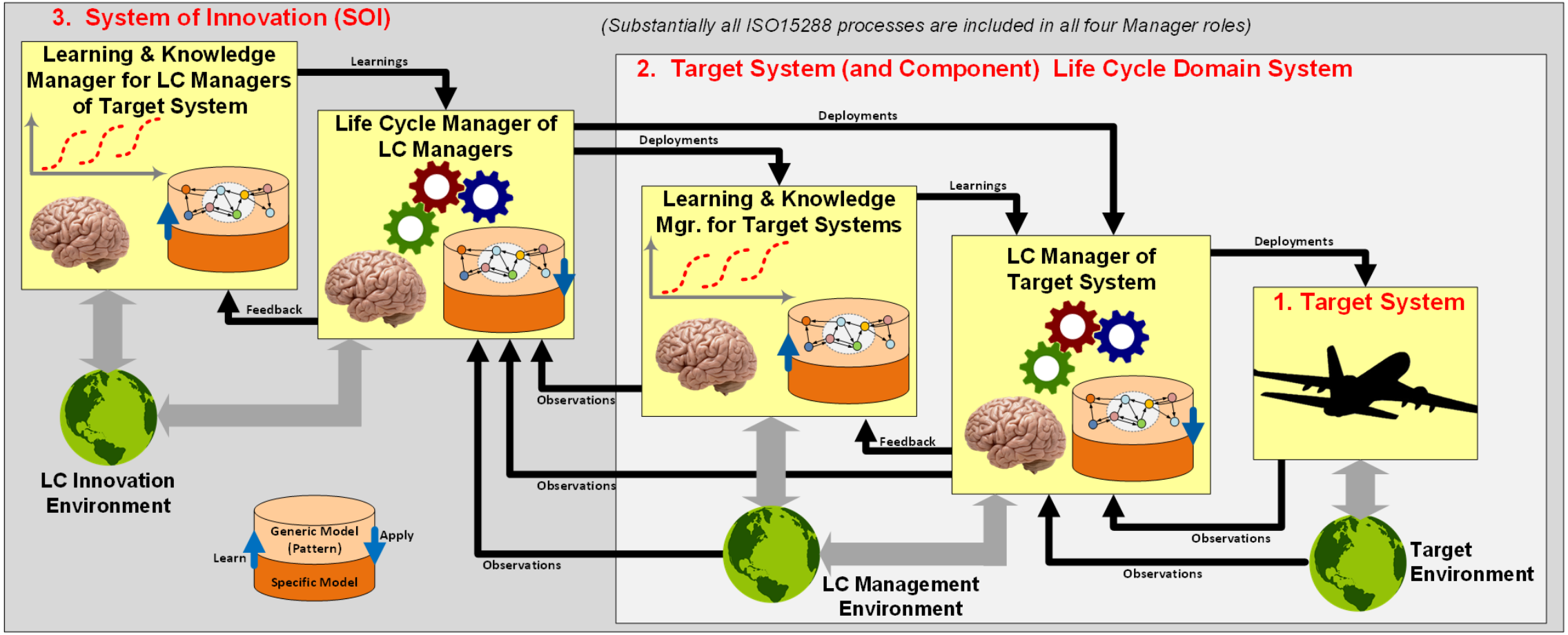
ASELCM Reference Pattern: Reference Configuration Stages for Models, Model Patterns, and the Real Systems They Represent



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Purpose and scope

- The following material is a walk-through summary of pattern configuration stages for the INCOSE Agile Systems Engineering Life Cycle Management (ASELCM) Reference Pattern.
- This material does not introduce or describe the purpose or nature of the ASELCM Pattern. For that introduction, see:

  https://www.omgwiki.org/MBSE/lib/exe/fetch.php?media=mbse:patterns:is2016_intro_to_the_aselcm_pattern_v1.4.8.pdf
- This material does not provide background on MBSE Patterns. For a background introduction to MBSE Patterns, see:

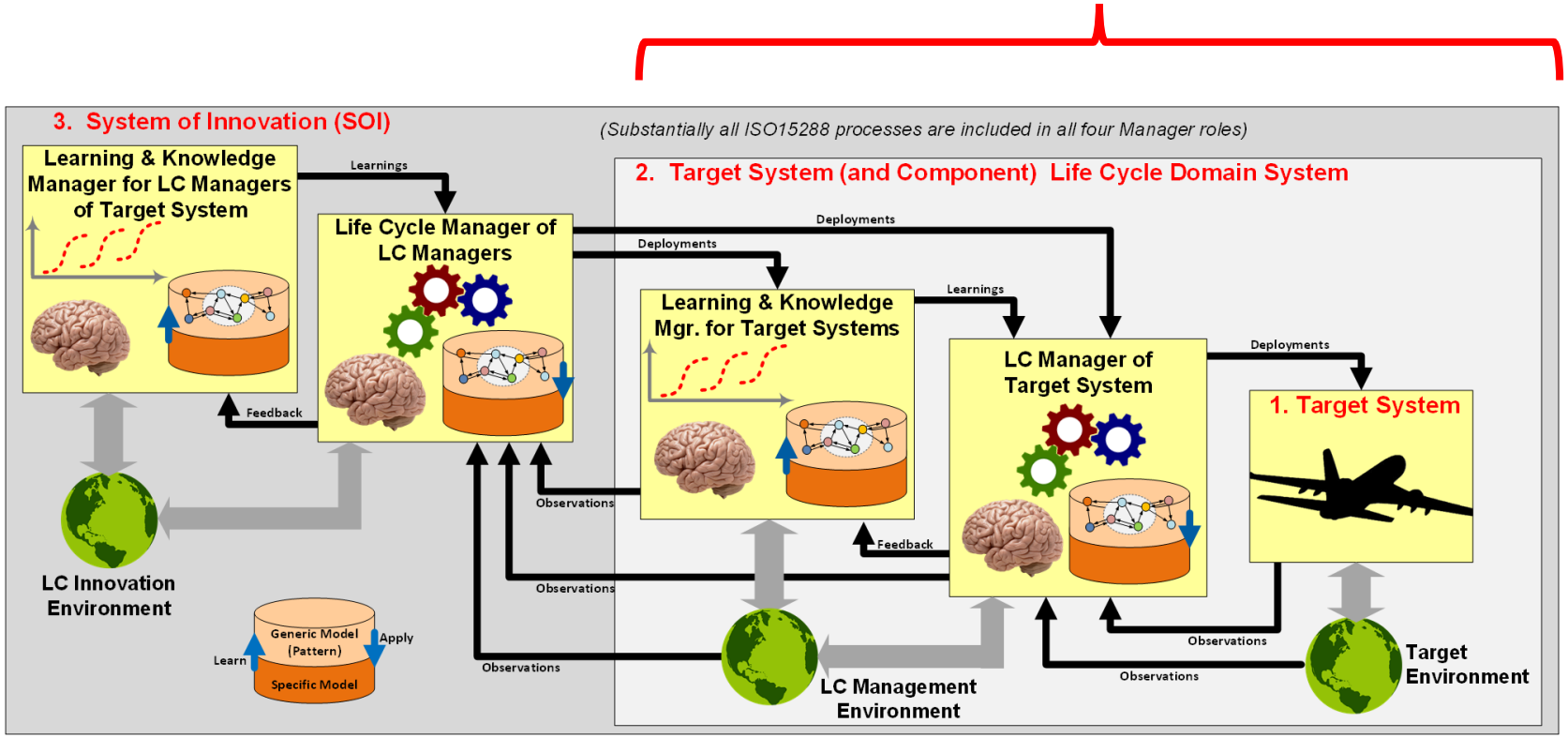
  https://www.omgwiki.org/MBSE/lib/exe/fetch.php?media=mbse:patterns:pbse_extension_of_mbse--methodology_summary_v1.6.1.pdf

  and

  https://www.omgwiki.org/MBSE/doku.php?id=mbse:patterns:patterns

Subsections

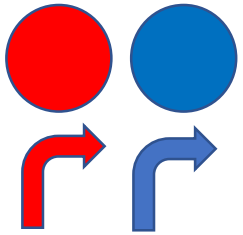
I. Configuration of System 1, managed by System 2
II. Configuration of System 2, managed by System 3

