HEALTHCARE ENVIRONMENTAL SERVICES

HESAS

AUTOMATION SOICETY

Service Coordination Strategy & Planning

V0.1

11th Oct 2020

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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 a Service coordination strategy for the organization's environmental Services department.

- To ensure that all the services are well coordinated towards achieving overall strategic objectives of the organization.
- To establish the overall coordination aims of the department
- To provide a framework for coordination based upon clear and agreed principles.

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 Service Coordination Strategy & Planning process document comprises the following chapters:

Chapter–3: *Scope*: This chapter describes the scope of the document and the Service Coordination Strategy & Planning.

Chapter–4: *General Assumptions*: This chapter describes the underlined assumptions made for both the document and Service Coordination Strategy & Planningprocess.

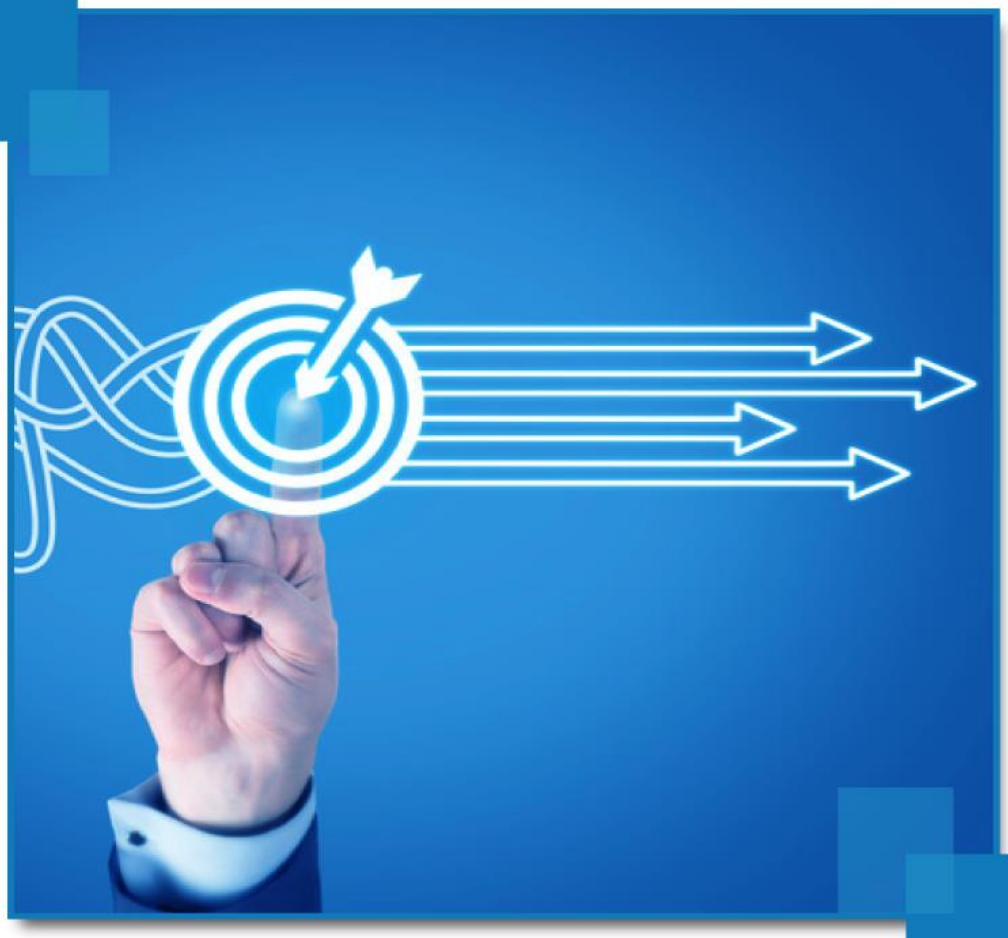
Chapter–5: *Service Coordination Strategy & Planning Framework***:** This chapter exhibits the interaction of Service Coordination Strategy & Planningprocess with other related processes.

Chapter–6: *Service Coordination Strategy & Planning Process***:** In this chapter Service Coordination Strategy & Planningprocess 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 Service Coordination Strategy & Planningprocess 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 Service Coordination Strategy & Planning process.

3 Service Coordination Strategy & Planning

Scope



3 Scope

3. SCOPE

This process is applicable to Environmental services department.

4

Service Coordination Strategy & Planning

General Assumptions

4 General Assumptions

4. GENERAL ASSUMPTIONS

Following are the general assumptions made for this process:

- All the Strategy decisions are carefully and meticulously analyzed by the senior management.
- Organization has a very sound and automated R & D and forecasting capability.
- The roles defined in all processes within this document can be attached to the existing position
- Any activity related assumptions are explicitly identified in related Process Specification table in Chapter 6.

5

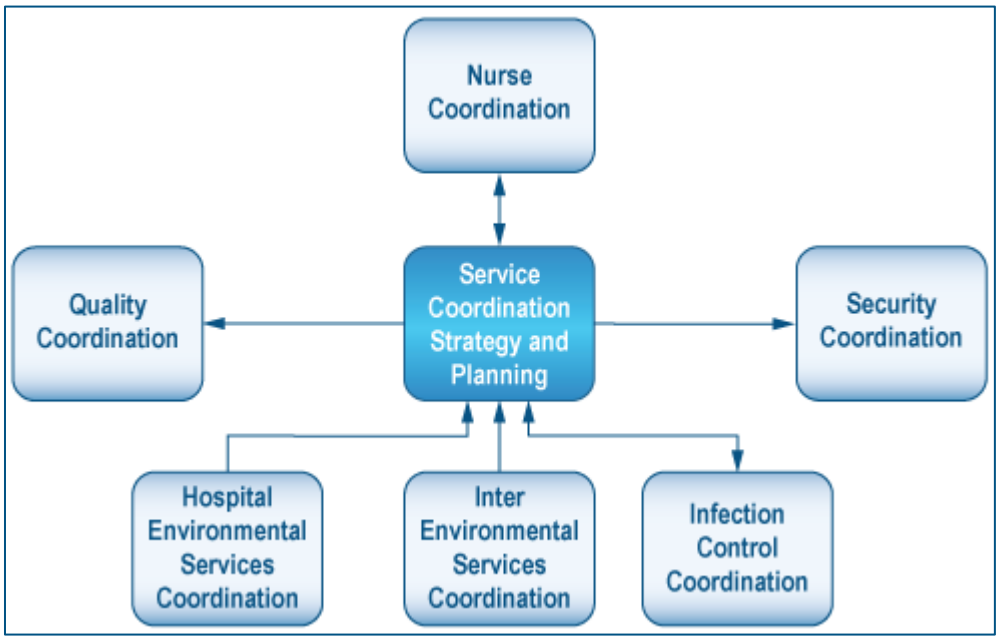
Service Coordination Strategy & Planning

Service Coordination Strategy & Planning Framework

5 Service Coordination Strategy and Planning Framework

5.1 Service Coordination Strategy & Planning Interactions

The following depiction shows the points of interaction of organization's environmental Services Service Coordination Strategy & Planning process with other related processes. The arrows moving into Service Coordination Strategy & Planning process signifies the inputs from the other processes to Service Coordination Strategy & Planning Process, and the arrows moving out of the Service Coordination Strategy & Planning process signify the inputs from Service Coordination Strategy & Planning process to other related processes.



