Inter Environmental Services Coordination Management

HESAS

HEALTHCARE ENVIRONMENTAL SERVICES AUTOMATION SOICETY

Draft
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HESAS EMS Standards Document

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Message from the chairman

It is vividly evident that the world witnessed the worst public health and economic crisis due to COVID-19 pandemic. This inevitably mobilized the international community to act seriously and swiftly. However, the mortalities and morbidities induced by healthcare-acquired infections (HAI) are equally fatal, but the international community did not act similarly. Consequently, we are continuously and chronically suffering from HAI.

The current intervention for HAI is merely based on passively-set standards and enforcing these standards via regulatory agencies such as the centre for disease control and prevention (CDC), joint commission international (JCI), ministries of health, and other regulatory agencies. To efficiently address HAI, we inevitably need to mobilize the international community because HAI traverses a multitude of epistemological dimensions, requiring multidisciplinary tacit knowledge, and mandates active international collaboration. Besides, we believe that we can efficiently traverse deeply into the root-causes and solution landscapes by automating the entire healthcare environmental services and infection control within healthcare institutions using the latest advancements in computational epistemology, computational infection control models, computational epidemiological models, artificial intelligence, machine learning, distributed ledger technology, collective intelligence, cognitive technologies, internet of things, ubiquitous technologies, intelligent micro-measurement frameworks, artificial life, evidence-based program implementation, patient-centric care, strategy anchored execution, and symbiotic healthcare ecosystem services. Consequently, we developed these open standards that were tailored from diverse international standards to promote the automation of healthcare environmental services and infection control processes and best practices.

The Healthcare Environmental Services Operational Map (HESOM) and other standards were developed to efficiently leverage multidisciplinary experts and practitioners to contribute towards the eradication of HAI-induced mortalities and morbidities. Using ReXcels research and innovation environment, we cultivate collective intelligence by bringing together these multidisciplinary experts to iteratively develop these standards and adaptively support the innovation of computational technology that automates the execution and enforcement of these standards. As such, we cordially invite you to use these documents and participate actively in the further development of these standards to significantly reduce HAI-induced mortalities, morbidities, and their enormous negative economic externalities.

Hamid Adem
Interim Chairman, and Chief R&D Officer

Change Control

Change Control

Version:	Date:	Changes:

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Purpose

1 Purpose

1. PURPOSE

The purpose of this document is to establish Inter Environmental Services Coordination Management process that would:

- Enable efficiently quality coordination activities amongst the environmental services.
- Remove any of mis-coordination that can affect the overall performance of the department.
- Manage quality dependencies among environmental services in order to reduce time, costs and improve the outcome.
- Smoothen the communication between all the environmental services involved in quality coordination.
- Manage dynamism in the environmental services relationships so as to avoid ripple effect

This process is based on international well acclaimed standards like:

- *NHS- National Health Services Standard*
- *OSHA- Occupational Safety and Health Administration standard*
- *CDC- Centers for Disease Control and Prevention standard*
- *Lean six sigma- Quality Standard*
- *JCI- Journal of Clinical Investigation standard*
- *JCAHO- Joint Commission on Accreditation of Healthcare Organizations (JCAHO)*
- *EPA- US Environmental Protection Agency*
- *HCAHPS - Hospital Consumer Assessment of Healthcare Providers and Systems*
- *HIPA- Health Information Privacy Act standard.*

*P.S: This process is a derivation from **ESM (Environmental Service Map),** which is a holistic and a comprehensive model for Environmental Services Management.*

Structure of the Document

2 Structure of the Document
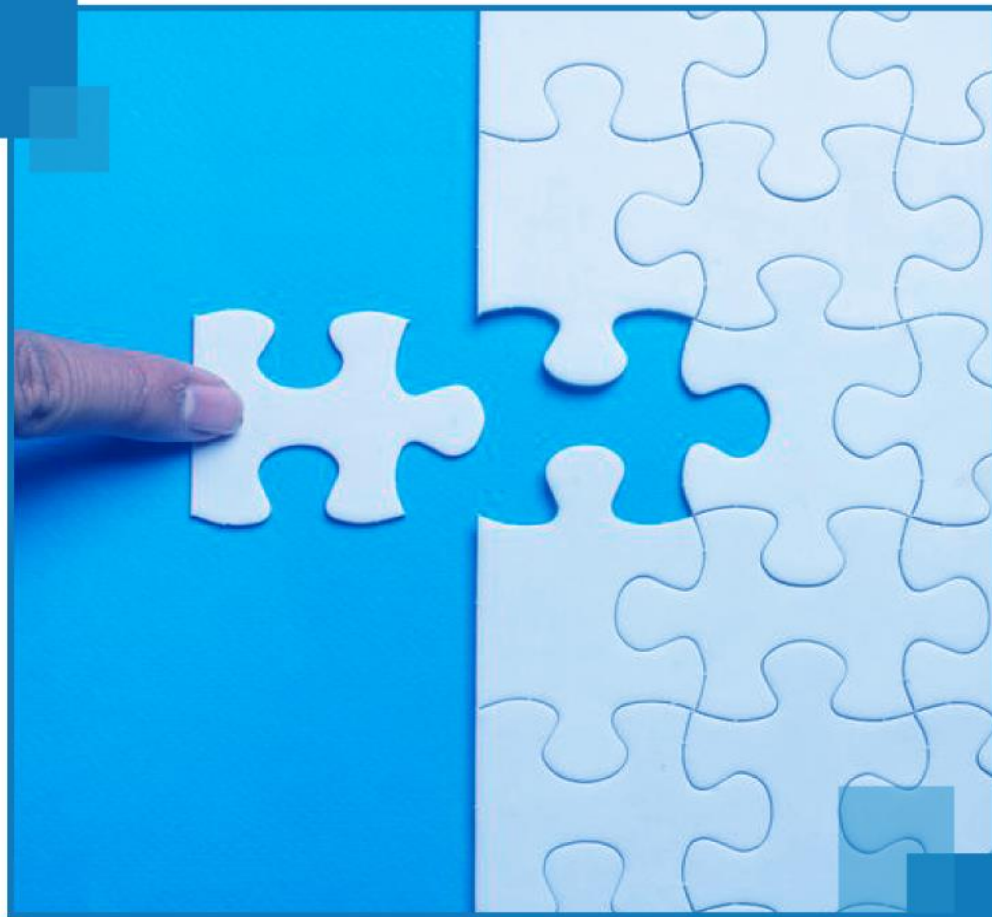
2. STRUCTURE OF THE DOCUMENT

The Inter Environmental Services Coordination Management process document comprises the following chapters:

Chapter–3: _Scope_: This chapter describes the scope of the document and the Inter Environmental Services Coordination Management process.

Chapter–4: _General Assumptions_: This chapter describes the underlined assumptions made for both the document and Inter Environmental Services Coordination Management process.

Chapter–5: _Inter Environmental Services Coordination Management Framework_**:** This chapter exhibits the interaction of Inter Environmental Services Coordination Management process with other related processes and also describes the high level process sequence for Inter Environmental Services Coordination Management based on EMS framework.

Chapter–6: _Inter Environmental Services Coordination Management Process_**:** In this chapter Inter Environmental Services Coordination Management process and sub processes (if any) will be depicted and specified using rigorous BPMN and process specification templates.

Chapter–7: _References_**:** This chapter serves as a prime reference to Inter Environmental Services Coordination Management process and presents the details supporting it in tabular formats. The chapter describes relevant Business Rules, Risks, Quality Attributes, Data Quality Dimensions, Operation Policies, KPIs, CTQs, Abstract Time-scales and SLAs terms specific to Inter Environmental Services Coordination Management process.