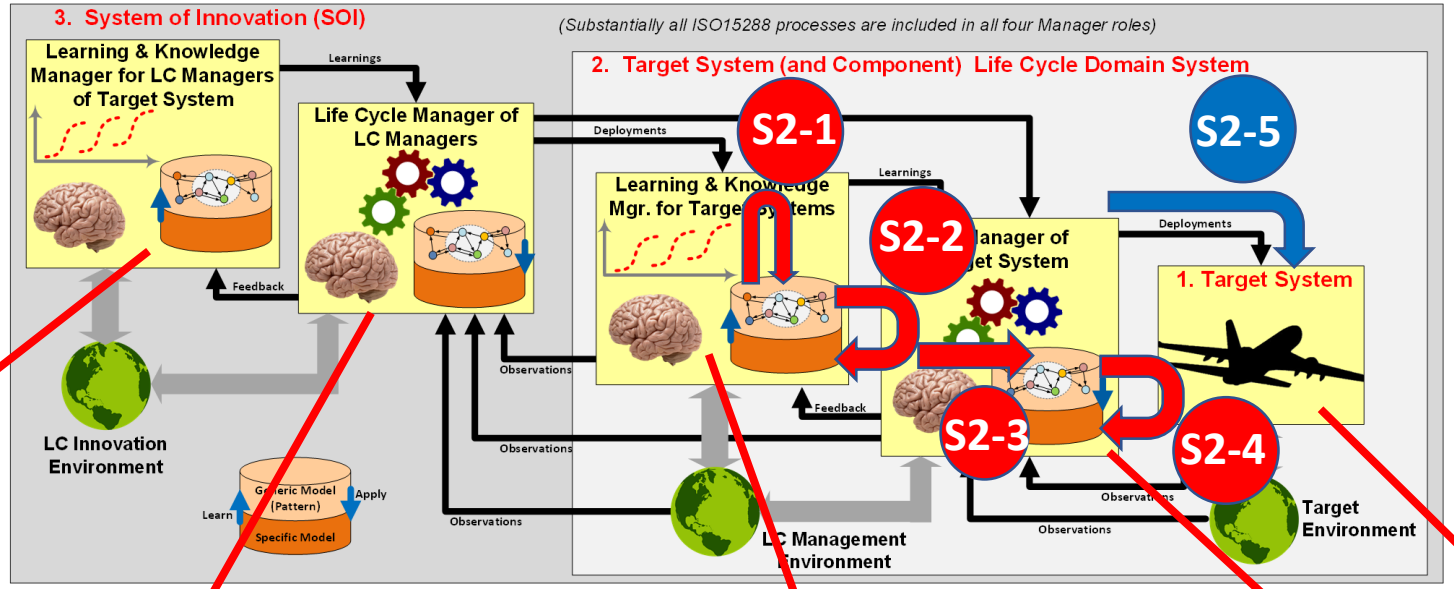


Stages of System 1 (Target System) Pattern & Model Synthesis and Configuration

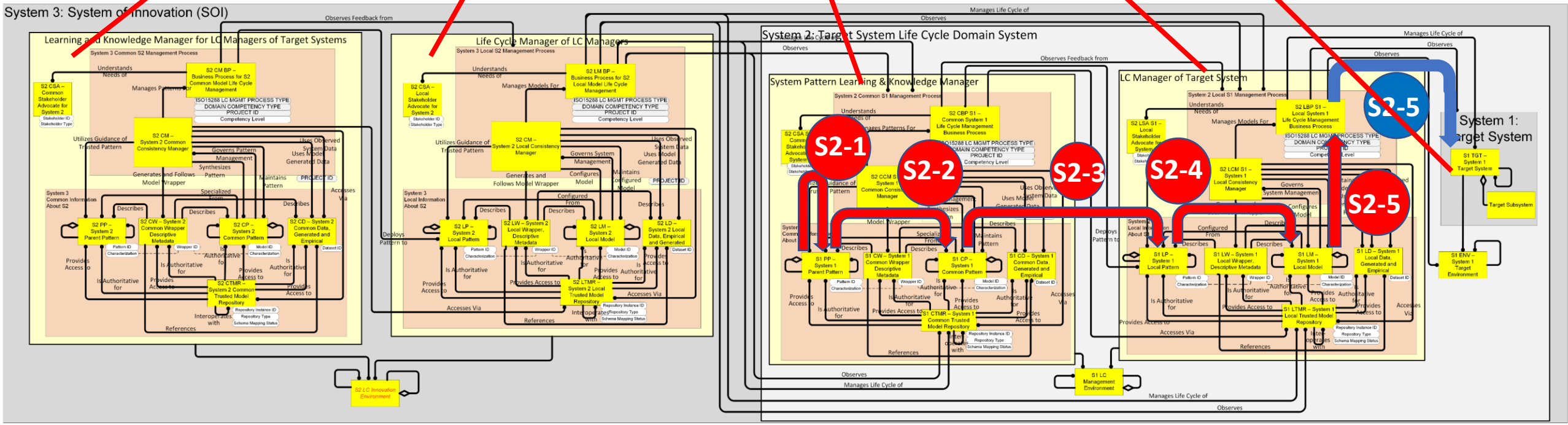
- The (System 1) Target System being engineered and life cycle managed is specified by models or other artifacts, having their own life cycle stages as they are progressively configured within an enterprise or other ecosystem.
- For any given single deployed System 1 configuration, there are a series of transition stages it will have passed through during the planning, implementing, deployment, and operation life of that configuration and its real System 1 capabilities.
- Those transition stages involve progressive stages of pattern specialization, which provide information in support of life cycle management processes that include engineering and other stages, referenced by the ASELCM Pattern.
- Those transition stages are illustrated by the following diagram and subsequent table of definitions . . .