5.2 Service Coordination Strategy & Planning Process Sequence

The Service Coordination Strategy & Planning process comprises of following high level sequence of activities:

1. **Establish Coordination goals**
2. **Identify coordination strategy**
3. **Articulate Coordination Strategy**
4. **Optimize strategy**

5. **Gain commitment to strategy**
6. **Enable Strategy**

Organization's environmental Services department'sService Coordination Strategy & Planning process follows sequential steps mentioned below (**Section 5.2.1-5.2.3**). **Section 6.1** Process Model sheds more light on the flow of this process.

5.2.1 Establish Service Coordination goals.

This process is responsible for identification of coordination goals for the environmental services department. Mentioned below are typical goals of the coordination goals.

- Better Service Management.
- Smooth workflow between processes.
- No duplication of effort.
- No conflicts.
- Overcoming Current Coordination Strategy Shortcomings.
- Knowledge sharing

5.2.2 Establishing Coordination Strategy

This involves following:

- **Formalization**. Coordination through formalization and standardization consists of the use of written policies, rules, job descriptions, and standard procedures that specify the necessary behavior in advance. The key advantage of using rules and standard procedures to coordinate activities is that they remove the need for excess communication.
- **Scheduling**. Coordination through plans is based on the idea of establishing schedules to guide the work of interdependent work groups or units, and managing interdependencies between the work groups through schedules
- **Reward System.** The use of reward systems is expected to increase the collaboration between the members of the organization or group, and thereby serve as a means to coordinate interdependent tasks.
- **Information technology**. The development of information technology has provides means for faster and cheaper communication, and opened a possibility to extend the scope of the information network. Information technology effectively controls on how coordination takes place, especially in cross-functional and distributed tasks such as globally distributed projects

- **Integrating Lateral relations**. Informal lateral coordination "often occurs naturally, but can be fostered through inter-social arrangements.
- **Interdisciplinary training**. Coordination through interdisciplinary training refers to the use of individuals who employ trans-specialist understanding in order to facilitate mutual understanding between different parts of the organization
- **Knowledge sharing**. The methods of information and knowledge sharing (coordination) between organizations

5.2.3 Articulate Coordination strategy

This involves following:

- **Clear description**. Precise explanation of what is the strategy about and what it is not.
- **Identification of Changes**. The points of improvements and difference between old and new strategy.
- **Identification goals.** The target establishment.
- **Establishment of Timeline**. The time frame for putting the strategy into practice.
- **Methodology**. How the strategy would be put into practice.
- **Metrics Alignment with Key success factors**. This involves alignment of performance metrics with the identified strategy success factor.

5.2.4 Optimization of Coordination

This comprise of following:

- **Aligning goals**. Aligning goals so that each actor and activity has accountability in the entire infection control management.
- **Removal of interaction complexity**. This involves resolving conflicts arising from unexpected task interactions. Smooth communications between all the parties can help control this constraint
- **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.
- **Enabling Synchronization.** Some activities need to be synchronized with other activities so as to ensure that they do not impact the overall process goal.
- **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 and the vicious cycle of blame game doesn't happen.
- **Use of Automation**. Using automated tools to facilitate coordination would ensure that the processes remains accurate and is free from error.

- **Ensure Mutual Exclusiveness.** This activity ensures that two coordinating activities do not share a resource at the same time. This ensure that the processes do not suffer from:
    - **Deadlock**. Deadlock is a situation where by two activities are waiting for each other and neither can proceed.
    - **Starvation**. Starvation occurs when a blocked activity is consistently not allowed to proceed

5.2.5 Gain Commitment to Strategy

This process is responsible for seeking shareholders' approval for Service strategy. This process is responsible for identification of stakeholders and gaining commitment from them.

5.2.6 Enable the Strategy

This refers to making change in the organization so as to ensure that the environment facilitates the new strategy. This comprises of making changes in:

- Organization structure.
- Business processes.
- Technology.

