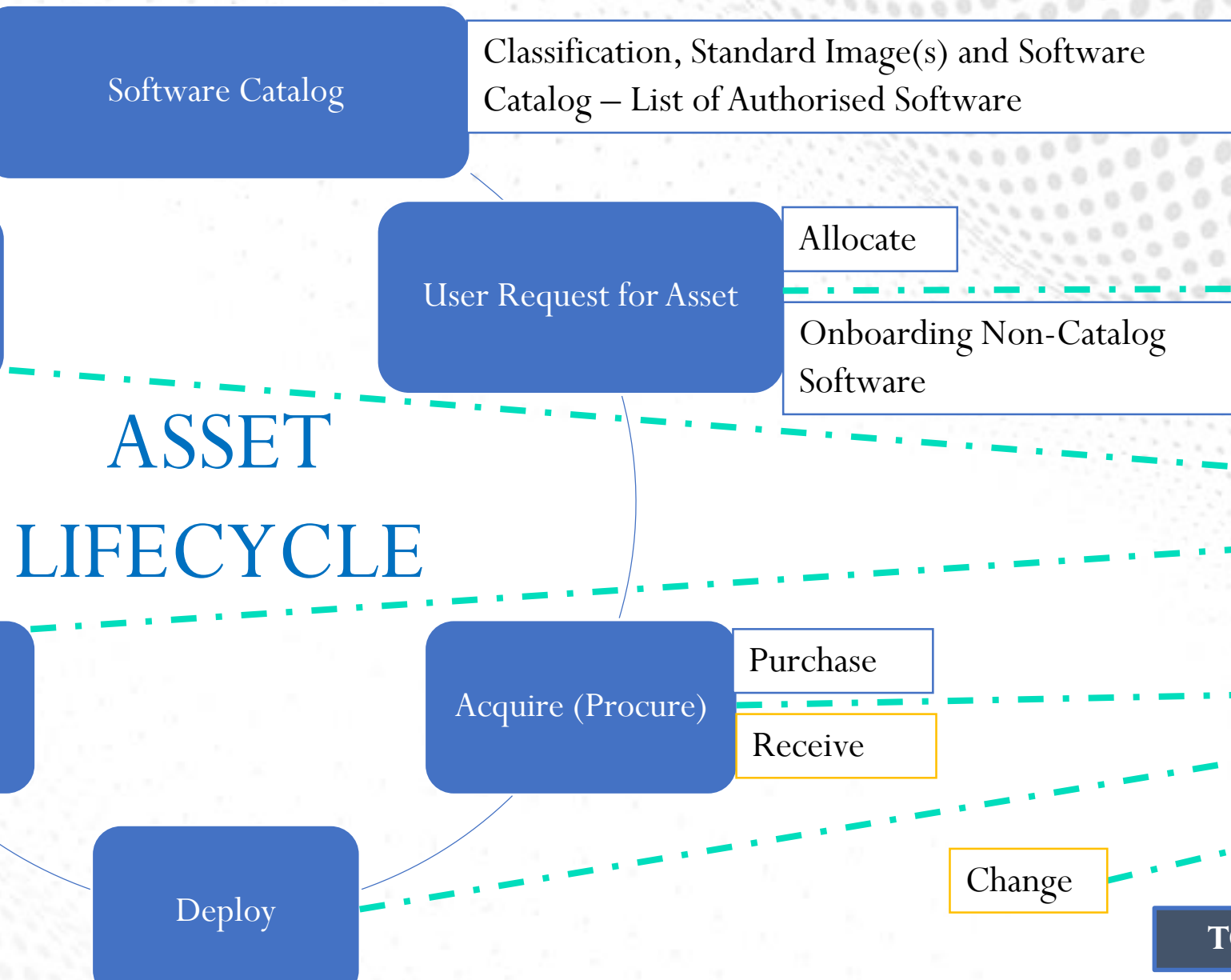


Image Source <https://www.mdpi.com/1424-8220/18/10/3584>

- Range
- Active / Passive
- Size of the Tag
- Surface and Environment

Software Asset Lifecycle



Data Analysis and Reporting - Compliance, Alerts – (EoS, EoL, M&S Renewal), Asset Optimization, Entitlement Management, Asset Pool/Buffer, Data for Maintenance and Support Renewal, etc.