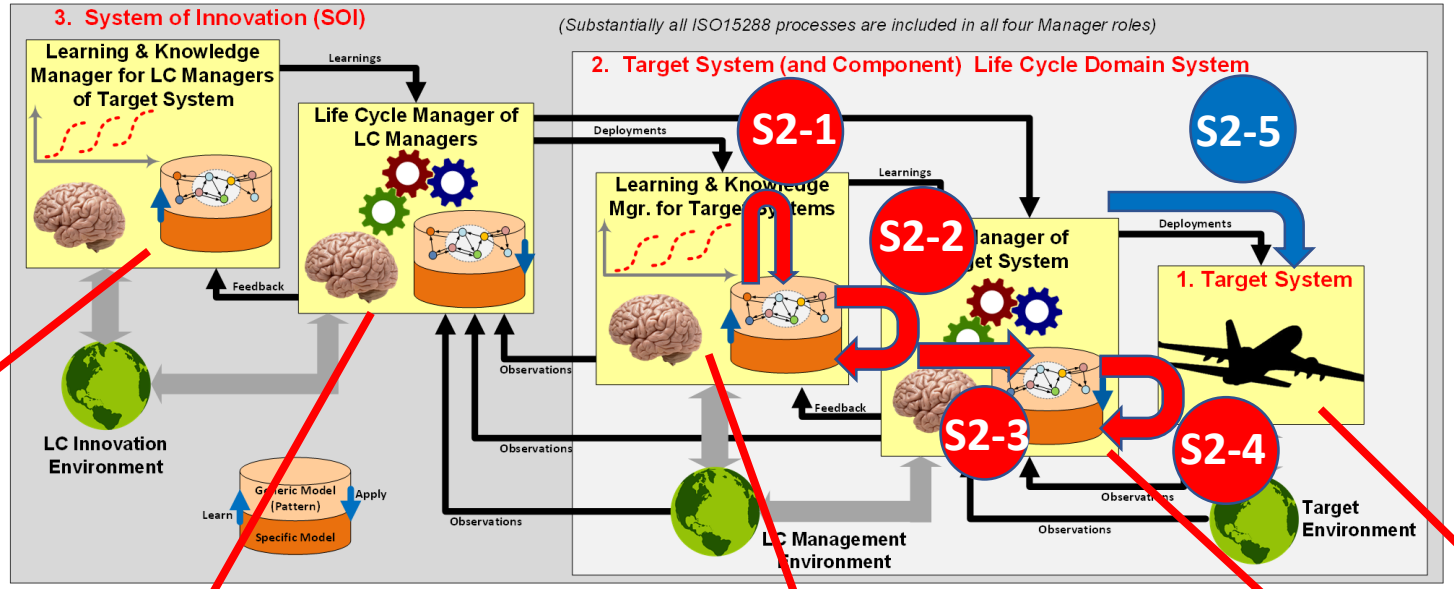
Transition stages:

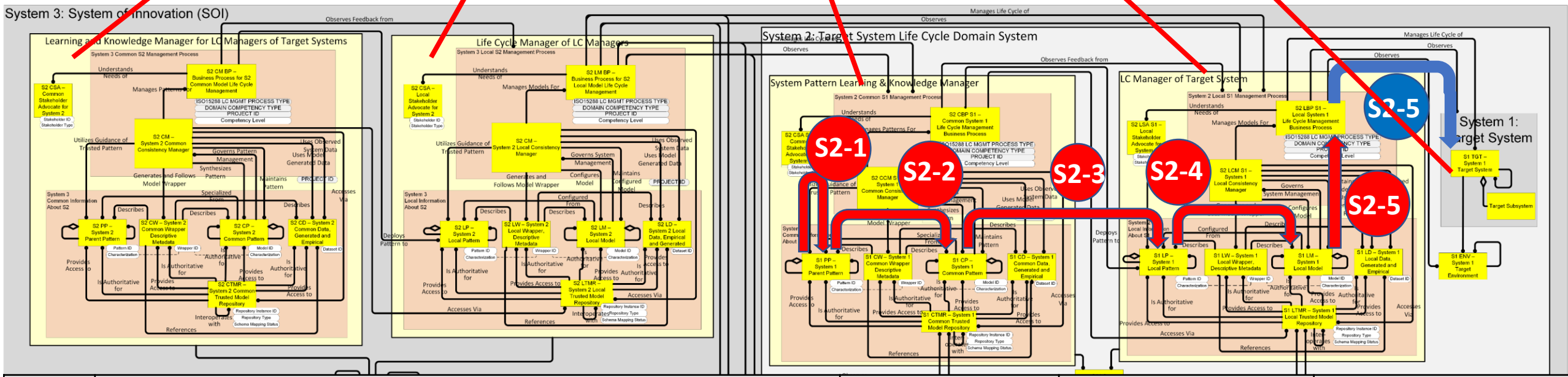




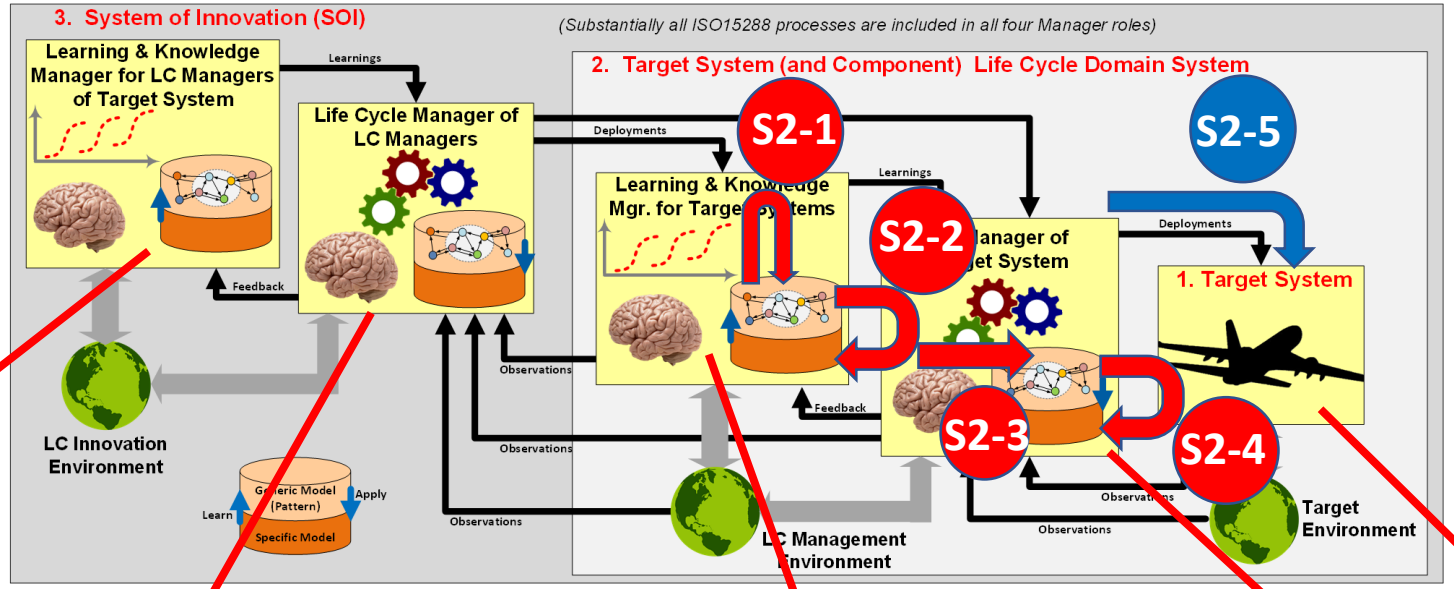
See next slides for definition of labeled stages.