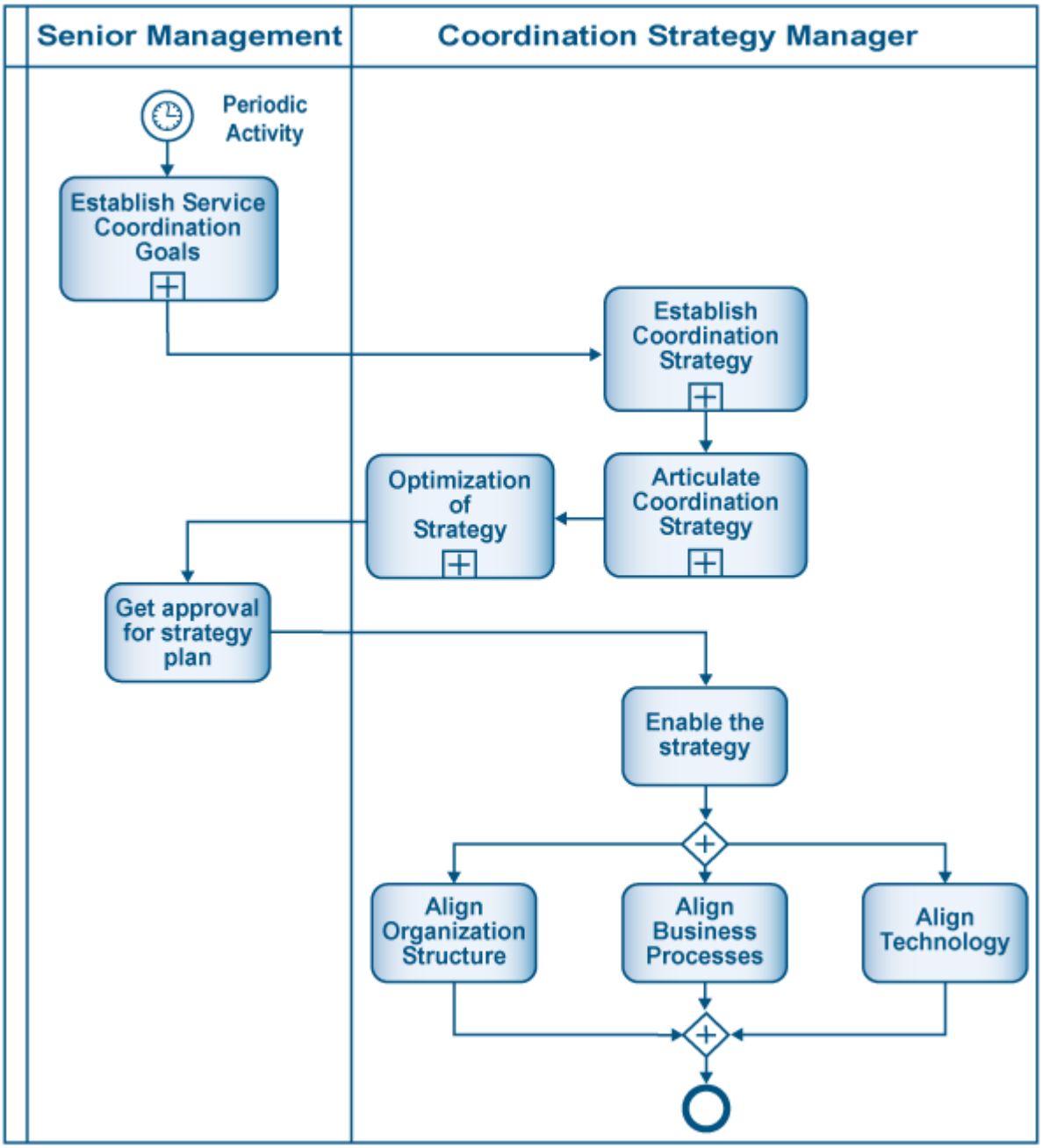
6

Service Coordination Strategy & Planning

Service Coordination Strategy & Planning Process

6 Service Coordination Strategy and Planning Process

6.1 Service Coordination Strategy & Planning – Process



6.2 Service Coordination Strategy & Planning – Specification

Specification	Description
Summary/Purpose	This process is responsible for creation of Customer Strategy and plan for organization's Environmental Services department
Scope	This is a level 1 Process Specification.
Primary Reference	• NHS- National Health Services Standard • OSHA- Occupational Safety and Health Administration standard • Lean six sigma- Quality Standard • JCI- Journal of Clinical Investigation standard • JCAHO- Joint Commission on Accreditation of Healthcare Organizations (JCAHO).
Related ESM Practices	Quality coordination, nurse coordination, security coordination, hospital environmental services coordination, inter environmental service coordination, infection control coordination.
Related Business Driver	Better services to customers.
Related Operational Policies	OP-001, OP-002, OP-003, OP-004,OP-005 (Ref. 7.5)
Assumptions	Senior management is committed to this process.
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

6 Service Coordination Strategy and Planning Process

Equipment & Accessories	Automated System for Service coordination management.
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 Dimension	**Type**: **Normal** **Average**: 30 min **Std**: 12 min
Trigger	Periodic activity
Basic Course of Event	**Service Coordination Strategy & Planning** 1. Senior Management establishes service coordination goals 2. Coordination strategy Manager establishes coordination strategy 3. Coordination strategy Manager optimizes the strategy 4. Senior Management identifies the stakeholders 5. Senior Management gets approvals for strategy plan 6. Coordination strategy Manager enables the strategy (align organization structure, Align business processes, Align technology) 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	Quality coordination, nurse coordination, security coordination, hospital environmental services coordination, inter environmental service coordination, infection control coordination.
Preconditions	Organization's environmental services department has a very sound R & D capability.

6 Service Coordination Strategy and Planning Process

Post -conditions	Customer Strategy is established
Related Business Rules	BR-001 , BR-002, BR-003, BR-004, BR-005(Ref 7.1)
Related Risks	RR-001, RR-002 (Ref. 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Data Integrity, Non-repudiation, Accountability, Performance, Scalability, Extensibility, Adaptability, Testability, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, Free-of-Error, Value Added, Relevance, Completeness, Timeliness, Appropriate Amount, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	GER, CSRR,DR (Ref 7.6)
Related CTQs	GERV, CSRRV,DRV, MOM, PWOM, CTQ, IOM, TOM, WRM, DRM (Ref 7.7)
Actors/Agents	Senior Management, Customer Strategy Manager
Delegation	<u>Delegation Rule -1: Agent Not Available</u> 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation <u>Delegation Rule -2: Agent Overloaded</u> 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation
Escalation	<u>Rule 1: Performance, operational legal Issues</u> 1. Escalate to environmental services department head. 2. Log Escalation

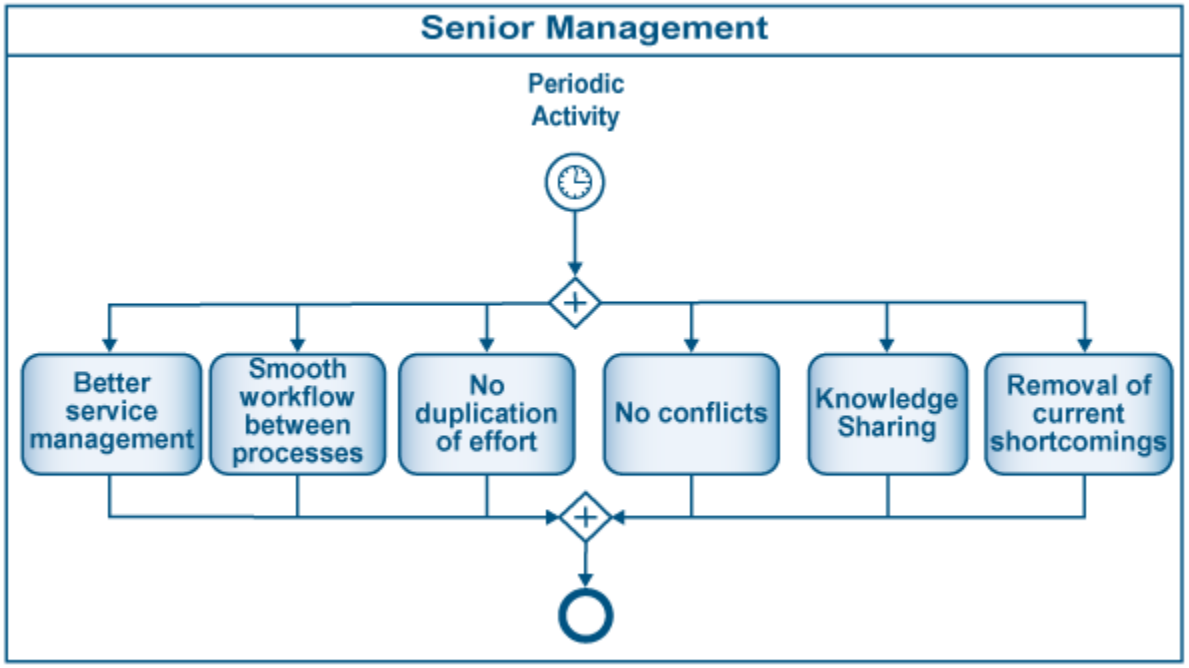
6 Service Coordination Strategy and Planning Process