The Inter Environmental Services Coordination Management process is supposed to be a living document and consists of various variable values which would frequently evolve or change as Inter Environmental Services Coordination Management process matures or changes.
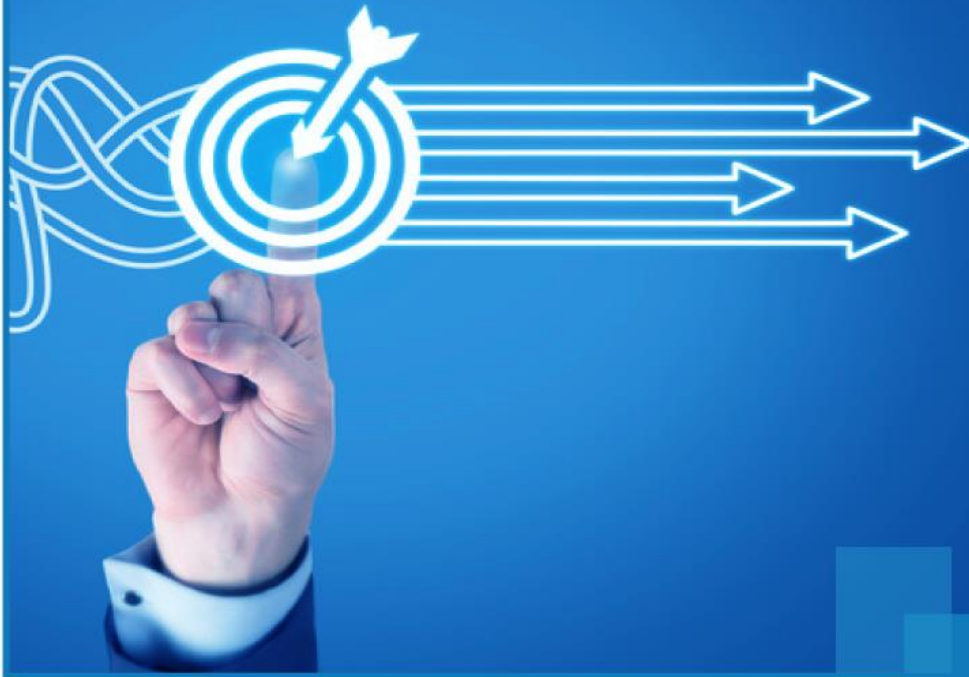
Scope

3. SCOPE

The scope of this process is applicable to environmental services department.

General Assumptions

4 General Assumptions

4. GENERAL ASSUMPTIONS

The following are the general assumptions made:

- Inputs to the process are accurate.
- This process is supported by automated tools that would enable detailed analysis and management capabilities for this process.
- The roles defined in this document can be attached to the existing position
- Any process or sub process related assumptions are explicitly identified in related Process Specification table in Chapter 6.

Inter Environmental Services Coordination Framework

5 Inter Environmental Services Coordination Framework

5.1 Inter Environmental Services Coordination Management Interactions

The following depiction shows the points of interaction Inter Environmental Services Coordination Management process with other related EMS processes. The arrows moving into Inter Environmental Services Coordination Management process signify the inputs from the other process to Inter Environmental Services Coordination Management process, and the arrows moving out of the Inter Environmental Services Coordination Management process signify the inputs from Inter Environmental Services Coordination Management process to other related EMS processes. All these processes depicted below are defined in their own respective dedicated documents.

5 Inter Environmental Services Coordination Framework
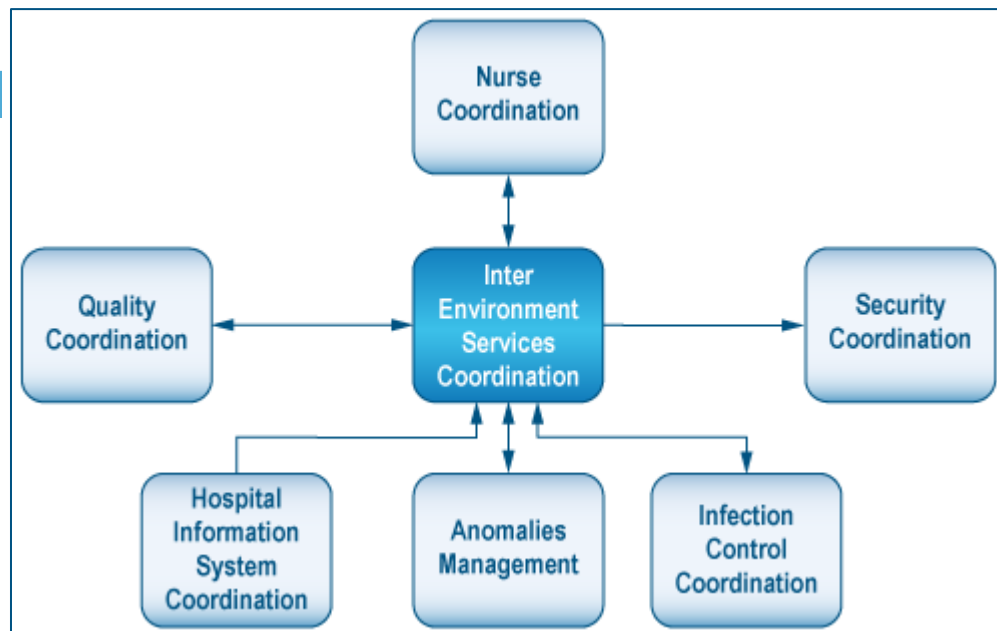
5.2 Inter Environmental Services Coordination Management Process Sequence

The Inter Environmental Services Coordination Management process comprises of following high level sequence of activities:

1. **Establishing Inter Environmental Service Coordination Team**
2. **Identifying Inter Environmental Service Coordination relationships**
3. **Establish Coordination Goals**
4. **Establish Coordination mechanism**
5. **Monitor Performance.**

Section 5.2.1 -5.2.7 describes the high level process sequence for environmental services department Inter Environmental Services Coordination Management based on EMS framework. **Section 6.1** Process Model sheds more light on the flow of Inter Environmental Services Coordination Management process.

5.2.1 Establishing Inter Environmental Service Coordination Team

This involves establishing governing bodies to look over inter environmental services Coordination. Typically, this team should be lead by higher ranking executive who have authority to make decisions for the entire environmental services department. This body would comprise of members taken as representative of various environmental services department.

This process comprises of establishing following:

- Establishing Coordination Leader
- Team Roles and responsibilities
- Chain of Authority
- Quality Coordination Methodology
- Coordination rules & workflow.

5.2.2 Identifying Inter Environmental Service Coordination Relationships

This comprises of following:

- **Identification of coordination Services**. This involves identification of the services which require coordination. For example, coordination between infection management service, waste management service, housekeeping management, laundry management, materials management, inventory management.
- **Identification of activities**. Decomposition of the services into activities.
- **Identification of critical activities**. These are the critical coordination activities.
- **Identification of dependencies**. This comprises of identification of all the possible dependencies which the critical processes need for their smooth functioning activities.
- **Identification of coordinating resources**. This comprises of
  - o **Identification of actors.** This comprises identification of actors who are responsible for coordinating task.
  - o **Identification of resources**. This comprises identification of resources which are responsible for coordinating task.
- **Identification Coordination constraints.** The constraints to current coordination process which might result into under coordination.

5.2.3 Establish Coordination Goals

This comprise of following:

- **Aligning Collaboration goals**. Aligning goals so that each actor and activity has accountability and are free from conflicts.
- **Removal of interaction complexity**. This involves resolving conflicts arising from unexpected task interactions.
- **Ensure Sharing.** This comprises of following:
  - o **Ensuring Information sharing.** This ensures that a free information flow happens across all the activities so that the activities can operate in harmony with each other. This can be achieved via having frequent meetings.
  - o **Ensure Resource Sharing**. This involves sharing of resources both in terms of man power and budget.
- **Enabling Synchronization.** Some activities need to be synchronized with other activities so as to ensure that they do not impact the overall process goal.

- **Ensure Smooth Communication**. This involves establishing smooth communication between various services of inter environmental services.
- **Establish Behavior Harmony.** This activity ensures that all the actors/ agents involved in the coordination process trust each other, and see the entire process as one.
- **Use of Automation**. Using automated tools to facilitate coordination would ensure that the process remains accurate and free from error.
- **Ensure Mutual Exclusiveness.** This activity ensures that two coordinating activities do not share a resource at the same time.
- **Increasing Knowledge Base.** This involves ensuring the knowledge is well disseminated across all the sections of the department.

5.2.4 Establish Coordination Mechanisms

This involves identification of combination of coordination mechanisms which can be implemented to foster smooth intra environmental services:

- **Internal.** Internal Coordination refers to the coordination among the member of the same department or section
- **External.** External Coordination refers to the coordination with out of the organizations e.g., customer, partners, suppliers.
- **Vertical.** This refers to a situation where the department head is called upon to coordinate the activities of all those who report to him.
- **Horizontal.** Horizontal Coordination exists between different departments such as Marketing and finance etc
- **Sequential Coordination**. This type of coordination often involves the transfer of responsibility for care e.g from one shift nurse to another, or from a doctor to a nurse.
- **Parallel Coordination.** This is where each profession or service retains responsibility for their care to the patient while working with others who are also seeing the patient

5.2.5 Monitor performance

This process involves monitoring the performance of the entire process to identify:

- **Conflicts**. If any conflicts are identified, they are highlighted to senior management, who would draft resolution plan to optimize the Quality Coordination process
- **Improvisations**. If any improvisation needs are identified, they are highlighted to senior management, who would draft improvisation plan to optimize the Quality Coordination process
- **Anomalies**. The anomalies found in the process are escalated to the anomalies management process.