Software Asset Security and tracking



- Installation Files and Media
- License Entitlement Records
- License Keys
- License Agreements (Terms and Conditions)
- Protection and Control
 - Software Library
 - Information/Data Management
- Contract Management
- Asset Copy
 - Asset Copy entering the Network
 - Asset Copy moving within Network
 - Asset Copy Access (Remote,...)
 - Asset Copy moving out of Network
- Visibility and Tracking
 - Deployment Discovery
 - Identification
 - Asset Mapping

Information / Data Management & Tools



Capturing Asset Acquisition Data



- Contracts
- POs & Work Orders
- Invoices & GRNs
- Proof of Payment
- Bills of Entry/Lading
- Who Receives?
- Recording Assets
 - Entitlement Records
 - License Management Portals
 - License Statements
- Information Captured
 - Part Number / SKU
 - Product Title/Name
 - Licensing Units
 - Maintenance Dates
- Maintenance Renewals
- Information Source(s)
 - Finance
 - Procurement
 - Contract Management
- Asset Management
 - FAR
- Publisher emails
- License Management Portals
- Licensing Agreements
- Invoices and POs
- Reseller Report?
- Software Box(es), COA
- License Statements

Procured, Leased, Rented, Loaned, etc.



Information / Data Management



- Data Sources
- Data Definition
 - Attributes and Values
- Product Models
- Lifecycle Data
 - Asset Request with Catalog
 - Allocation/Assignment
 - Asset Procurement
 - Asset User, Location
 - Usage Monitoring
 - Asset Maintenance and Support
 - Asset Retirement
- Changes to Asset or IT Environment
 - Upgrade / Downgrade
 - Technical Releases, Patches, Service Packs
- Discovery
- Analysis and Reporting
 - Compliance
 - Asset Utilization Report and Optimization Opportunities
 - Maintenance Renewal Alerts
 - EoS Alerts
- Data Security and Trail

Who Defines and Controls?



Tools



- Service Desk
- Procurement System / Tool
- Contract Management Tool
- Asset Data Management Tool(s)
- Software Library
- Discovery Tool
- Imaging Packaging
- Deployment
- Uninstall Registry Cleaner
- Barcode/QR Code Scanner
- RFID Reader
- Define the ITAM Solution requirements based on process automation / workflow and data flow as per key attributes to be captured and monitored.
- With help of Solution Architect design the ITAM system with required interfaces to databases / data sources and Tool(s).



Discovery Tool Requirements



- Supported
 - OS
 - Technology
 - Virtualization
- Asset Type
 - HW
 - SW (Range)
- Agent / Agentless
 - Change Alerts
- Hardware & Software Discovery
- Hardware Identification
 - Make Model Configuration
- Software Identification
 - Product Title / Part No
 - Suites and Components
- Reporting
- Integration Capability
- Asset Acquisition Data Management (Module)

Systematic Asset Management

Asset Management is - coordinated activity of an organization to realize value from assets

Asset Management System – “Set of interrelated or interacting elements to establish asset management policy, asset management objectives and processes to achieve those objectives”

Source : ISO 55000 :2014



ISO/IEC 19770 family of Standards for ITAM



- ISO/IEC 19770-1:2017 - Management **System** Standard
- ISO/IEC 19770-2 : 2015 - Software **Identification** Tag
- ISO/IEC 19770-3 : 2016 - Software **Entitlement** Schema
- ISO/IEC 19770-4 : 2017 - Resource Utilization Measurement
- ISO/IEC 19770-5 : 2015 Overview and Vocabulary
- ISO/IEC 19770-6x – Hardware Schema (Under Development)

Asset Management System – “Set of interrelated or interacting elements to establish asset management policy, asset management objectives and processes to achieve those objectives”