Process Map	5.1
Process Model	6.1
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.3 Service Coordination Strategy & Planning Management – Roles & Responsibilities

Roles	Responsibilities
Senior Manager	• Senior Management establishes service coordination goals • Senior Management identifies the stakeholders • Senior Management gets approvals for strategy plan
Customer Strategy Manager	• Coordination strategy Manager establishes coordination strategy • Coordination strategy Manager optimizes the strategy • Coordination strategy Manager enables the strategy (align organization structure, Align business processes, Align technology)

6.4 Sub Process – Establish Service Coordination Goals



6.5 Sub Process – Establish Service Coordination Goals Specification

Specification	Description
Summary/Purpose	This process is responsible for establishing service coordination goals
Scope	This is a level 2 Process Specification.
Primary Reference	• NHS- National Health Services Standard • OSHA- Occupational Safety and Health Administration standard • Lean six sigma- Quality Standard • JCI- Journal of Clinical Investigation standard • JCAHO- Joint Commission on Accreditation of Healthcare Organizations (JCAHO).
Related ESM Practices	Quality coordination, nurse coordination, security coordination, hospital environmental services coordination, inter environmental service coordination, infection control coordination.
Related Business Driver	Better service coordination
Related Operational Policies	OP-002 (Ref 7.5)
Assumptions	Senior management is supportive of this process.
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

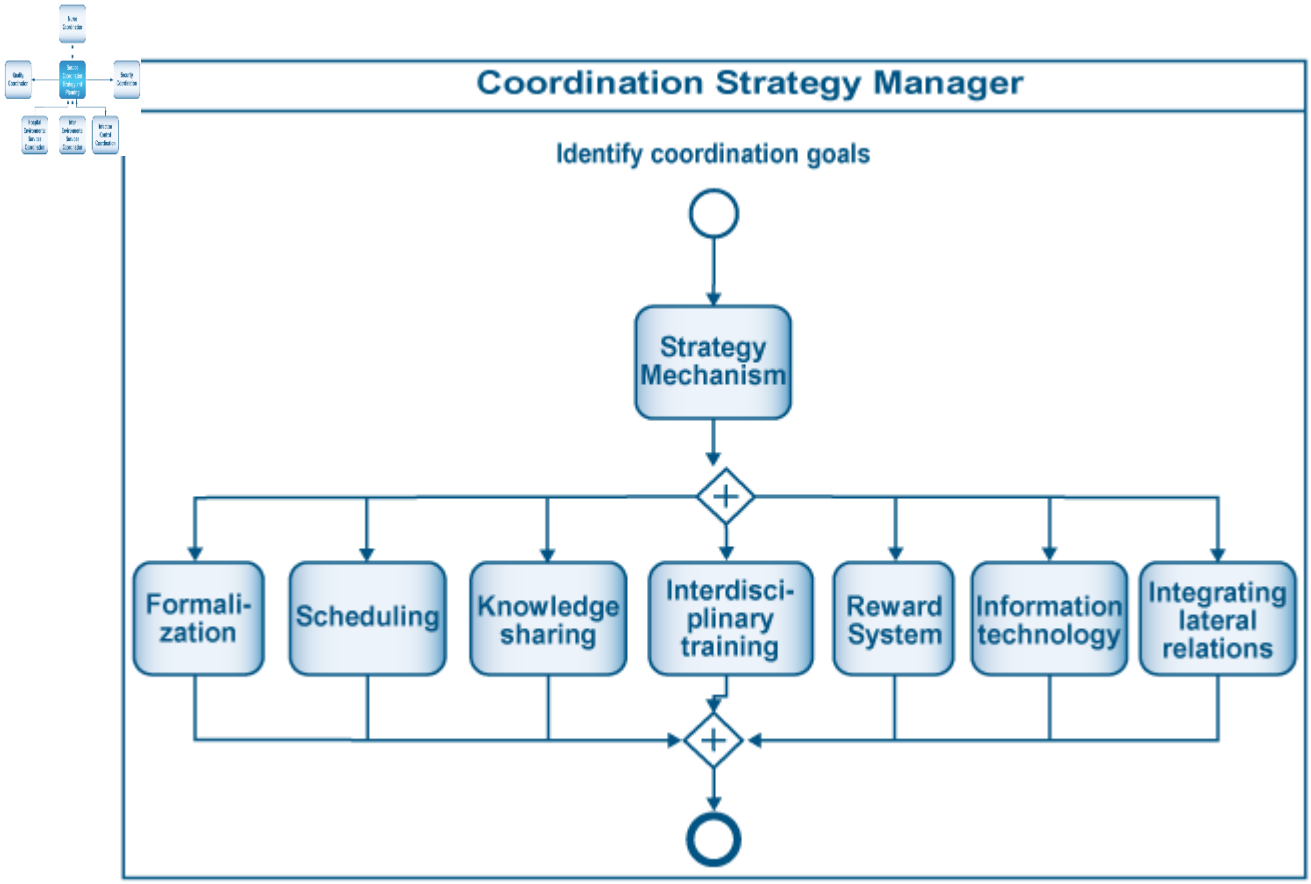
Equipment & Accessories	Automated System for Service coordination management.
MSD Management	Lifting/carrying, Disability, Force, Loaded motion , Physical ergonomics, Posture change, Excessive force, Scarceness, Noise, Concentration, Floor hazards, Clothing, Psychosocial factors. (Ref 7.12)
EBC Procedures	None
Timing Dimension	**Type** / **Normal** **Average** / 30 min **Std** / 12 min
Trigger	Periodic activity
Basic Course of Event	**Establish Coordination goals** 1. Senior Management identifies goals (better service management, smooth workflow between processes, no duplication of effort, no conflicts, knowledge sharing, and removal of current shortcomings. 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 strategy
Preconditions	Organization's environmental services department has a very sound R & D capability.
Post -conditions	Service coordination goals are established.
Related Business Rules	BR-002(Ref 7.1)
Related Risks	RR-001(Ref. 7.2)

Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Data Integrity, Non-repudiation, Accountability, Performance, Scalability, Extensibility, Adaptability, Testability, Auditability, Operability and Deployability (Ref 7.3)
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, Free-of-Error, Value Added, Relevance, Completeness, Timeliness, Appropriate Amount, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	GER (Ref 7.6)
Related CTQs	GERV (Ref 7.7)
Actors/Agents	Senior Management
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation Delegation Rule -2: Agent Overloaded 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 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 Service Coordination Goals Roles & Responsibilities

Roles	Responsibilities
Senior Management	Senior Management identifies goals (better service management, smooth workflow between processes, no duplication of effort, no conflicts, knowledge sharing, and removal of current shortcomings.

6.7 Sub process – Establish Service coordination strategy



6.8 Sub process – Establish Service coordination strategy Specifications

Specification	Description
Summary/Purpose	This process is responsible for establishing service coordination strategy
Scope	This is a level 2 Process Specification.
Primary Reference	• NHS- National Health Services Standard • OSHA- Occupational Safety and Health Administration standard • Lean six sigma- Quality Standard • JCI- Journal of Clinical Investigation standard • JCAHO- Joint Commission on Accreditation of Healthcare Organizations (JCAHO).
Related ESM Practices	Quality coordination, nurse coordination, security coordination, hospital environmental services coordination, inter environmental service coordination, infection control coordination.
Related Business Driver	Effective coordination strategy
Related Operational Policies	OP-003 (Ref. 7.5)
Assumptions	• Organization's environmental services department has a very sound R & D capability. • Organization's environmental services department has done proper analysis to identify current shortcomings.
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

6 Service Coordination Strategy and Planning Process

COI Correlation	None
Raw Materials	None
Equipment & Accessories	Automated System for Service coordination management.
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 Dimension	**Type** / **Normal** **Average** / 30 min **Std** / 12 min
Trigger	Identification of coordination goals
Basic Course of Event	**Establish Service coordination strategy.** 1. Coordination strategy Manager identifies strategy mechanism (formalization, scheduling, knowledge sharing, interdisciplinary training, reward system, information technology, integrating lateral relations). 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	Articulate coordination strategy.
Preconditions	Information is gathered and analyzed accurately
Post -conditions	Coordination strategy is established.

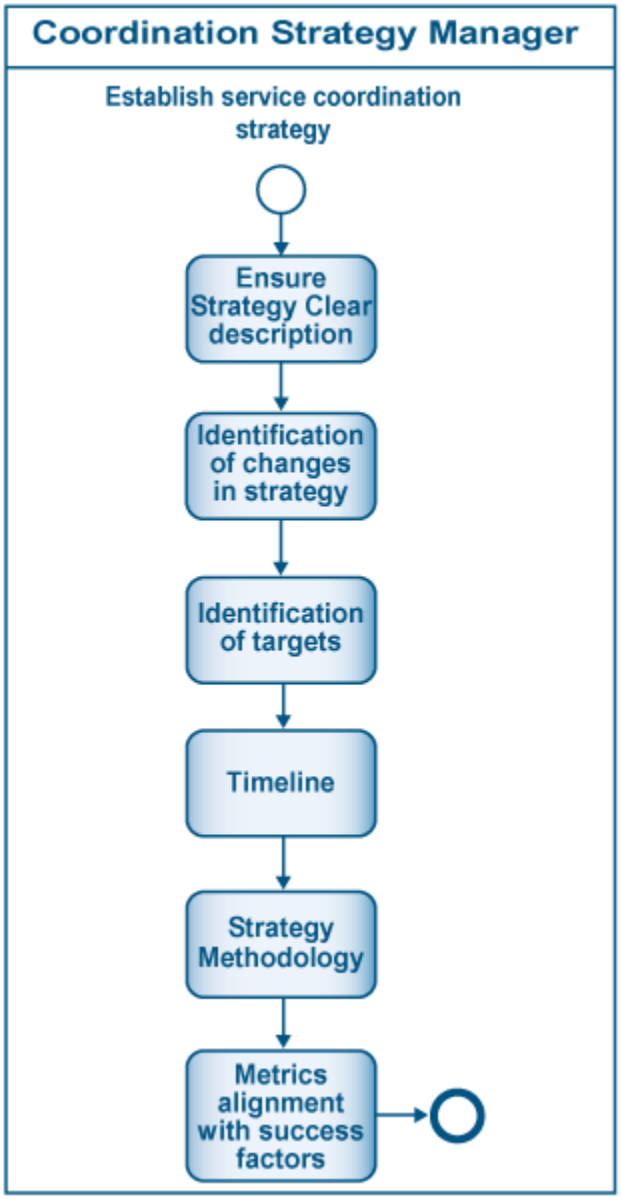
6 Service Coordination Strategy and Planning Process

Related Business Rules	BR-003 (Ref 7.1)
Related Risks	RR-003 (Ref. 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Data Integrity, Accountability, Performance, Scalability, Extensibility, Adaptability **(Ref 7.3)**
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, Free-of-Error, Value Added, Relevance, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CSRR (Ref 7.6)
Related CTQs	CSRRV (Ref 7.7)
Actors/Agents	Customer strategy Manager
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation Delegation Rule -2: Agent Overloaded 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 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 – Establish Service coordination strategy Roles & Responsibilities

Roles	Responsibilities
Customer Strategy manager	Coordination strategy Manager identifies strategy mechanism (formalization, scheduling, knowledge sharing, interdisciplinary training, reward system, information technology, integrating lateral relations).