Inter Environmental Services Coordination Management Process

6 Inter Environmental Services Coordination Management Process

6.1 Process Model

Inter Environmental Coordination Process

Senior Management	Environmental services coordination management
Periodic Review ○ → **Establish Coordination Team** ⊞ → **Identify coordination relationships** ⊞ → **Establish Coordination Goals** ⊞	**Establish Coordination Mechanism** ⊞ → **Monitor Performance** ⊞ → ◎

6 Inter Environmental Services Coordination Management Process
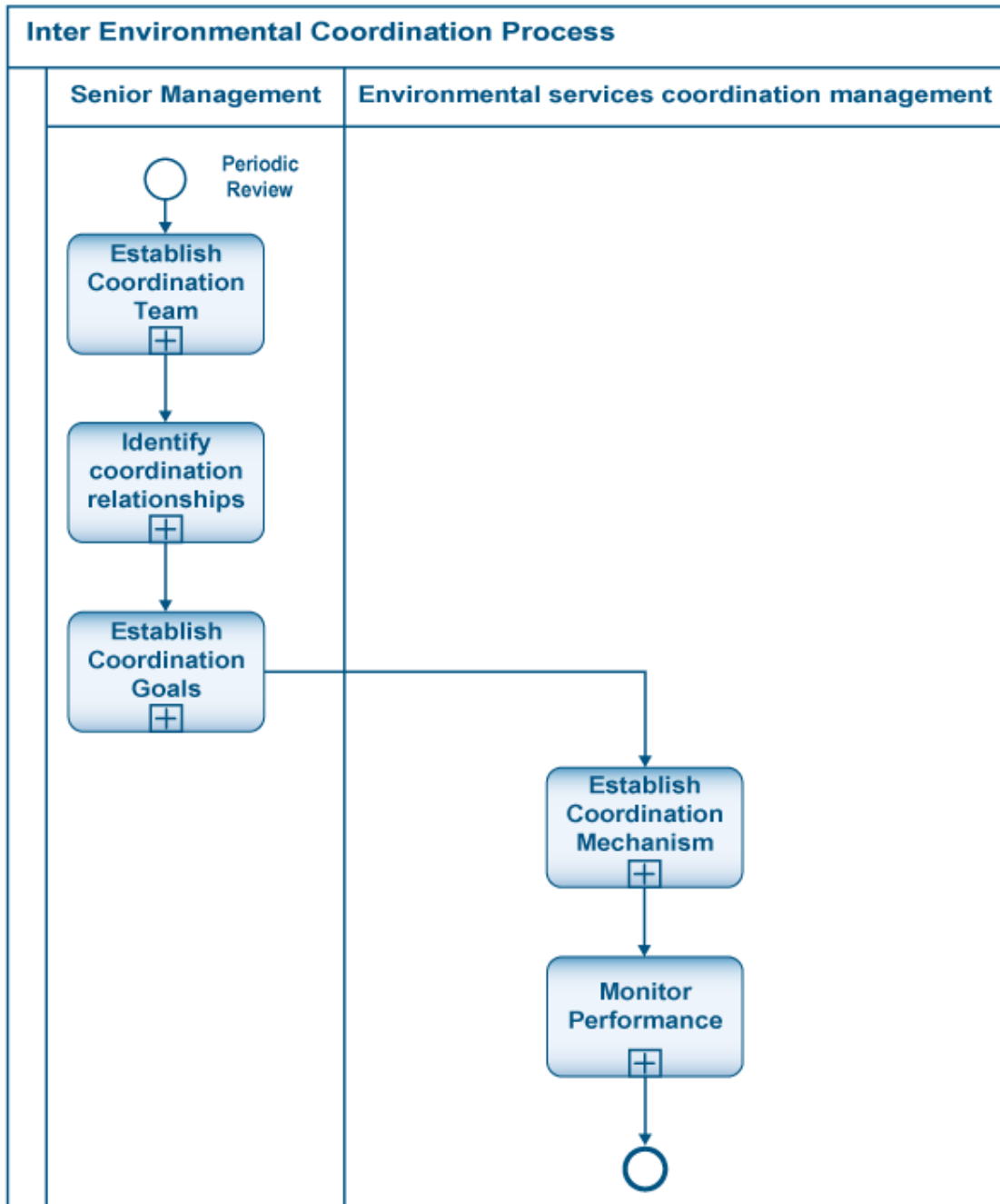
6.2 Process Specification

Specification	Description
Summary/Purpose	The purpose of this process is to create Inter Environmental Services Coordination Management process for environmental services.
Scope	This is a Level 1 Process Specification.
Primary Reference	Lean Six Sigma Standard, OSHA, NHS
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, Quality coordination, Anomalies Management.
Related Business Driver	Coordination of environmental related activities across organization.
Related Operational Policies	OP-001, OP-002, OP-003, OP-004, OP-005 (Ref. 7.5)
Assumptions	- Inputs to the process are accurate. - Top level management commitment exists.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Inter-Environmental Coordination

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimensions	<table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table>
Trigger	• Periodic Review.
Basic Course of Event	**Inter Environmental Services Coordination Management** 1. Senior Management establishes Quality Coordination Team 2. Senior Management identifies coordination relationships 3. Senior Management establishes coordination goals 4. Environmental Services Coordination Manager establishes coordination mechanism 5. Environmental Services Coordination Manager monitors performance. 6. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running. 2. Update the System and clear all logs. 3. End.
Extension points	Anomalies Management
Preconditions	Automated tools are provided to the process to ensure smooth and effective operations.
Post -conditions	Inter Environmental Services Coordination Management process is established.
Related Business Rules	BR-001, BR-002, BR-003, BR-004, BR-005 (Ref 7.1)
Related Risks	RR-001, RR-002, RR-003, RR-004 Ref. 7.2)

6 Inter Environmental Services Coordination Management Process

Related Quality Attributes	Reliability, Availability, Accountability, Performance, Auditability, confidentiality, non repudiation, adaptability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, timeliness, understandability, concise representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CB, PIR, CER, DR, CRR (Ref 7.6)
Related CTQs	CBV, PIRV, CERV, DRV, CRRV, MOM, PWOM, CTQ, IOM, TOM, WRM, DRM (Ref 7.7)
Actors/Agents	Senior Management, Environmental Services Coordination Management
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	5.1
Process Model	6.1
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.3 Roles and Responsibilities

Roles	Responsibilities
Senior Management	- Senior Management establishes Quality Coordination Team - Senior Management identifies coordination relationships - Senior Management establishes coordination goals
Environmental Services Coordination Manager	- Environmental Services Coordination Manager establishes coordination mechanism - Environmental Services Coordination Manager monitors performance.