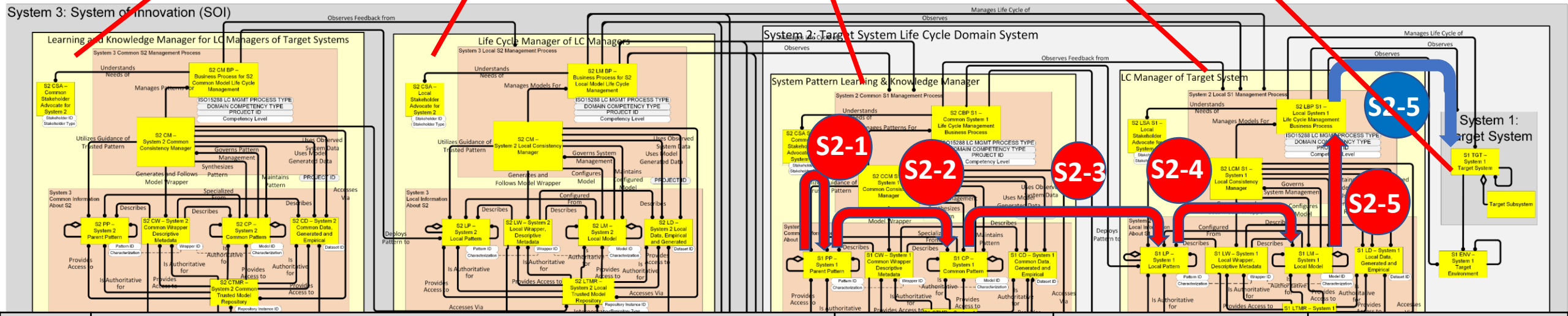




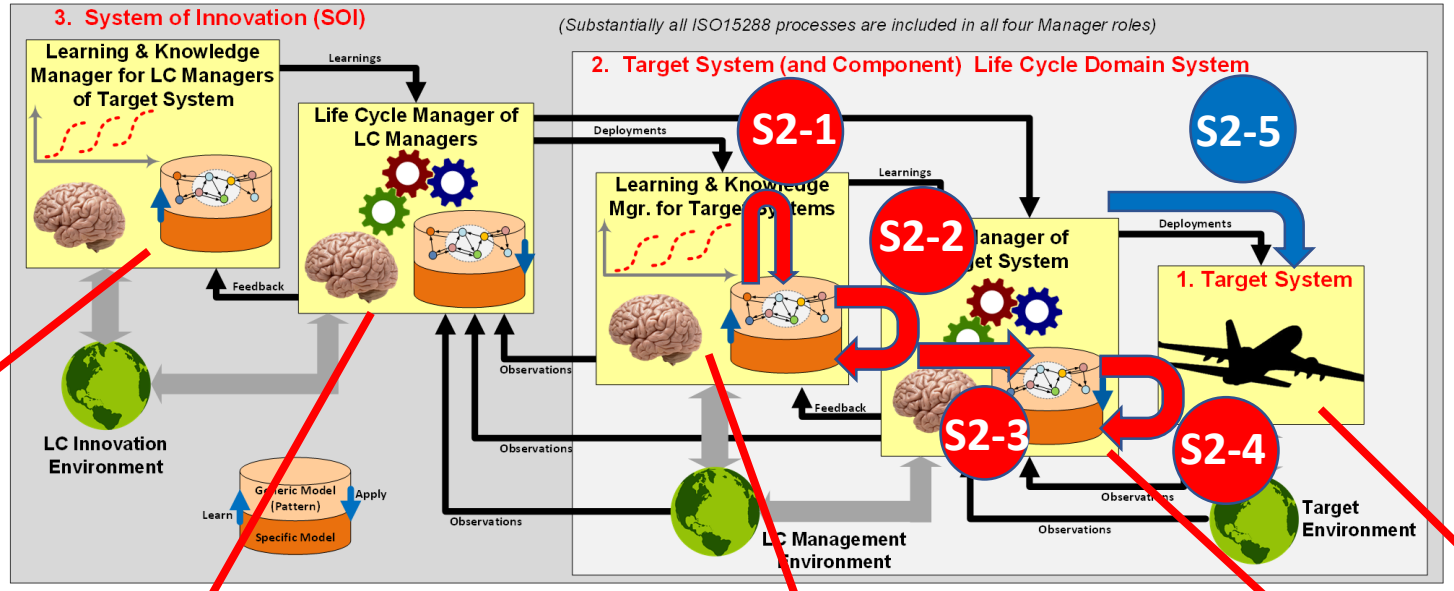


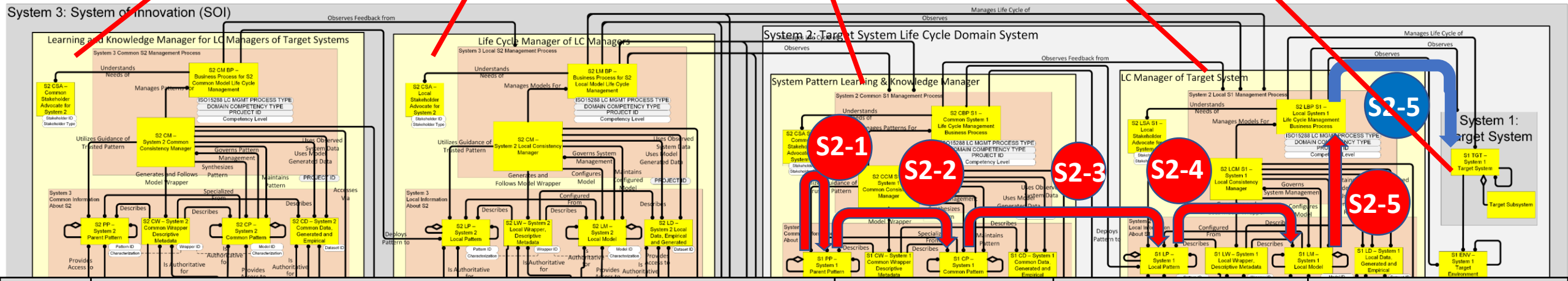
Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S2-1	Parent Pattern version release as a Parent Pattern to an enterprise's System 2 Parent Pattern Library.	S*Patterns Community	S1 PP -- System 1 Parent Pattern (in S2)	Information Transfer