Source : ISO 55000 :2014

4.1 Understanding the organization and its context
4.2 Understanding the needs and expectations of interested parties (Stakeholders)

4.3 Determining the scope of the Asset Management system
4.4 Asset Management System

5.1 Leadership and commitment
5.2 Policy
5.3 Organizational roles, responsibilities and authorities

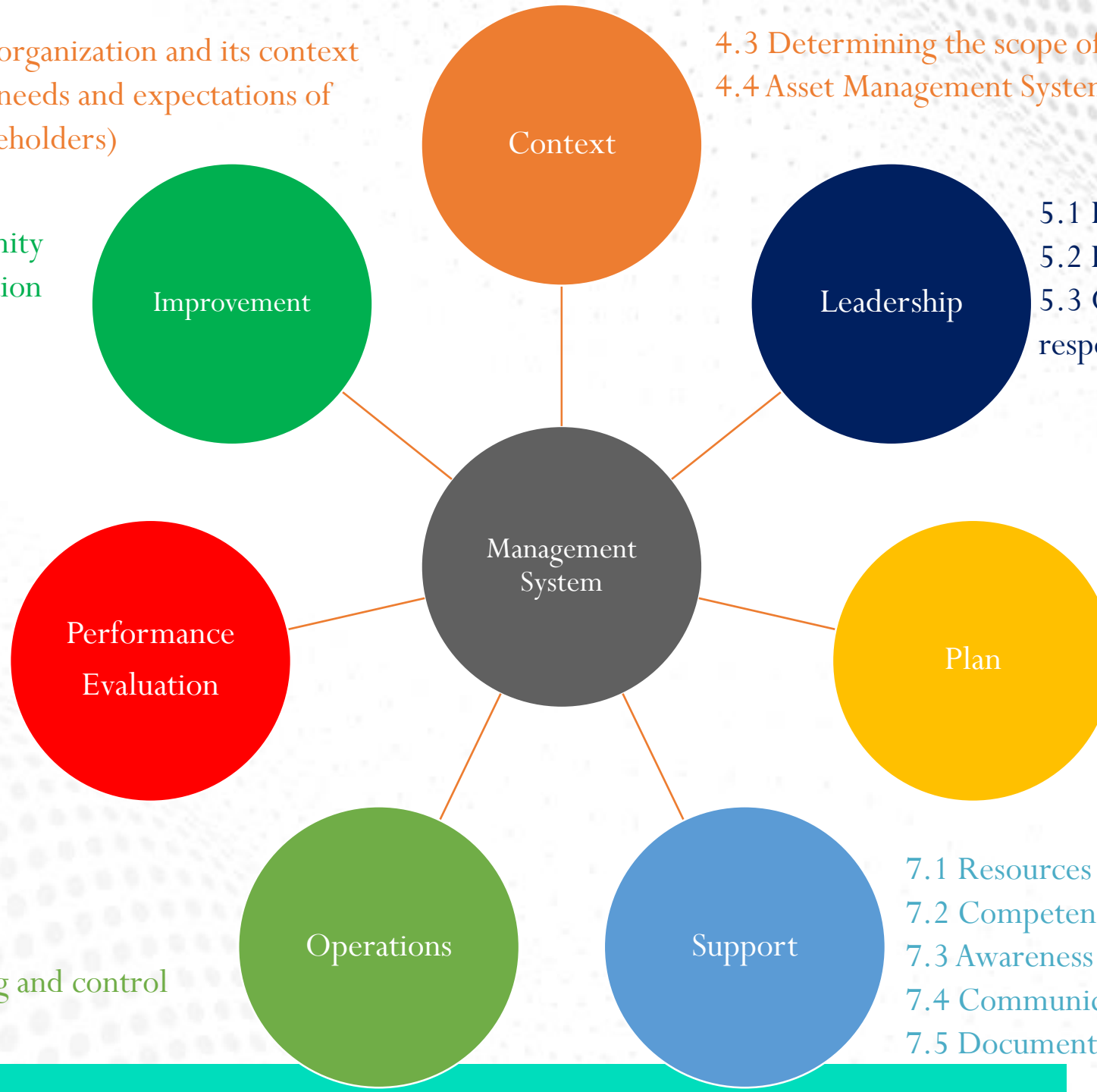
6.1 Actions to address risks and opportunities
6.2 Management system objectives and planning to achieve them