6.4 Sub Process – Establish Inter Environmental Coordination Team

Establishing Inter Environmental Services Coordination Team

Senior Management

Periodic Activity

Establish Coordination

Team Leader

Role and Responsi-bilities

Chain of Authority

Quality Coordination Methodology

Coordination Rules

Coordination Workflow

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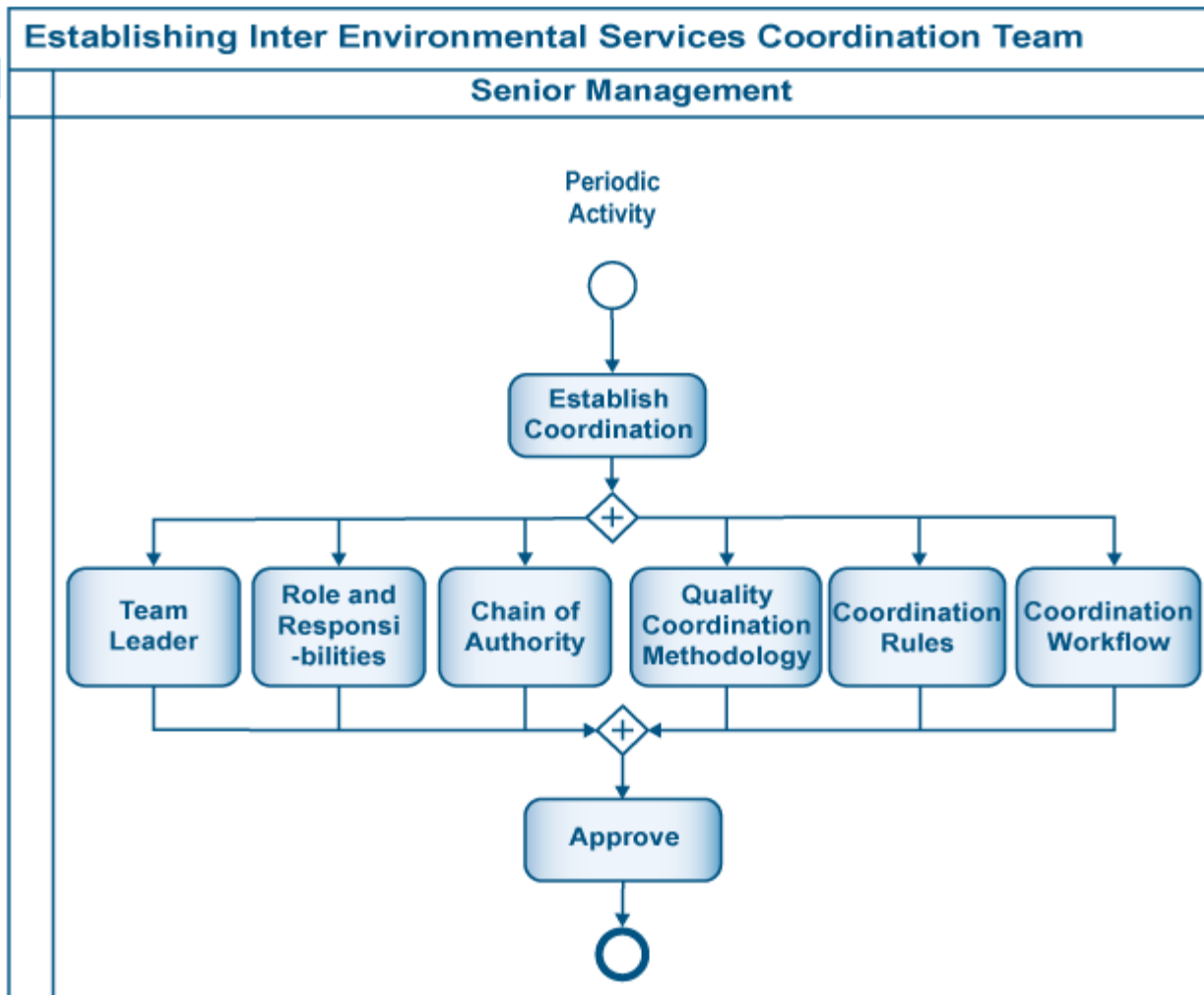
6.5 Sub Process – Establish Inter Environmental Coordination Team Specification

Specification	Description
Summary/Purpose	To establish Inter Environmental coordination team.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, Quality coordination, Anomalies Management.
Related Business Driver	Establish team structure for better governance.
Related Operational Policies	OP-001 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Inter-Environmental Coordination

6 Inter Environmental Services Coordination Management Process

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimensions	<table><tr><th>Type</th><th>Normal</th></tr><tr><td>Average</td><td>30 min</td></tr><tr><td>Std</td><td>12 min</td></tr></table>
Trigger	• Periodic Activity
Basic Course of Event	**Establishing Inter Environmental Services Coordination Team** 1. Senior management establishes coordination team leader, roles and responsibilities, chain of authority, Quality coordination methodology, coordination rules and coordination workflow. 2. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Establish Coordination relationships
Preconditions	The senior management is very committed to ensure that this process is well governed.
Post-conditions	Inter Environmental Services Coordination Management team gets formulated.
Related Business Rules	BR-001 (Ref 7.1)
Related Risks	RR-001(Ref. 7.2)
Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)

Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	PIR (Ref 7.6)
Related CTQs	PIRV (Ref 7.7)
Actors/Agents	Senior Management
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	5.1
Process Model	6.4
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.6 Sub Process – Establish Inter Environmental Coordination Team Roles and Responsibilities

Roles	Responsibilities
Senior Management	Senior management establishes coordination team leader, roles and responsibilities, chain of authority, Quality coordination methodology, coordination rules and coordination workflow.

6.7 Sub Process – Identify Inter Environmental Services coordination relationships

Identifying Inter Environmental Service Coordination Relationships

Senior Management

Establish inter environmental service coordination team

Identification of coordination service

Infection Management | Waste Management | House keeping | Laundry Management | Materials Management | Inventory Management

Identification of activities

Identification of critical activities

Identification of critical dependencies

Identification of coordinating resources

Actors | Resources

Identification of coordination constraints

6.8 Sub Process – Identify Inter Environmental Services coordination relationships Specification

Specification	Description
Summary/Purpose	To establish the process to identify inter environmental services Coordination relationships
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, Quality coordination, Anomalies Management.
Related Business Driver	Better understanding of the quality coordination activities.
Related Operational Policies	OP-002 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Inter-Environmental Coordination

Inter Environmental Services Coordination Management Process
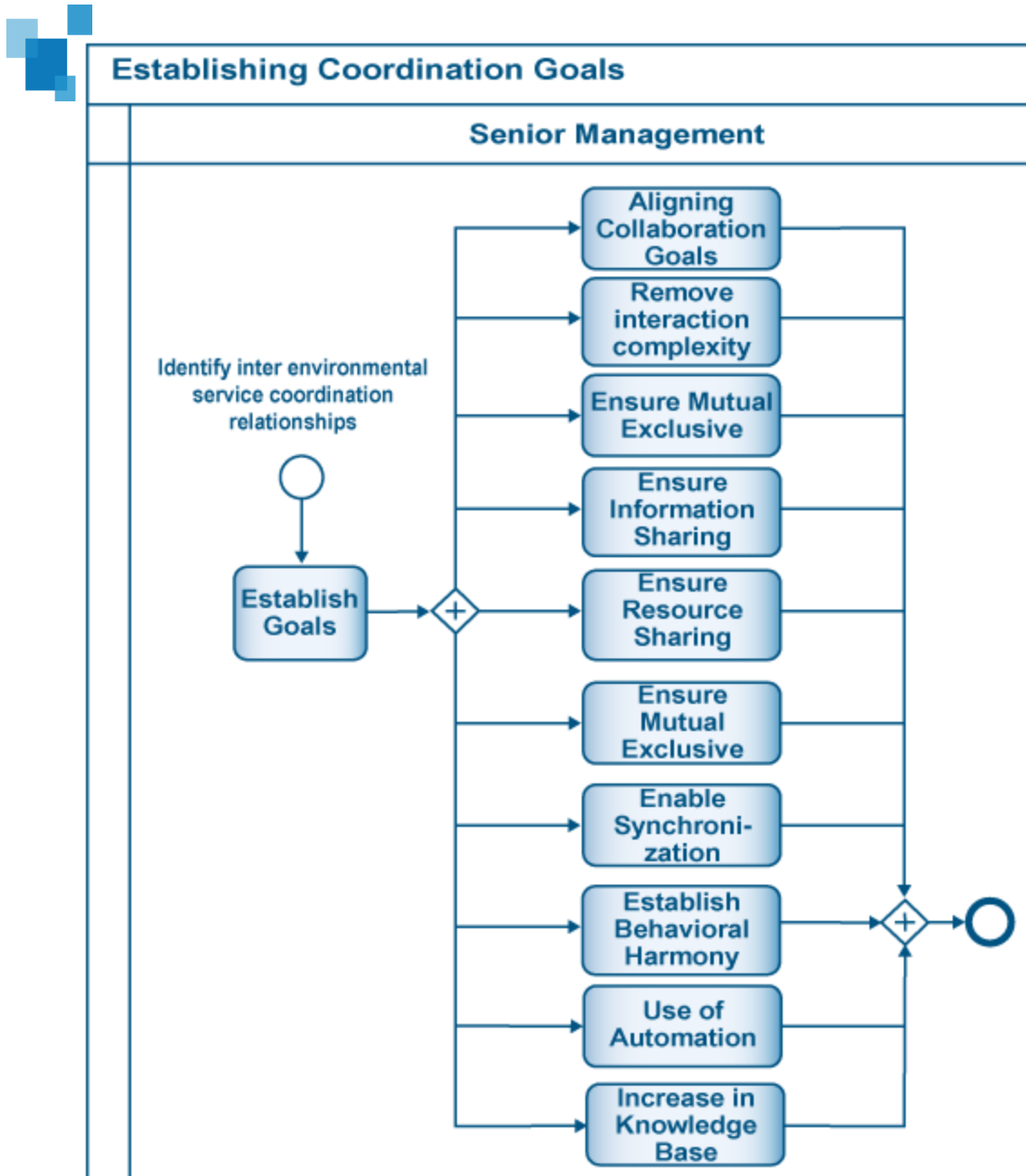
MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimensions	<table><tr><td>**Type**</td><td>**Normal**</td></tr><tr><td>**Average**</td><td>30 min</td></tr><tr><td>**Std**</td><td>12 min</td></tr></table>
Trigger	• Establish inter environmental service coordination team
Basic Course of Event	**Identify Inter environmental services coordination relationship** 1. Senior Management identification of coordination service (infection management, waste management, housekeeping, laundry management, materials management, inventory management) 2. Senior Management performs identification of process activities. 3. Senior Management performs identification of critical activities. 4. Senior Management performs identification of dependencies. 5. Senior Management identifies coordinating resources (actors as well as resources) 6. Senior Management identifies identification of coordination constraints. 7. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Establish coordination goals
Preconditions	This process is supported by automated tools.
Post -conditions	Coordination related relationships are established