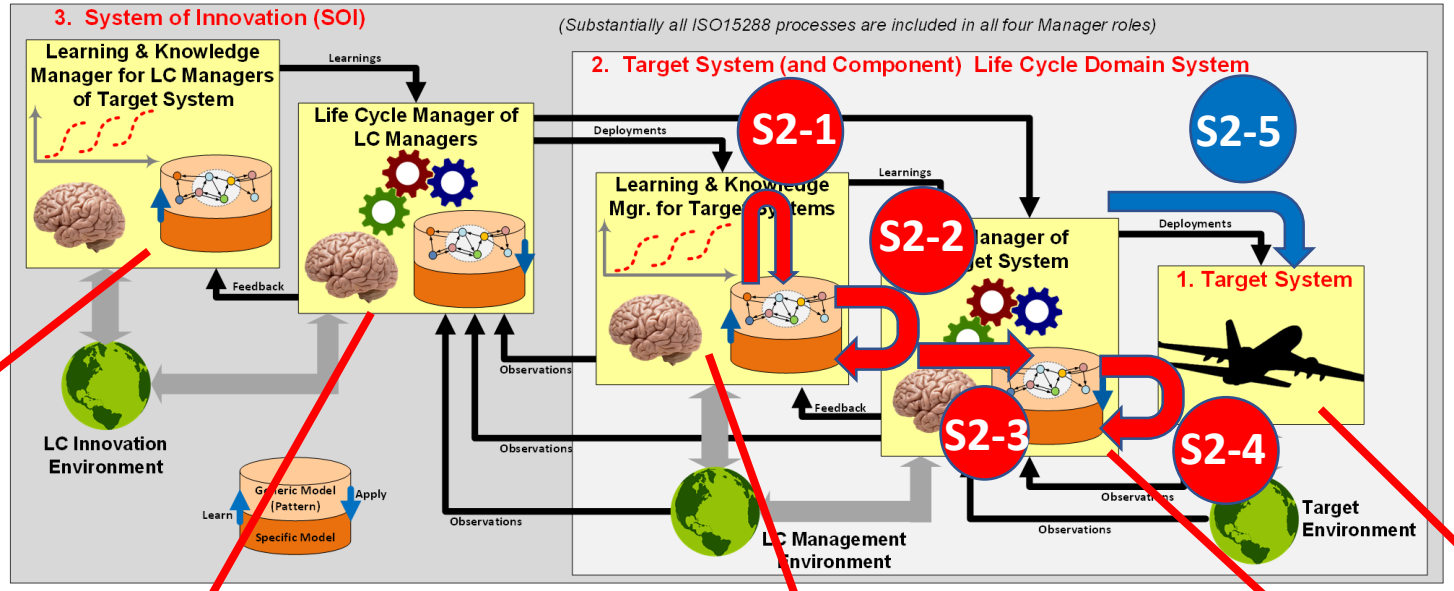


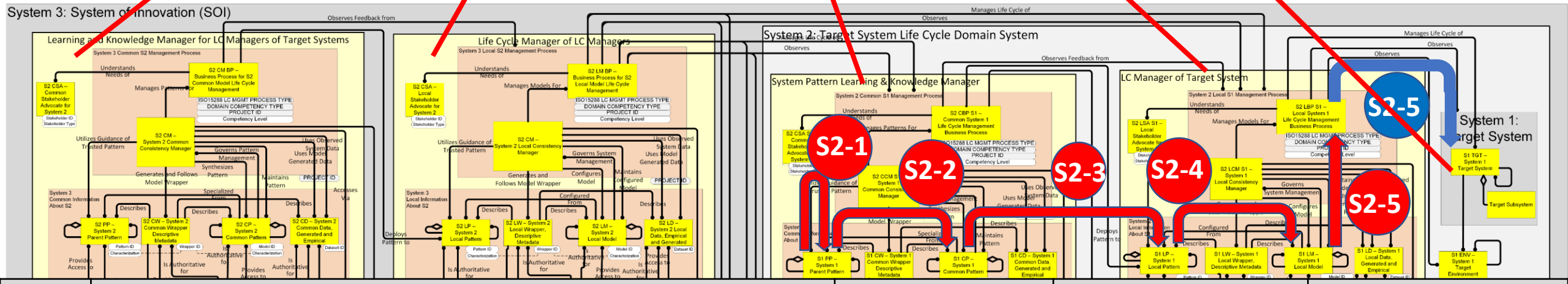
Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S2-2	Configuration of Parent Pattern to one or more general System 1 patterns (in System 2) for use within the enterprise. Point of accumulation of future learning by observing S1 & environment during performance/life, or other sources of learning about S1.	S1 PP -- System 1 Parent Pattern (stored in S2)	S1 CP – System 1 Common Pattern (stored in S2)	Information Transformation (Pattern Configuration)



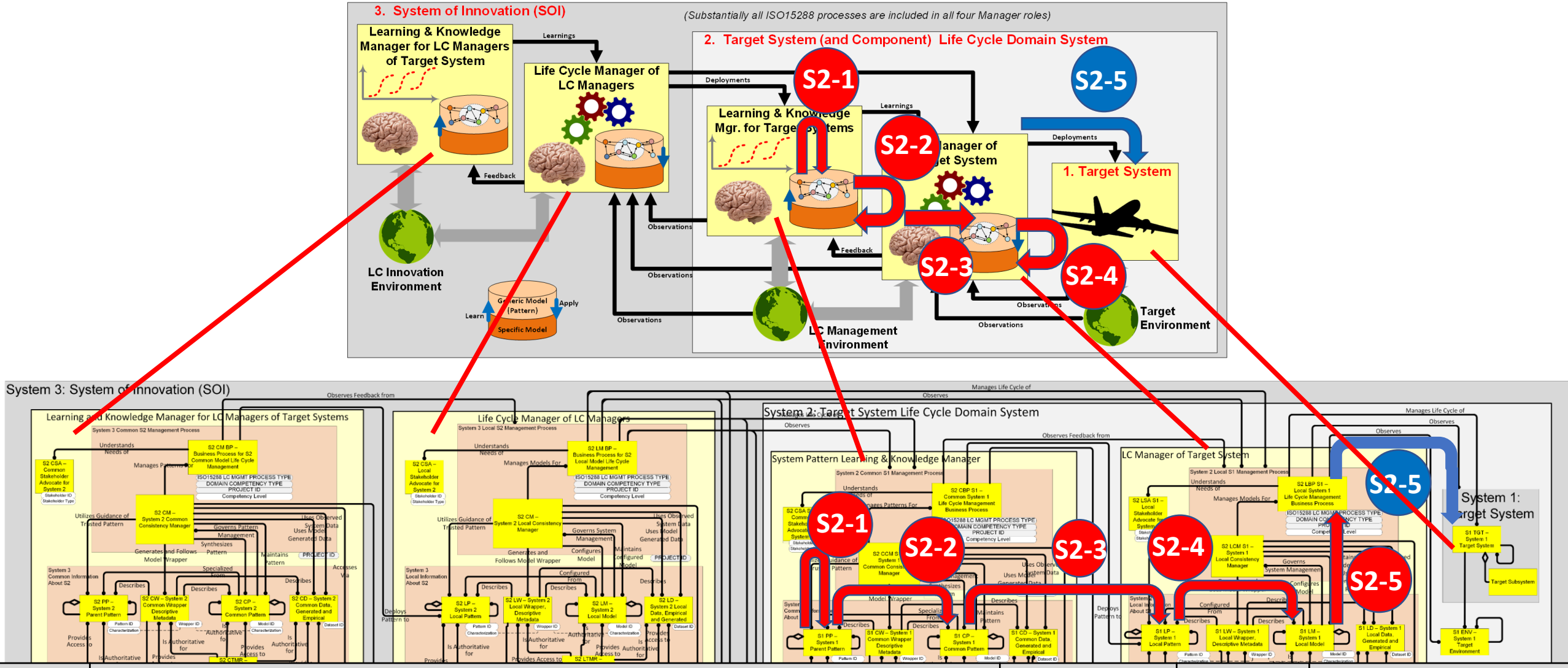


Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S2-3	Typically describes library of types of intended S1 capabilities, but not yet configured to be specific to individual S1 instances, projects, or programs as to their quantities or combinations of those capabilities, projects, or programs. Types, but not quantities of instances or combinations of those types.	S1 CP – System 1 Common Pattern (stored in S2)	S1 LP – System 1 Local Pattern (stored in S2)	Information Transfer, but one to many





Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S2-4	Typically each model is specific to the enterprise's managed S1 projects and programs for individual S1 products, as to their quantities and combinations. Quantities of instances or combinations of instances for those S1 capabilities. May be instantiated as individual models for each S1 project or program.	S1 LP – System 1 Local Pattern (stored in S2)	S1 LM – System 1 Local Model (stored in S2)	Information Transformation (Pattern Configuration--usually many)