7.1 Resources
7.2 Competence
7.3 Awareness
7.4 Communication
7.5 Documented information

10.1 Non-conformity and Corrective action
10.2 Continual Improvement

9.1 Monitoring, measurement, analysis and evaluation
9.2 Internal Assessment
9.3 Management review

8.1 Operational planning and control





ISO/IEC 19770-1:2017 Tiers Explained



IT Asset Lifecycle
Management
Processes

1. Specification
2. Acquisition
3. Development
4. Release
5. Deployment
6. Operation
7. Retirement

Tier 3
Optimization

Tier 2
Lifecycle
Integration

Tier 1
Trustworthy
Data

1. Relationship / Contract Management
2. Financial Management
3. Service Level Management
4. Other risk management

1. Change Management
2. Data Management
3. License Management
4. Security Management

SAM – Key Elements

Policies and Processes Agreements

- Policies, Processes and Process Interfaces.
- Awareness
- Understanding of Agreements and Information Updates on Licensor-New Products, EoS, etc.

People

- Functions
- People – Program Manager, SMEs – Licensing Experts
- Roles and Responsibilities

Information / Data Management and Tools

- Data Attribute and Data Values (Drop Downs)
- Data Sources
- Workflow Automation and Data Management
- Discovery

Policy in Brief

1. Software Source Credibility Check and Software License Verification should be done before software is acquired.
2. License verification - License Terms to be verified in line with organisation's contract management guidelines.
3. Rights (License) must be acquired before Software Usage.

Note - Software Usage – Any activity which requires a license to do so.
E.g. Allocate (Named User Licenses), Copy, Deployment (Infrastructure and Location), Access (local or Network), Run and Use
4. Software Assets must be protected and Software Usage must be controlled as per Applicable License Terms and conditions.
5. Software Procurement Data and Entitlement Details to be managed by capturing Proof of Entitlements with key Asset Attributes (Global / Regional / Country/Project/Cost centre)
6. Software Deployment is carried out using Corresponding License Keys and Software Installation Files provided by Licensor, in line with Applicable License Terms.

7. Software License Compliance is verified Periodically.

8. Governance and Enforcement process must be in place for Software Asset Management operations. Disciplinary Actions to be defined for unauthorised and Counterfeit Software Usage on infrastructure

9. All SAM activities must be handled as per information security guidelines – All the artefacts, data and information records created must be classified as information Items and to be managed as per organizations Information Security Policy and Guidelines.

E.g. 1. License Key – Highly Confidential and Restricted Information Item. 2. Software Installation Files - Highly Confidential and Restricted Information Item, 3. Discovery Data - Highly Confidential and Restricted Information Item.

Security Guidelines must be defined based on “Need to know and Least Privilege” basis for managing Software Asset information records.

Awareness and Communication





People and Functions



- ITAM Committee
- ITAM Charter
- Functions Representation
 - Procurement
 - Risk & Compliance
 - Corporate & Biz Planning
 - InfoSec / HR / Legal / Finance
 - CIO / IS - Application Manager(s) & Enterprise IT and DB architect/admin
 - Quality and Internal Audit
- External Stake Holders
- Core IAAM Team
 - SAM and HAM Program Manager
 - Software and Hardware Asset Manager
 - License Manager
 - Asset Analyst
- IT Teams
 - Deployment
 - Service Desk
 - Data Centre Team



SAM Documentation



- SAM Charter
 - Objectives, Goals and Scope
- SAM Policy
- Reference to related policies
- SAM Processes
- List of Interface processes with SAM Checks and Controls details
- Procedures & Activities
- SAM Plan
- Asset Classification and Attributes
- SAM Roles and responsibilities
- Listing of
 - SAM Tools
- Managing the document
 - Revisions with Version Control

THANK YOU