6.10 Sub process – Articulate coordination strategy



6.11 Sub process – Articulate coordination strategy Specifications

Specification	Description
Summary/Purpose	This process is responsible for articulating customer strategy
Scope	This is a level 2 Process Specification.
Primary Reference	• NHS- National Health Services Standard • OSHA- Occupational Safety and Health Administration standard • Lean six sigma- Quality Standard • JCI- Journal of Clinical Investigation standard • JCAHO- Joint Commission on Accreditation of Healthcare Organizations (JCAHO).
Related ESM Practices	Quality coordination, nurse coordination, security coordination, hospital environmental services coordination, inter environmental service coordination, infection control coordination.
Related Business Driver	Effective coordination strategy
Related Operational Policies	OP-004 (Ref. 7.5)
Assumptions	• Organization's environmental services department has a very sound R & D capability. • Organization's environmental services department has done proper analysis to identify current shortcomings.
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

6 Service Coordination Strategy and Planning Process

Raw Materials	None
Equipment & Accessories	Automated System for Service coordination management.
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 Dimension	**Type** / **Normal** **Average** / 30 min **Std** / 12 min
Trigger	Coordination strategy.
Basic Course of Event	**Articulate coordination strategy** 1. Coordination strategy Manager ensures clear description of strategy 2. Coordination strategy Manager ensures identification of changes in strategy. 3. Coordination strategy Manager performs identification of customer goals 4. Coordination strategy Manager performs identification of timeline. 5. Coordination strategy Manager identifies strategy methodology 6. Coordination strategy Manager Metrics alignment with success factors. 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	Optimization of strategy
Preconditions	Information is gathered and analyzed accurately
Post -conditions	Customer strategy is articulated.

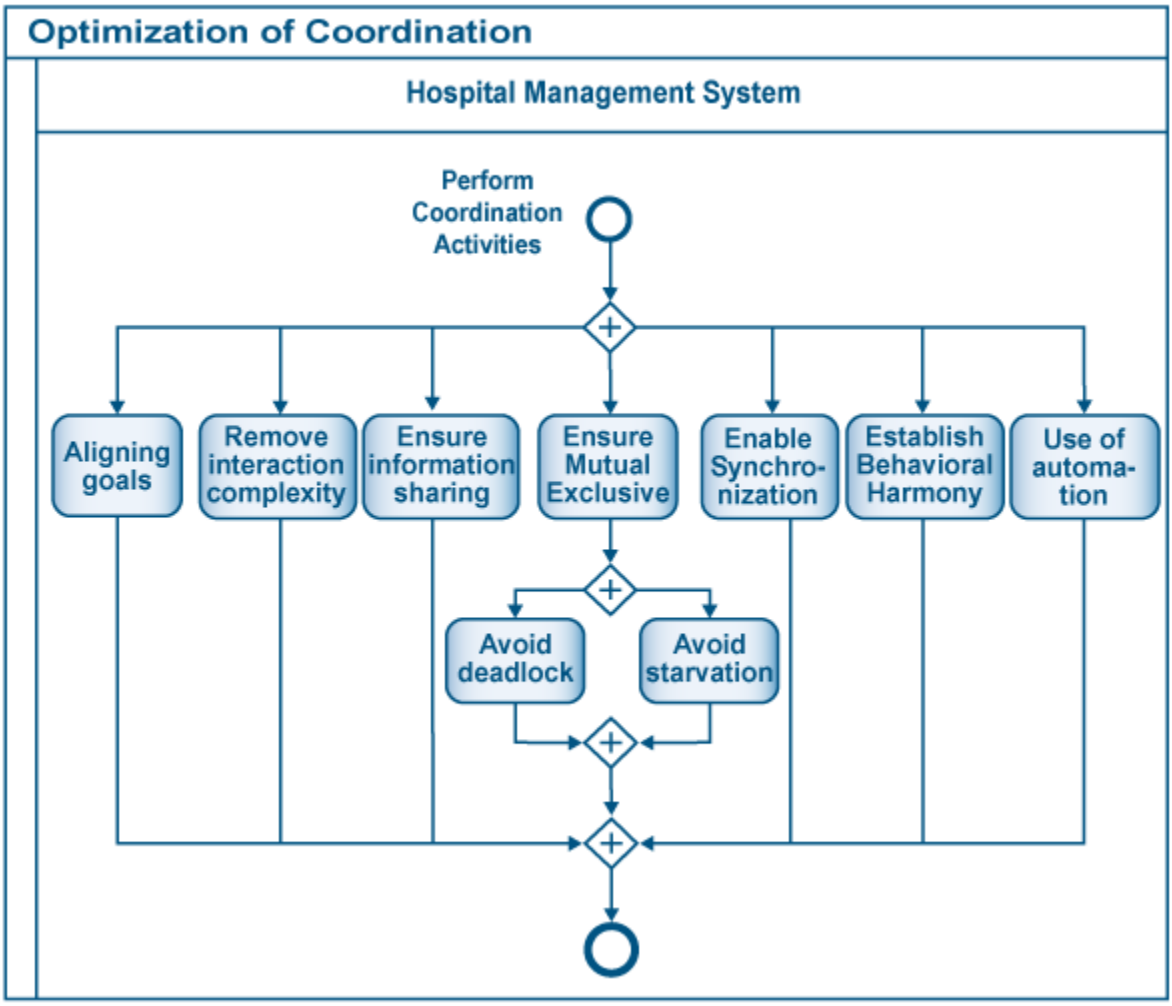
6 Service Coordination Strategy and Planning Process

Related Business Rules	BR-002, BR-004 (Ref 7.1)
Related Risks	RR-002 (Ref. 7.2)
Related Quality Attributes	Reliability, Availability, Usability, Confidentiality, Authenticity, Data Integrity, Accountability, Performance, Scalability, Extensibility, Adaptability **(Ref 7.3)**
Related Data Quality Dimensions	Accuracy, Reputation, Objectivity, Free-of-Error, Value Added, Relevance, Understandability, Interpretability, Concise Representation (Ref 7.4)
Related Primary SLA Terms	(Ref 7.9)
Related KPIs	CSRR (Ref 7.6)
Related CTQs	CSRRV (Ref 7.7)
Actors/Agents	Customer strategy Manager
Delegation	Delegation Rule -1: Agent Not Available 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 3. Log the Delegation Delegation Rule -2: Agent Overloaded 1. Delegate the Issue to additional Agent with same Role 2. Update the Issue 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

6.12 Sub process – Articulate coordination strategy Roles & Responsibilities

Roles	Responsibilities
Customer Strategy manager	• Coordination strategy Manager ensures clear description of strategy • Coordination strategy Manager ensures identification of changes in strategy. • Coordination strategy Manager performs identification of customer goals • Coordination strategy Manager performs identification of timeline. • Coordination strategy Manager identifies strategy methodology • Coordination strategy Manager Metrics alignment with success factors.