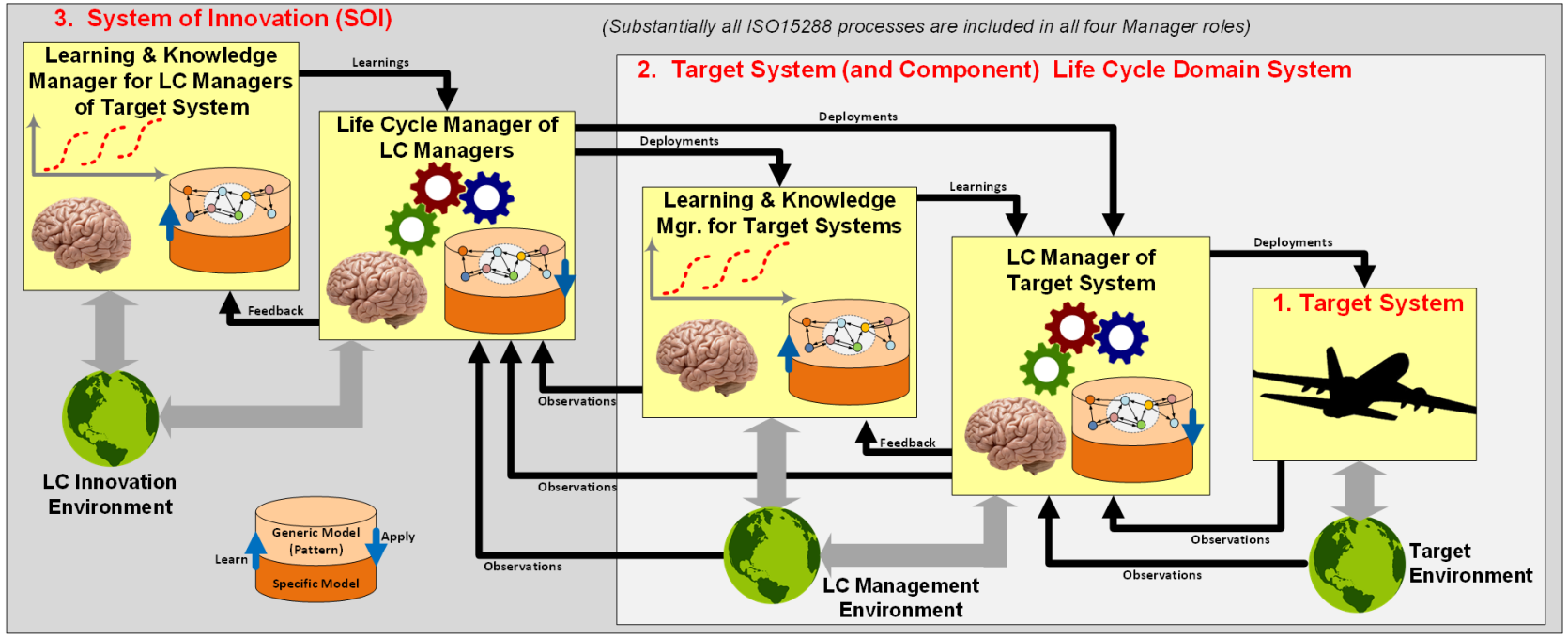
Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S2-5	This is not primarily an information / model stage, but instead is use of the above S1 Local Model as "S1 blueprints", from which certain S2 Business Processes create and deploy real capabilities in S1, though S1 acquisition, fabrication, programming, staffing, education, other creation of real world S1 entities. Although many of these are not information but are real technology, a few can be information.	S2 Business Processes for S1 fabrication, acquisition, staffing.	S1 hardware, software, operators, facilities.	Deployment of real S1 hardware, software, operators, facilities that are described by S1 LM stored in S2.

Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S2-1	Parent Pattern version release as a Parent Pattern to an enterprise's System 2 Parent Pattern Library.	S*Patterns Community	S1 PP -- System 1 Parent Pattern (in S2)	Information Transfer
S2-2	Configuration of Parent Pattern to one or more general System 1 patterns (in System 2) for use within the enterprise. Point of accumulation of future learning by observing S1 & environment during performance/life, or other sources of learning about S1.	S1 PP -- System 1 Parent Pattern (stored in S2)	S1 CP – System 1 Common Pattern (stored in S2)	Information Transformation (Pattern Configuration)
S2-3	Typically describes library of types of intended S1 capabilities, but not yet configured to be specific to individual S1 instances, projects, or programs as to their quantities or combinations of those capabilities, projects, or programs. Types, but not quantities of instances or combinations of those types.	S1 CP – System 1 Common Pattern (stored in S2)	S1 LP – System 1 Local Pattern (stored in S2)	Information Transfer, but one to many
S2-4	Typically each model is specific to the enterprise's managed S1 projects and programs for individual S1 products, as to their quantities and combinations. Quantities of instances or combinations of instances for those S1 capabilities. May be instantiated as individual models for each S1 project or program.	S1 LP – System 1 Local Pattern (stored in S2)	S1 LM – System 1 Local Model (stored in S2)	Information Transformation (Pattern Configuration--usually many)
S2-5	This is not primarily an information / model stage, but instead is use of the above S1 Local Model as "S1 blueprints", from which certain S2 Business Processes create and deploy real capabilities in S1, though S1 acquisition, fabrication, programming, staffing, education, other creation of real world S1 entities. Although many of these are not information but are real technology, a few can be information.	S2 Business Processes for S1 fabrication, acquisition, staffing.	S1 hardware, software, operators, facilities.	Deployment of real S1 hardware, software, operators, facilities that are described by S1 LM stored in S2.

Subsections

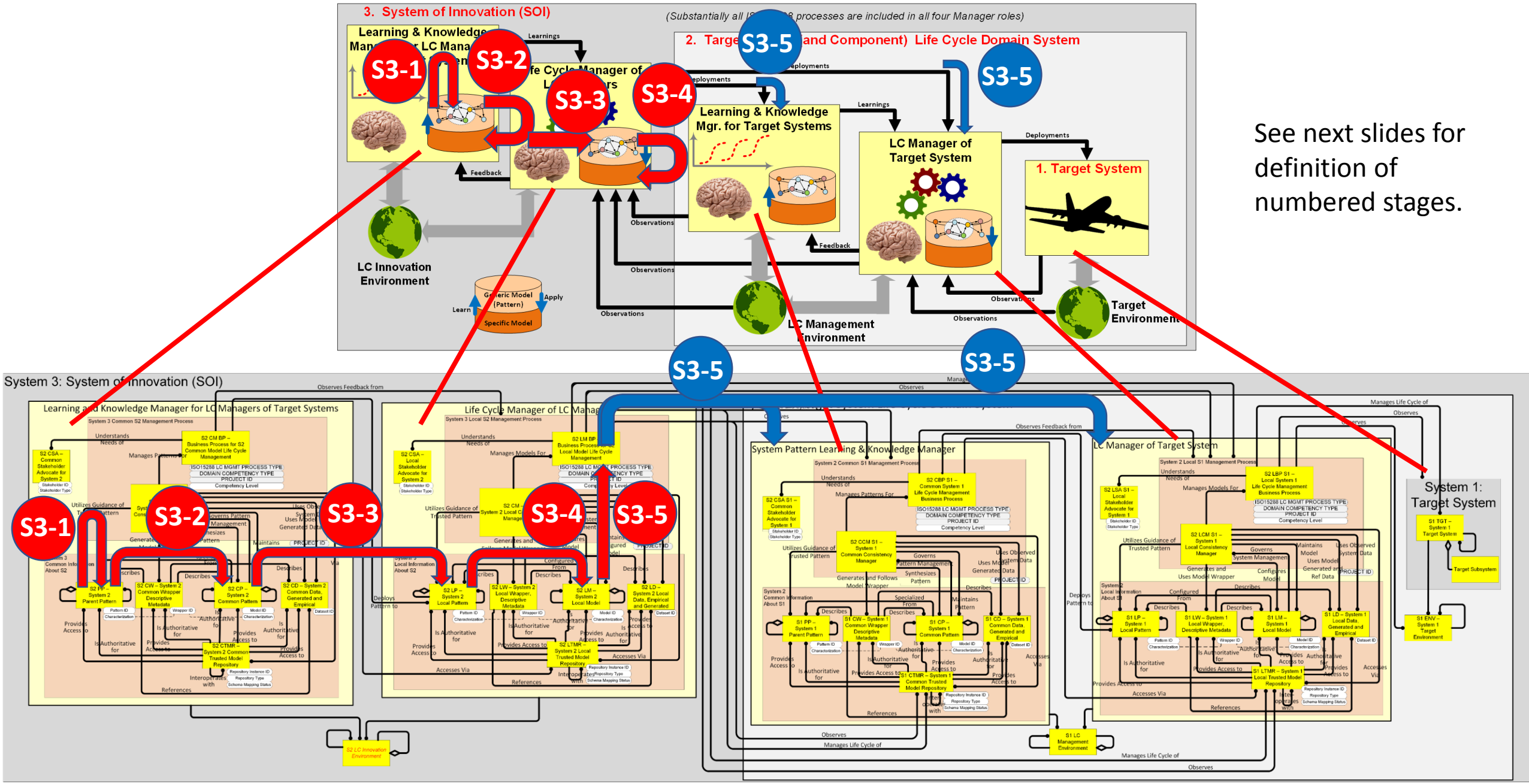
I. Configuration of System 1, managed by System 2