6 Inter Environmental Services Coordination Management Process

Related Business Rules	BR-002(Ref 7.1)
Related Risks	RR-002(Ref. 7.2)
Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CER(Ref 7.6)
Related CTQs	CERV (Ref 7.7)
Actors/Agents	Senior Management
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	5.1
Process Model	6.7
Other References	Appendix A: Business Process Modeling Notation Reference

	Appendix B: Chain of Infection

6.9 Sub Process – Identify Inter Environmental Services coordination relationships Roles and Responsibilities

Roles	Responsibilities
Senior Management	• Senior Management identification of coordination service (infection management, waste management, housekeeping, laundry management, materials management, inventory management) • Senior Management performs identification of process activities. • Senior Management performs identification of critical activities. • Senior Management performs identification of dependencies. • Senior Management identifies coordinating resources (actors as well as resources) • Senior Management identifies identification of coordination constraints

6.10 Sub Process – Establish Coordination Goals

Establishing Coordination Goals

Senior Management

- Aligning Collaboration Goals
- Remove interaction complexity
- Ensure Mutual Exclusive
- Ensure Information Sharing
- Ensure Resource Sharing
- Ensure Mutual Exclusive
- Enable Synchronization
- Establish Behavioral Harmony
- Use of Automation
- Increase in Knowledge Base

Identify inter environmental service coordination relationships

Establish Goals

Inter Environmental Services Coordination Management Process

6.11 Sub Process – Establish Inter environmental Services Coordination Goals

Specification	Description
Summary/Purpose	To establish the process to establish inter environmental services coordination goals
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, Quality coordination, Anomalies Management.
Related Business Driver	Optimization of the coordination process.
Related Operational Policies	OP-003 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Inter environmental services Coordination

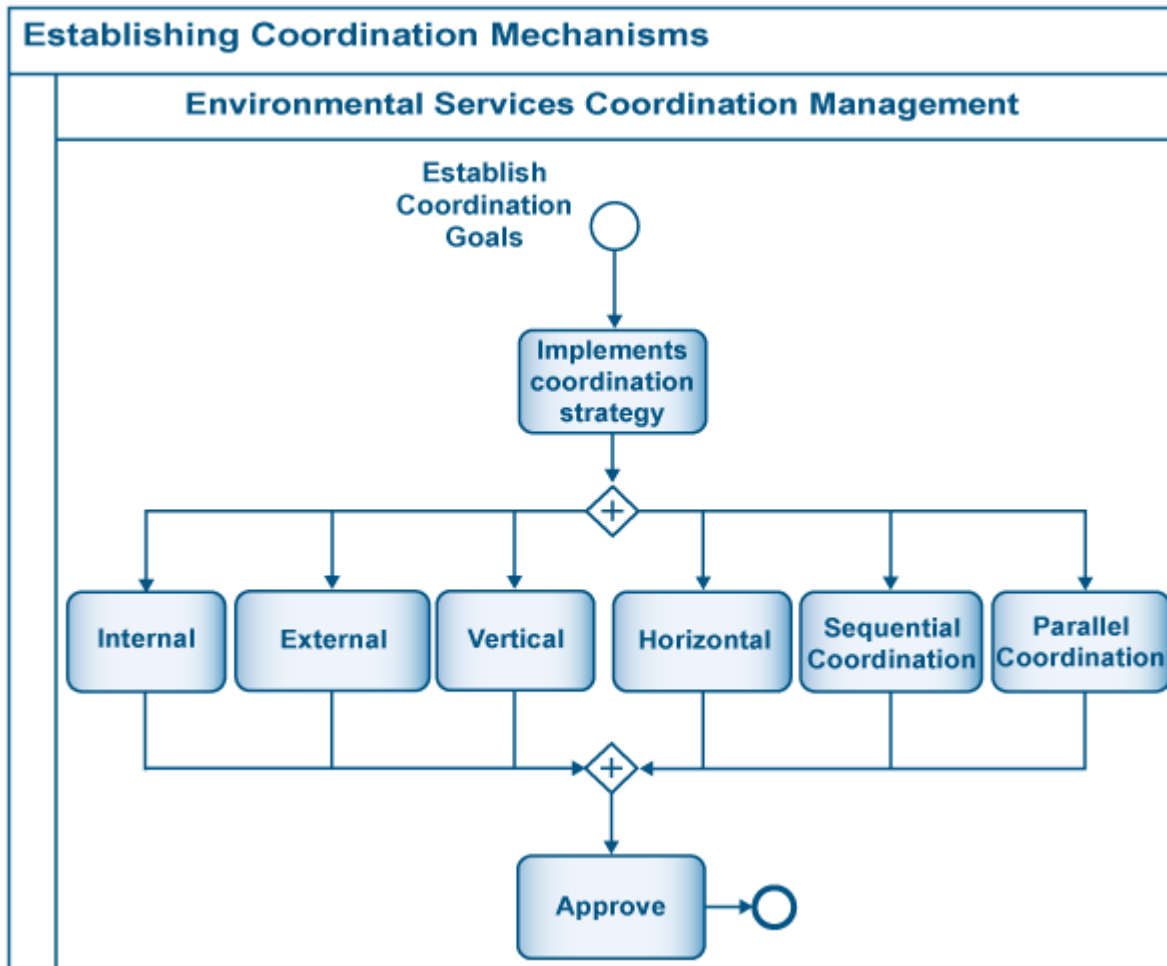# 6 Inter Environmental Services Coordination Management Process

MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimensions	<table><tr><td>**Type**</td><td>**Normal**</td></tr><tr><td>**Average**</td><td>30 min</td></tr><tr><td>**Std**</td><td>12 min</td></tr></table>
Trigger	• Identify inter environmental service coordination relationships
Basic Course of Event	**Establish Coordination Goals** 1. Senior management establishes goals (aligning collaboration goals, remove interaction complexity, ensure mutual exclusive, ensure information sharing, ensure resource sharing, ensure mutual exclusive, enable synchronization, establish behavioral harmony, use of automation, increase in knowledge base) 2. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Establish Coordination Mechanisms.
Preconditions	This process is supported by automated tools.
Post -conditions	Goals for coordination are identified.
Related Business Rules	BR-003 (Ref 7.1)
Related Risks	RR-003(Ref. 7.2)

6 Inter Environmental Services Coordination Management Process

Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	DR(Ref 7.6)
Related CTQs	DRV (Ref 7.7)
Actors/Agents	Senior Management
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the task to the agent with same role 2. Update the task 3. Log the delegation Delegation Rule -2: Agent Overloaded 1. Delegate the task to the agent with same Role 2. Update the task 3. Log the delegation
Escalation	Rule 1: Performance, operational legal Issues 1. Escalate to environmental services department head. 2. Log Escalation
Process Map	5.1
Process Model	6.16
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.12 Sub Process – Establish Coordination Goals Roles and responsibilities

Roles	Responsibilities
Senior Management	Senior management establishes goals (aligning collaboration goals, remove interaction complexity, ensure mutual exclusive, ensure information sharing, ensure resource sharing, ensure mutual exclusive, enable synchronization, establish behavioral harmony, use of automation, increase in knowledge base)

6.13 Sub process – Establish Coordination Mechanism

Establishing Coordination Mechanisms

Environmental Services Coordination Management

Establish Coordination Goals

Implements coordination strategy

Internal | External | Vertical | Horizontal | Sequential Coordination | Parallel Coordination