6.13 Sub Process – Optimization of Coordination strategy



6.14 Sub Process – Optimize of Coordination Specification

Specification	Description
Summary/Purpose	To establish the process to optimize coordination strategy.
Scope	This is a Level 2 Process Specification.
Primary Reference	Lean Six Sigma standard, NHS, OSHA
Related ESM Practices	Quality coordination, nurse coordination, security coordination, hospital environmental services coordination, inter environmental service coordination, infection control coordination.
Related Business Driver	Optimization of the coordination process.
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 Service 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	**Type** / **Normal** **Average** / 30 min **Std** / 12 min
Trigger	• Articulate Service coordination
Basic Course of Event	**Optimization of coordination** 1. Service Coordination Manager aligns goals, removes interaction complexity, ensures information sharing, ensures mutual exclusiveness (avoid deadlock and starvation), enable synchronization, establish behavioral harmony, ensure use of automation. 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	Monitoring process.
Preconditions	This process is supported by automated tools.
Post -conditions	Coordination process is optimized.
Related Business Rules	BR-005 (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	DR(Ref 7.6)
Related CTQs	DRV (Ref 7.7)
Actors/Agents	Service 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	6.13
Other References	Appendix A: Business Process Modeling Notation Reference Appendix B: Chain of Infection

6.15 Sub Process – Optimize of Coordination Roles and responsibilities

Roles	Responsibilities
Service Coordination Manager	• Performs optimization of this process.

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 department' s Service Coordination Strategy & Planning process matures or changes.

7.1 Business Rules

BR ID	Description	Context	Rule	Source
BR-001	Coordination strategy would be only approved by stakeholders	Business	TBD	TBD
BR-002	Coordination goals should be in line with the overall organizational strategy.	Business	TBD	TBD
BR-003	Coordination strategy should cover all the key mechanism that can be utilized for comprehensiveness.	Business	TBD	TBD
BR-004	The strategy should be simple and clear so that it can be easily understood by All	Business	TBD	TBD
BR-005	Automated tools should be used everywhere possible for optimizing the process.	Business	TBD	TBD

7.2 Risk

Risk ID	Description	Source	Severity Level	Status	Resolution
RR-001	The coordination goals are not effective.	TBD	High	TBD	The goals should be realistic and measureable.
RR-002	The strategies are not comprehensive.	TBD	High	TBD	The Service strategies should be a well thought

					process and should include various strategic dimensions such that the end result is tailored and focused.

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 Dimension

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	Strategy enablement would be supported by technology.	TBD	TBD
OP-002	Coordination goals would be approved by senior management	TBD	TBD
OP-003	Service coordination strategy would be formulated by Coordination strategy Manager and approved by Senior Management	TBD	TBD
OP-004	Strategies would not be implemented unless approved.	TBD	TBD
OP-005	Optimization should be done via automated tools	TBD	TBD

7.6 KPI

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Goals effectiveness rate	GER	Percentage of alignment of coordination goals with the organization strategy.	NA	TBD	TBD	TBD

Coordination Strategy review rate	CSRR	The number of reviews done to coordination service strategy	NA	TBD	TBD	TBD
Deadlock rate	DR	Number of deadlock encounter per process	NA	TBD	TBD	TBD

7.7 CTQ

Name	Acronym	Description	Context	Importance	Soft Threshold	Hard Threshold
Goals effectiveness rate	GER	Percentage of alignment of coordination goals with the organization strategy.	NA	TBD	TBD	TBD
Coordination Strategy review rate	CSRR	The number of reviews done to coordination service strategy	NA	TBD	TBD	TBD
Deadlock rate	DR	Number of deadlock encounter per process	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
Inventory Optimization Measure	IOM	Management of Inventory 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

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	Wastes should be either removed or minimized.	• Safe environment • Low infection rate

	Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers		• Low risk • Reputation of hospital or organization • Low cost • Timely response • High quality
Excellent Ergonomic	Doctors, Patients, Nurses, Housekeeping Supervisors, Clerks, Visitors, Environmental Services Management, Laundry worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers	The hospital environment and policy should comply with physical, organization and cognitive ergonomics.	• Professionalism • Trust • Job accuracy • Excellent communication • 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	The appearance of the workers, supervisors and manager should induce positive biases.	• Professionalism • Reputation of hospital or organization • Trust

	worker, Transportation worker, Maintenance worker, Waste management worker, Housekeepers		• 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, infection control coordination
Clerks	CLR	Direct	HIS Coordination
Visitors	VIS	Indirect	HIS Coordination

Environmental Services Management	ESM	Direct	Nurse Coordination, infection control 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	infection control 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