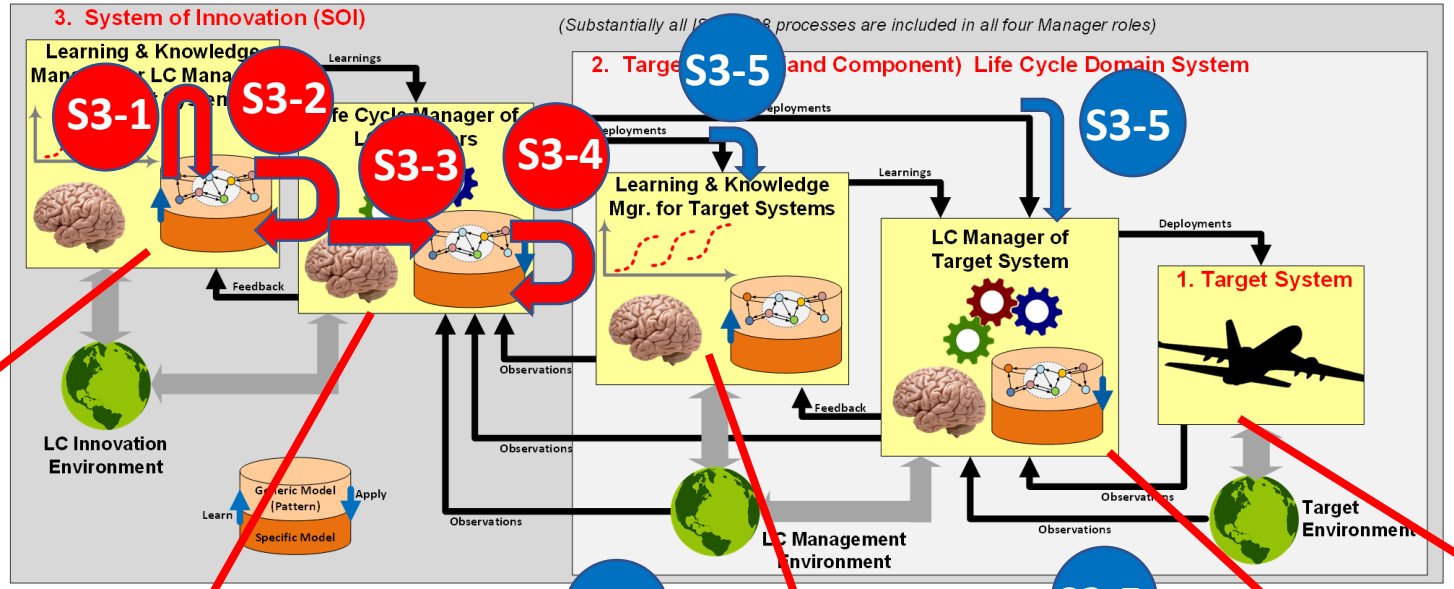
II. Configuration of System 2, managed by System 3

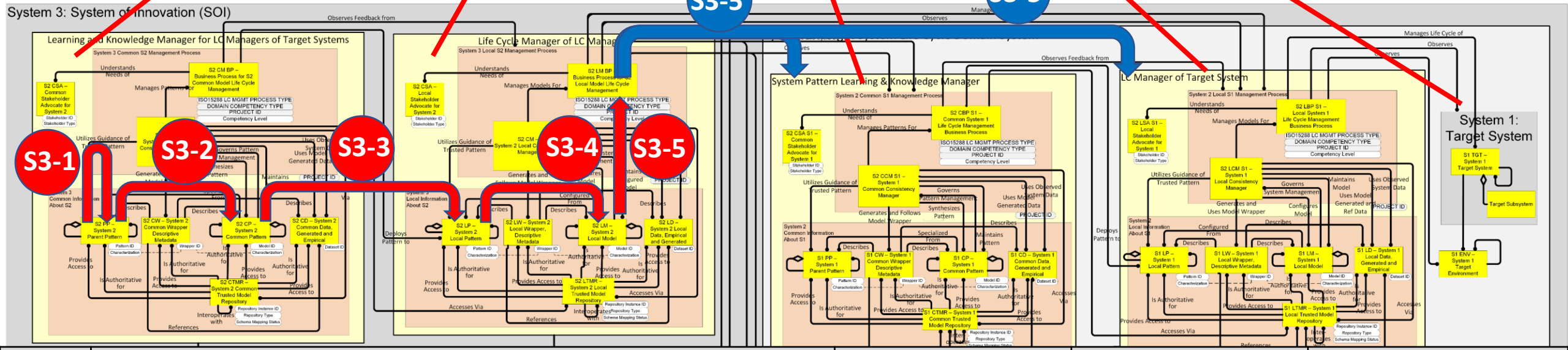


Stages of System 2 (Program/Project Ecosystem) Pattern & Model Synthesis and Configuration