Approve

6.14 Sub Process – Establish Coordination Mechanism Specification

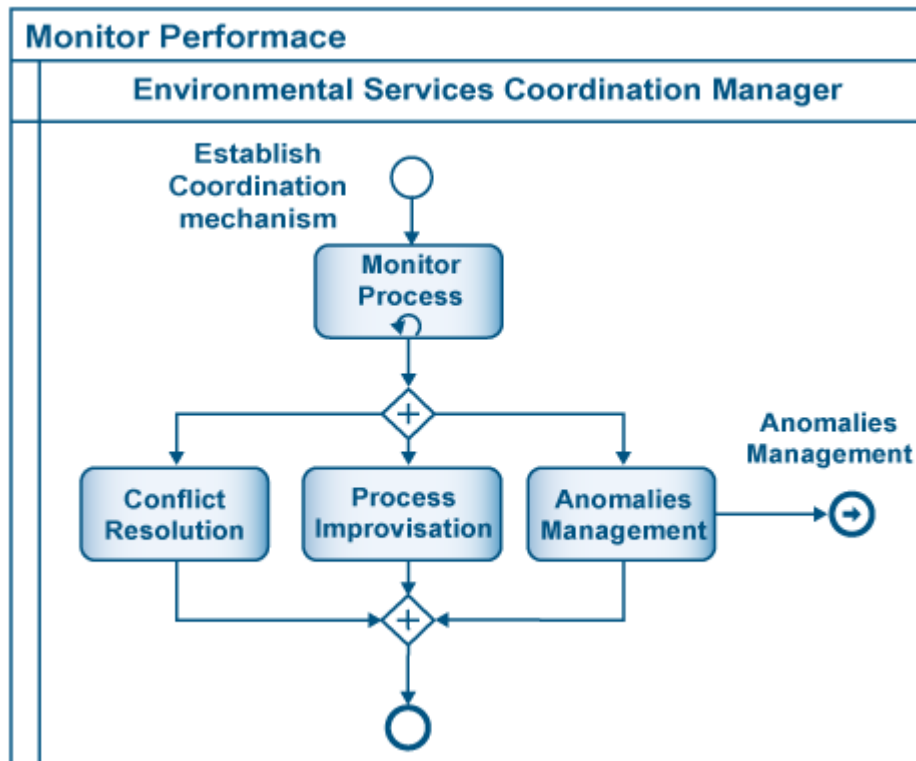| Specification	Description
Summary/Purpose	To establish the process to explain the coordination mechanism options.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, Quality coordination, Anomalies Management.
Related Business Driver	Better implementation of inter environmental coordination process.
Related Operational Policies	OP-004(Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Inter-Environmental Coordination
MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)

6 Inter Environmental Services Coordination Management Process

EBC Procedures	None
Timing Dimensions	<table><tr><td>**Type**</td><td>**Normal**</td></tr><tr><td>**Average**</td><td>30 min</td></tr><tr><td>**Std**</td><td>12 min</td></tr></table>
Trigger	• Establish Coordination goals
Basic Course of Event	**Establish Coordination Mechanisms** 1. Environmental Services Coordination Manager implements coordination strategy (internal, external, vertical, horizontal, sequential coordination, Parallel Coordination) 2. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Monitor Performance
Preconditions	This process is supported by automated tools.
Post -conditions	Coordination mechanism is established.
Related Business Rules	BR-004(Ref 7.1)
Related Risks	RR-002(Ref. 7.2)
Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)

6 Inter Environmental Services Coordination Management Process

Related Primary SLA Terms	(Ref 7.9)
Related KPIs	NCR (Ref 7.6)
Related CTQs	NCRV (Ref 7.7)
Actors/Agents	Environmental Services Coordination Manager.

Delegation	Delegation Rule -1: Agent Not Available
	   1. Delegate the task to the agent with same role
	   2. Update the task
	   3. Log the delegation
	
	Delegation Rule -2: Agent Overloaded
	   1. Delegate the task to the agent with same Role
	   2. Update the task
	   3. Log the delegation

Escalation	Rule 1: Performance, operational legal Issues
	   1. Escalate to environmental services department head.
	   2. Log Escalation

Process Map	5.1
Process Model	6.10
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.15 Sub Process – Establish Coordination Mechanisms Roles and Responsibilities

Roles	Responsibilities
Environmental Services Coordination manager	Environmental Services Coordination Manager implements coordination strategy (internal, external, vertical, horizontal, sequential coordination, Parallel Coordination)

6.16 Sub Process – Monitor Performance

6.17 Sub Process – Monitor Performance Specification

Specification	Description
Summary/Purpose	To establish the process of monitoring the process performance.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Infection control coordination, Nurse coordination, security coordination, hospital information system coordination, Quality coordination, Anomalies Management.
Related Business Driver	Process improvement.
Related Operational Policies	OP-005 (Ref. 7.5)
Assumptions	• Inputs to the process are accurate.
Voice of Customer	Hygiene, High and Consistent Quality of standards, Free of Infections, Timely Services, High Coordinating, Remove Waste, Excellent Ergonomic, Safety, Appearance, Excellent Worker Attitude. (Ref 7.10)
Customer Satisfaction Measure	Customer satisfaction index
COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Quality of inter environmental services Coordination
MSD Management	Lifting/carrying, Disability, Force, Loaded motion, Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)

6 Inter Environmental Services Coordination Management Process

EBC Procedures	None
Timing Dimensions	<table><tr><td>**Type**</td><td>**Normal**</td></tr><tr><td>**Average**</td><td>30 min</td></tr><tr><td>**Std**</td><td>12 min</td></tr></table>
Trigger	• Establish Coordination Mechanism
Basic Course of Event	**Monitoring performance** 1. Inter environmental Services Coordination Manager monitors process continuously for conflict resolution, process improvisation, and anomalies management. 2. End
Alternative Path	None
Exception Path	**System Down** 1. Keep paper track until system is up and running 2. Update the System and clear all logs. 3. End.
Extension points	Anomalies Management
Preconditions	This process is supported by automated tools.
Post -conditions	Coordination process is improved.
Related Business Rules	BR-005(Ref 7.1)
Related Risks	RR-004(Ref. 7.2)
Related Quality Attributes	Reliability, Accountability, Performance, Auditability, Extensibility (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, free of error, Relevance, completeness, Value added, Believability (Ref 7.4)

6 Inter Environmental Services Coordination Management Process

Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CRR (Ref 7.6)
Related CTQs	CRRV (Ref 7.7)
Actors/Agents	Environmental Coordination Manager.

Delegation	Delegation Rule -1: Agent Not Available
	   1. Delegate the task to the agent with same role
	   2. Update the task
	   3. Log the delegation
	
	Delegation Rule -2: Agent Overloaded
	   1. Delegate the task to the agent with same Role
	   2. Update the task
	   3. Log the delegation

Escalation	Rule 1: Performance, operational legal Issues
	   1. Escalate to environmental services department head.
	   2. Log Escalation

Process Map	5.1
Process Model	6.19
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.18 Sub Process – Monitor Performance Roles and responsibilities

Roles	Responsibilities
Environmental Services Coordination Manager	Inter environmental Services Coordination Manager monitors process continuously for conflict resolution, process improvisation, and anomalies management.

Reference

7 Reference

This chapter serves as a prime reference to Chapter 6 and presents the details supporting Chapter 6 in tabular formats. This chapter consists of various variable values which would frequently evolve or change as organization's Environmental Services' Inter Environmental Services Coordination Management process matures or changes.

At minimal this document can be updated biannually. However, if need arises this document may be updated earlier than its prescribed revision period.

7.1 Business Rules

BR ID	Description	Context	Rule	Source
BR-001	Team Lead for inter environmental coordination enjoys full authority for the Coordination process.	Operations	TBD	NA
BR-002	All coordination related activities would be managed at a micro level	Operations	TBD	NA
BR-003	All identified Coordination goals would be accomplished.	Operations	TBD	NA
BR-004	Coordination strategy should be formulated.	Operations	TBD	NA
BR-005	Automated tools should be used everywhere possible for optimizing the process.	Operations	TBD	NA

7.2 Risk

Risk ID	Description	Source	Severity Level	Status	Resolution
RR-001	Coordination team member doesn't have right mix of people.	NA	Medium	NA	The board members should be all well qualified and should belong to different departments of the

					organization which are vital for the success of this process.
RR-002	Lack of accuracy	NA	High	NA	Employ automated tools and techniques wherever possible.
RR-003	All coordination goals are not monitored	NA	High	NA	Performance metrics should be established for each goal so as to assess its progress.
RR-004	Lack of Monitoring of performance	NA	High	NA	Employ automated tools for monitoring.