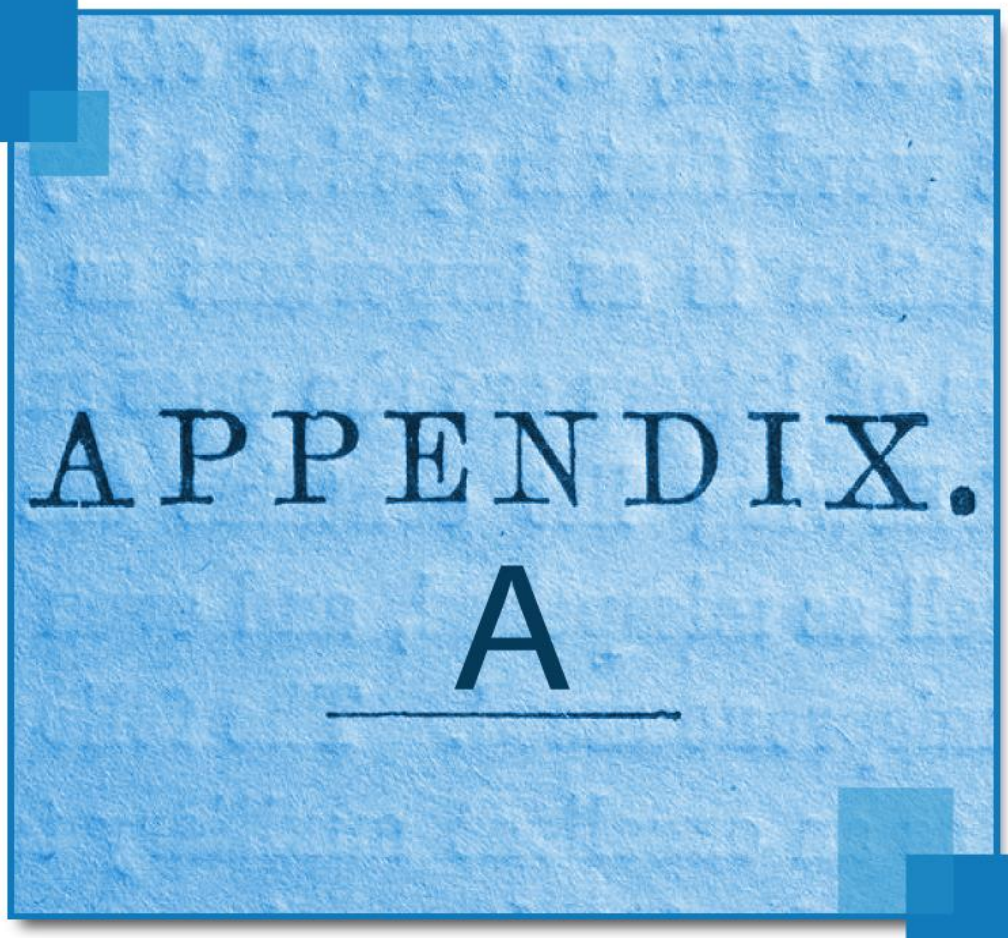
8 Glossary / Acronyms

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
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
ESM	Environmental Services Map
EBC	Evidence based cleaning
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.
Operational Policy	Rules defined to operate the process.
Quality Attributes	Quality attributes are non-functional requirements used to evaluate the performance of a process.

8 Glossary / Acronyms

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

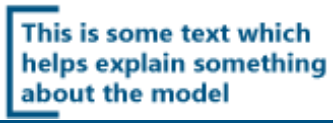
Pool	A *Pool* represents a participant in a Process. It is also acts as a "swimlane" and a graphical container for partitioning a set of activities from other Pools	Name
Lane	A *Lane* is a sub-partition within a Pool and will extend the entire length of the Pool, either vertically or horizontally. Lanes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

CONNECTORS

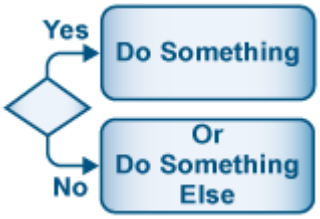
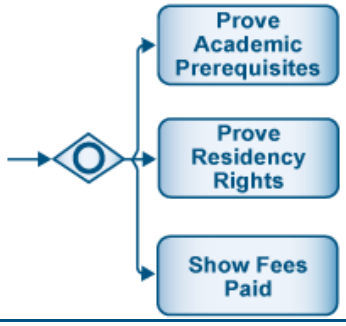
Sequence Flow	A *Sequence Flow* is represented by a solid line with a solid arrowhead (see the figure to the right) and is used to show the order (the sequence) that activities will be performed in a Process.	
Message Flow	A *Message Flow* is represented by a dashed line with an open arrowhead (see the 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.	

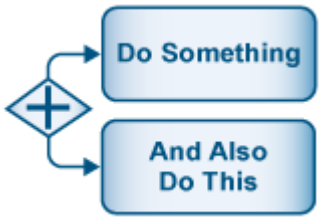
9 Appendix A: Business Process Modeling Notation Reference

ARTIFACTS

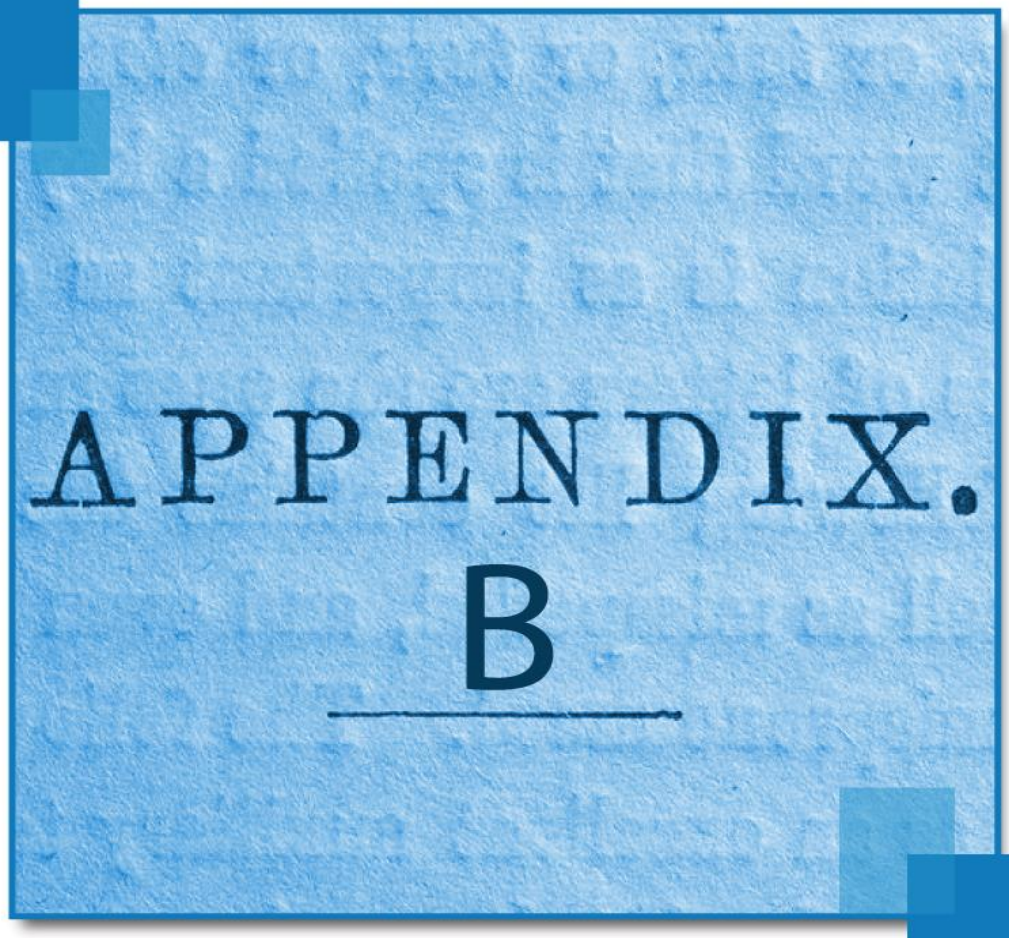
Annotation	The ANNOTATION shape is used to add comments to a process model. It consists of text in a square left bracket	
Data Object	A data object represents a piece of data which is required or produced by the process eg. Customer details, output.	
Group	A grouping is purely for documentation or explanatory 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	
Inclusive	Each branch will be evaluated and will not stop when one branch condition becomes true.	

Parallel	Provides a mechanism to synchronise parallel flow and to create parallel flow.	

Appendix B: Chain of Infection



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.

10 Appendix B: Chain of Infection

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.