7.3 Quality Attribute

QA ID	Description	Threshold
QA-001	Interoperability	TBD
QA-002	Reliability	TBD
QA-003	Service Reliability	TBD
QA-004	Availability	TBD
QA-005	Usability	TBD
QA-006	Normal Usability Operations	TBD
QA-007	Confidentiality	TBD
QA-008	Authenticity	TBD
QA-009	Data Integrity	TBD
QA-010	Availability	TBD
QA-011	Non-repudiation	TBD
QA-012	Accountability	TBD

QA-013	Security Integration	TBD
QA-014	Performance	TBD
QA-015	Scalability	TBD
QA-016	Extensibility	TBD
QA-017	Adaptability	TBD
QA-018	Testability	TBD
QA-019	Auditability	TBD
QA-020	Operability and Deployability	TBD

7.4 Data Quality Dimensions

DQ ID	Description	Threshold
DQ-001	Accuracy	TBD
DQ-002	Believability	TBD
DQ-003	Reputation	TBD
DQ-004	Objectivity	TBD
DQ-005	Free-of-Error	TBD
DQ-006	Value Added	TBD
DQ-007	Relevance	TBD
DQ-008	Completeness	TBD
DQ-009	Timeliness	TBD
DQ-010	Appropriate Amount	TBD
DQ-011	Understandability	TBD

DQ-012	Interpretability	TBD
DQ-013	Concise Representation	TBD

7.5 Operation Policy

Policy ID	Description	Context	Importance (1-5)
OP-001	All Coordination members of the team would be appointed for a period of 1 year.	Operations	TBD
OP-002	All critical coordination processes and their supporting processes would be decomposed to activities level for better understanding	Operations	TBD
OP-003	Performance metrics would be attached to all the goals.	Operations	TBD
OP-004	Coordination strategy would employ a mix of mechanism to achieve it.	Operations	TBD
OP-005	All anomalies identified should be escalated to the anomalies management process.	Operations	TBD

7.6 KPI

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Coordination budgeting	CB	Percentage of budget spend out of total coordination budget	TBD	TBD	TBD	TBD

Policies Implementation rate	PIR	Number of new policies implemented per year	TBD	TBD	TBD	TBD
Coordination effective rate	QER	Increase or decrease in the quality of coordination	TBD	TBD	TBD	TBD
Deviation rate	DR	Number of coordination deviations per quality process	TBD	TBD	TBD	TBD
Conflict resolution rate	CRR	Number of conflicts resolved per month	TBD	TBD	TBD	TBD

7.7 CTQ

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Coordination budgeting variation	CBV	Standard deviation of CB	TBD	TBD	TBD	TBD
Waste Minimization Rate variation	WMRV	Standard deviation of WMR	TBD	TBD	TBD	TBD
Quality Coordination effective rate variation	QCERV	Standard deviation of QCERV	TBD	TBD	TBD	TBD

Coordination needs rate variation	**CNRV**	Standard deviation of CNR	TBD	TBD	TBD	TBD
Number of coordination points variation	**NCPV**	Standard deviation of NCP	TBD	TBD	TBD	TBD
Deviation rate variation	**DRV**	Standard deviation of DR		TBD	TBD	TBD
Conflict resolution rate variation	**CRRV**	Standard deviation of CRR	NA	TBD	TBD	TBD
Device related infection rate	**DRIRV**	Standard Deviation of DRIR	NA	TBD	TBD	TBD
Environment related infection rate	**ERIRV**	Standard Deviation of ERIR	NA	TBD	TBD	TBD
Motion Optimization Measure	**MOM**	Management of motion optimization measure	NA	TBD	TBD	TBD
Paper work Optimization Measure	**PWOM**	Management of Paper work Optimization Measure	NA	TBD	TBD	TBD
Correction reduction measure	**CRM**	Management of Correction reduction measure	NA	TBD	TBD	TBD

Materials Optimization Measure	IOM	Management of Materials Optimization Measure	NA	TBD	TBD	TBD
Transportation Optimization Measure	TOM	Management of Transportation Optimization Measure	NA	TBD	TBD	TBD
Waiting Reduction Measure	WRM	Management of Waiting reduction Measure	NA	TBD	TBD	TBD
Delays reduction measure	DRM	Management of delays reduction measure	NA	TBD	TBD	TBD

7.8 Abstract Time – Scale

Name	Acronym	Description	Quantification
TBD	TBD	TBD	TBD

7.9 SLA Terms

SLA ID	Description	Context	KPI	CTQ
TBD	TBD	TBD	TBD	TBD

7.10 Voice of Customer

VOC	Customer	Description	Perceived Value
Hygiene	Doctors, Patients, Nurses, Housekeeping Supervisors, Housekeepers, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker.	The environment should be attributing with great hygiene level.	• High quality healthcare services • Safe environment • Low infection rate • Low risk
High and Consistent Quality of standards	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	High and Consistent Quality of standards.	• Reputation of organization or hospital • Professionalism • Trust • Positive psychological bias
Free of Infections	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Infections free and healthy environment.	• Safe environment • Reputation of hospital or organization • Trust • Quick healing • Positive psychological bias • Low risk

Timely Services	Doctors, Patients, Nurses, Housekeeping Supervisors, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The response time for any request should be very short.	• Professionalism • Trust • Positive psychological bias • Reputation of hospital or organization • Safe environment
High Coordinating	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	There should be high level of coordination between hospital employees and departments.	• Professionalism • Trust • Low risk • Excellent Ergonomic
Remove Waste	Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Wastes should be either removed or minimized.	• Safe environment • Low infection rate • Low risk • Reputation of hospital or organization • Low cost • Timely response • High quality
Excellent Ergonomic	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services	The hospital environment and policy should comply with physical, organization	• Professionalism • Trust • Job accuracy • Excellent communication

	Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	and cognitive ergonomics.	• Low risk • Reputation of hospital or organization
Safety	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	Hospital environment should comply with occupational health and safety procedures.	• Safe environment • Professionalism • Low risk
Appearance	Housekeeping Supervisors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The appearance of the workers, supervisors and manager should induce positive biases.	• Professionalism • Reputation of hospital or organization • Trust • Positive psychological bias
Excellent Worker Attitude	Housekeeping Supervisors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The environment service employee should be free from negative attitudes.	• Professionalism • Reputation of hospital or organization • Trust • Positive psychological bias • Minimum disputes • Less employee turn over

7.11 Customer Context Matrix

Name of Customer	Acronym	Context of Customer	Coordination Process Area
Doctors	DOC	Direct	HIS Coordination
Patients	PAT	Direct	HIS Coordination
Nurses	NUR	Direct	HIS Coordination, Nurse Coordination
Housekeeping Supervisors	HKS	Direct	Quality Coordination, Nurse Coordination, Quality Coordination
Clerks	CLR	Direct	HIS Coordination
Visitors	VIS	Indirect	HIS Coordination
Environmental Services Management	ESM	Direct	Nurse Coordination, Quality Coordination
Other hospital workers	OHW	Indirect	Security coordination
Laundry worker	LDW	Direct	Nurse Coordination, HIS Coordination
Transportation worker	TRW	Direct	Quality Coordination, HIS Coordination
Maintenance worker	MAW	Direct	Quality Coordination, HIS Coordination
Waste management worker	WMW	Direct	Quality Coordination, HIS Coordination

Infection control professional	ICP	Indirect	Quality Coordination
Housekeepers	HK	Direct	HIS Coordination, Nurse Coordination

7.12 MSD Attributes

MSD Attribute	Description
Lifting/carrying	Large vertical movements, long carry distances.
Disability	Pose a risk to those with a health problem or a physical or learning disability.
Force	High initial forces to get the load moving.
Loaded motion	High forces to keep the load in motion.
Physical ergonomics	Constraints on body posture/positioning, confined spaces/narrow doorways.
Posture change	Strong force and awkward movement/posture. E.g. bent wrists.
Excessive force	Excessive force to grip raw materials, product or tools
Scarceness	Inadequate tools for repetitive use screwdrivers, pliers, hammers.
Noise	Noise which cause stress and muscle tension.
Concentration	Tasks require high levels of attention/concentration especially where the worker has little control over allocation of effect to the task.
Floor hazards	Remove slip and trip hazards through provision of appropriate floor surfaces and good keeping.
Clothing	Clothing/PPE may prevent sufficient movement for the task or reduce capability. E.g. to grip consider handling needs when selecting work wear/gloves.

Psychosocial factors	Adverse psychosocial factors can increase the potential for manual handling injuries. A workers psychosocial response to work and the workplace conditions can affect their health in general and MSDs in particular. The factors include the content, design, organization and management of the work

Glossary / Acronyms

8   Glossary / Acronyms

Terminology	Description
Abstract Time Scale	Time Scale that will be quantified both during operations and continuous process improvement. These time identifiers are correlated with the soft thresholds that are dynamically specified during life span of the process.
BPMN	**Business Process Modelling Notation** Business Process Modelling Notation is the practice of documenting an organisation's key business processes in a graphical format.
Business Rules	Business Rules are intended to assert business structure or to control or influence the behaviour of the Business. Business rules describe the operations, definitions and constraints that apply to an organization
CRR	Contract Review Rate
CRRV	Contract Review rate Variation.
CTQ	**Critical to Quality** Critical To Quality (CTQ) is continuous measuring and monitoring tool agreed between the internal processes to achieve greater customer satisfaction.
COI	Chain of infection
Data Quality Dimensions	The totality of features and characteristics of data that bears on their ability to satisfy a given purpose
EBC	Evidence Based Cleaning
ESM	Environmental services Map
KPI	**Key Performance Indicator** A metric that is used to help manage a process, IT service or activity. Many metrics may be measured, but only the most important of these are defined as KPIs and used to actively manage and report on the process, IT service or activity. KPIs should be selected to ensure that efficiency, effectiveness, and cost effectiveness are all managed.
MSD	Macro Skeleton Disorder

8 Glossary / Acronyms

OLA	**Organization level Agreement** An Agreement between an IT Service Provider and another part of the same Organization
Operational Policy	Rules defined to operate the process.
Quality Attributes	Quality attributes are non-functional requirements used to evaluate the performance of a process.
Risk	A possible event that could cause harm or loss, or affect the ability to achieve Objectives. A risk is measured by the probability of a threat, the vulnerability of the asset to that threat, and the impact it would have if it occurred.
SLA	**Service Level Agreement** An Agreement between an IT Service Provider and a Customer. The SLA describes the IT Service, documents Service Level Targets, and specifies the responsibilities of the IT Service Provider and the Customer
VOC	**Voice of Customer**

Appendix A: Business Process Modeling Notation Reference

9 Appendix A: Business Process Modeling Notation Reference

INTRODUCTION

Business Process Modelling ("BPM") is the practice of documenting an organisation's key business processes in a manner which:

- Is highly graphical
- Focuses on business terminology rather than technical
- Allows all business steps/tasks to be included, not just those which involve a computer system

Mentioned below are the various core concepts of BPMN with the relevant definition and graphic notation.

PROCESS START

All processes have to start somehow, general notation for a process models commence with the START event, is a circle.	⚪
One can use simply the *basic unmarked* start event as above, or one of the different types of start event, to provide more detail as described below.	
If a process starts when some sort of message arrives, mail, email, text. Following notation can be used	**Message start** ✉
If a process starts by virtue of the passage of time – e.g. 1st Jan review or 4 days after the purchase order is sent, following notation can be used	**TIMER Start** 🕐
If the process starts when a rule/condition is met – e.g. when Incident Impact is more than 100,000.	**RULE Start** 📧
If a process starts when another process finishes. Following notation can be used	**LINK Start** ➡
If there is more than one 'trigger' for a process to start. Following notation can be used	**MULTIPLE Start** ✴

9 Appendix A: Business Process Modeling Notation Reference

TASK AND SUB PROCESS

Task	Task is a lowest level activity in a process map. A task is used when the work is not broken down to a finer level of detail	My Task
Sub Process	A Sub-process is a compound activity which can be broken down into finer details.	Sub-process #1
Loops	Loops task or sub process continues to iterate until the loop condition is true.	Review

INTERMEDIATE EVENTS

Following notation can be used to display the intermediate event, similar to start and end events.						
	BASIC	MESSAGE	TIMER	RULE	LINK	MULTIPLE
	○	✉	⏱	▤	➡	✦

PROCESS END

All processes have to end somehow, general notation for a process models end will be a circle with a solid line.	○
One can use simply use the *basic* end event as above, or you can use one of the different types of end event, to provide more detail, as described below:	
If a process ends by something being sent via a message of some sort e.g., mail, email, document, following notation can be used.	MESSAGE End ✉

9 Appendix A: Business Process Modeling Notation Reference

If the end of this process causes the start of another, following notation can be used.	LINK End
If more than one consequence of the process ending, following notation can be used.	MULTIPLE End

SWIMLANES

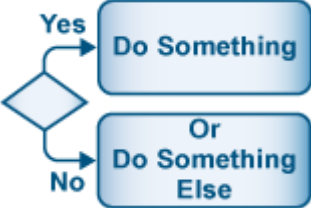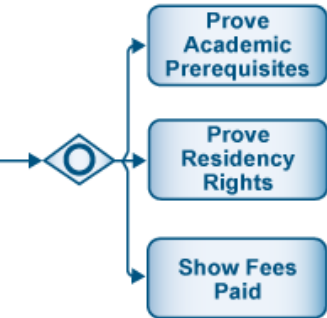|		
Pool	A *Pool* represents a participant in a Process. It is also acts as a "swimlane" and a graphical container for partitioning a set of activities from other Pools	Name
Lane	A *Lane* is a sub-partition within a Pool and will extend the entire length of the Pool, either vertically or horizontally. Lanes are used to organize and categorize activities.	Name
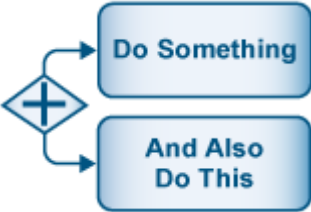
CONNECTORS

Sequence Flow	A *Sequence Flow* is represented by a solid line with a solid arrowhead (see the figure to the right) and is used to show the order (the sequence) that activities will be performed in a Process.	
Message Flow	A *Message Flow* is represented by a dashed line with an open arrowhead (see the figure to the right) and is used to show the flow of messages between two separate Process Participants. In BPMN, two separate Pools in the Diagram will represent the two Participants.	

9 Appendix A: Business Process Modeling Notation Reference

ARTIFACTS

Annotation	The ANNOTATION shape is used to add comments to a process model. It consists of text in a square left bracket	This is some text which helps explain something about the model
Data Object	A data object represents a piece of data which is required or produced by the process eg. Customer details, output.	Application Form
Group	A grouping is purely for documentation or explanatory purposes. It has no impact on the model. It consists of a rectangle with dashed lines and rounded corners, usually enclosing other objects.	

GATEWAYS

Exclusive	The values of the process are examined to determine which path to take	Yes → Do Something / No → Or Do Something Else
Inclusive	Each branch will be evaluated and will not stop when one branch condition becomes true.	Prove Academic Prerequisites / Prove Residency Rights / Show Fees Paid
Parallel	Provides a mechanism to synchronise parallel flow and to create parallel flow.	Do Something / And Also Do This

Appendix B: Chain of Infection

APPENDIX.

B

10 Appendix B: Chain of Infection

In order to control or prevent infection it is essential to understand that transmission stages of a pathogen resulting in infection requires the six vital links (Refer to the table below).

Each link mentioned below must be present for infection or colonization to proceed, and breaking any of the links can prevent the infection.

The section below details out the six stages:

Stage	Link	Description
1	Infectious Agent	Any disease-causing microorganism (pathogen)
2	The Reservoir Host	The organism in which the infectious microbes reside
3	The Portal of Exit	Route of escape of the pathogen from the reservoir.
4	The Route of Transmission	Method by which the pathogen gets from the reservoir to the new host
5	The Portal of Entry	Route through which the pathogen enters its new host
6	The Susceptible Host	The organism that accepts the pathogen

Link 1: Infectious Agent

The causative agent for infection is any microorganism capable of producing disease. Microorganisms responsible for infectious diseases include bacteria, viruses, rickettsiae, fungi, and protozoa. Sometimes, microorganisms are part of patient's own body flora and can cause infection in the immunocompromised host. These infections are called endogenous infections. Infections which are acquired from external sources are called exogenous infections.

Link 2: Reservoir Host

The second link in the chain of infection is the reservoir, i.e. the environment or object in or on which a microorganism can survive and, in some cases, multiply. Inanimate objects, human beings, and animals can all serve as reservoirs, providing the essential requirements for a microorganism to survive at specific stages in its life cycle.

Infectious reservoirs abound in health care settings, and may include everything from patients, visitors, and staff members to furniture, medical equipment, medications, food, water, and blood.

Link 3: Portal of Exit

The portal of exit is the path by which an infectious agent leaves its reservoir. Usually, this portal is the site where the microorganism grows. Common portals of exit associated with human reservoirs include the respiratory, genitourinary, and gastrointestinal tracts, the skin and mucous membranes and the placenta (transmission from mother to fetus)

Link 4: Route of Transmission

The microorganism can be acquired by inhalation (through respiratory tract), ingestion (through gastrointestinal tract), inoculation (through accidental sharp injury or bites), contact (during sexual intercourse) and transplacental transmission (microbes may cross placenta from the mother to fetus). It is important to remember that some microorganisms use more than one transmission route to get from the reservoir to a new host.

Of the six links in the chain of infection, the mode of transmission is the easiest link to break and is key to control of cross-infection in hospitals.

Link 5: The Portal of Entry

The portal of entry is the path by which an infectious agent invades a susceptible host. Usually, this path is the same as the portal of exit. For example, the portal of entry for tuberculosis and diphtheria is through the respiratory tract, hepatitis B and Human Immunodeficiency Virus enter through the bloodstream or body fluids and Salmonella enters through the gastrointestinal tract. In addition, each invasive device, e.g. intravenous line, creates an additional portal of entry into a patient's body thus increasing the chance of developing an infection.

Link 6: The Susceptible host

The final link in the chain of infection is the susceptible host. The human body has many defense mechanisms for resisting the entry and multiplication of pathogens. When these mechanisms function normally, infection does not occur. However, in immunocompromised patients, where the body defenses are weakened, infectious agents are more likely to invade the body and cause an infectious disease. In addition, the very young and the very old are at higher risk for infection because in the very young the immune system does not fully develop until about age 6 months, while old age is associated with declining immune system function as well as with chronic diseases that weaken host defenses.