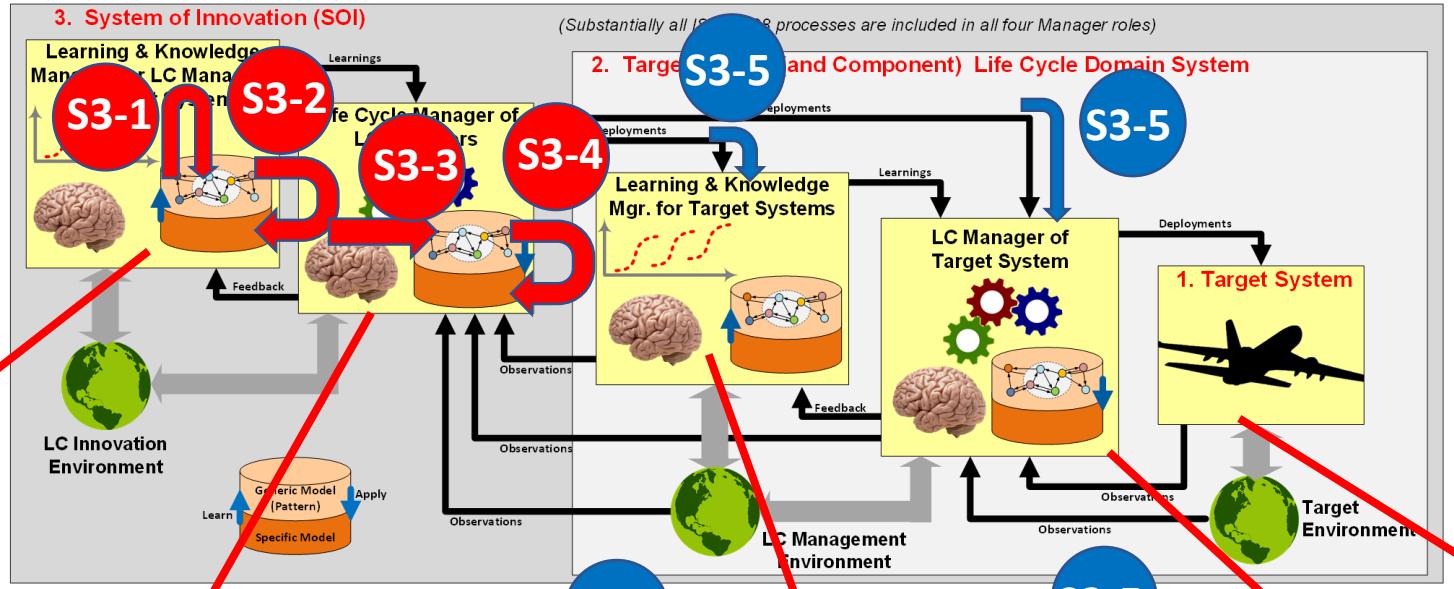
- System 2 capabilities to engineer and otherwise manage the life cycle of Target Systems is represented by the high level and detailed model of System 2—itself a system which can likewise be engineered and progressively configured with its own capabilities.
- For any given single configuration of System 2 capabilities, there are a series of transition stages it will have passed through during the planning, implementing, deployment, and operation life of that configuration as real ecosystem capability.
- Those transition stages involved progressive stages of System 2 pattern specialization, which provide information in support of deployment and governance of System 2.
- Those transition stages are illustrated by the following diagram and subsequent table of definitions . . .

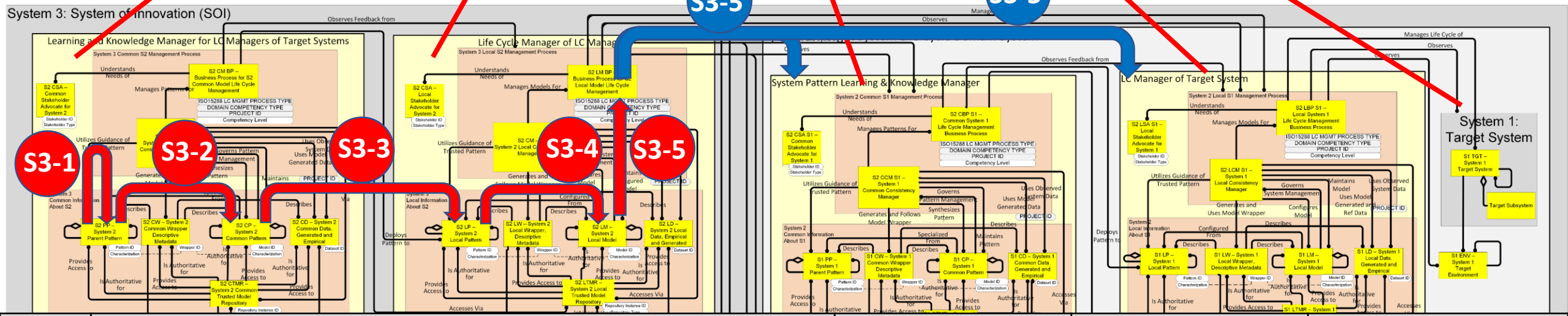

3. System of Innovation (SOI)
(Substantially all ISO 15288 processes are included in all four Manager roles)
2. Target (and Component) Life Cycle Domain System
Learning & Knowledge Mgr. for LC Managers
Life Cycle Manager of LC Managers
Learning & Knowledge Mgr. for Target Systems
LC Manager of Target System
1. Target System
LC Innovation Environment
LC Management Environment
Target Environment
Generic Model (Pattern)
Specific Model
Learn
Apply
Learnings
Deployments
Feedback
Observations
S3-1
S3-2
S3-3
S3-4
S3-5
See next slides for definition of numbered stages.
System 3: System of Innovation (SOI)
Learning and Knowledge Manager for LC Managers of Target Systems
Life Cycle Manager of LC Managers
System Pattern Learning & Knowledge Manager
LC Manager of Target System
System 1: Target System



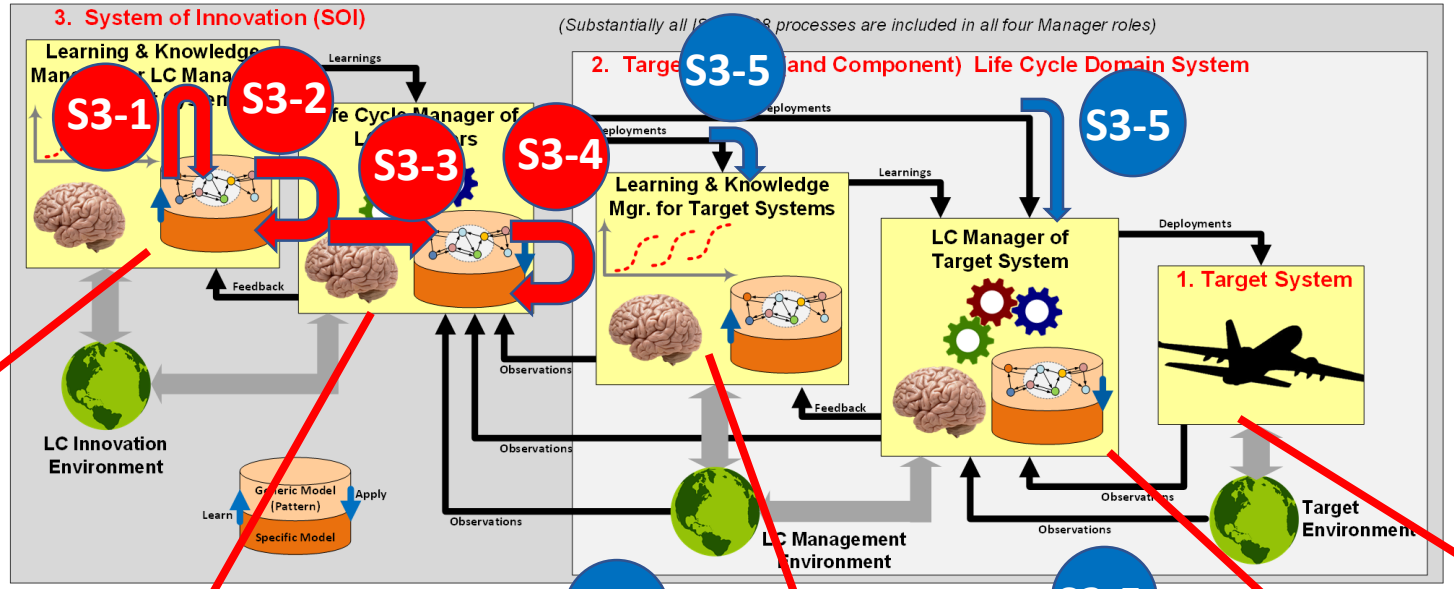


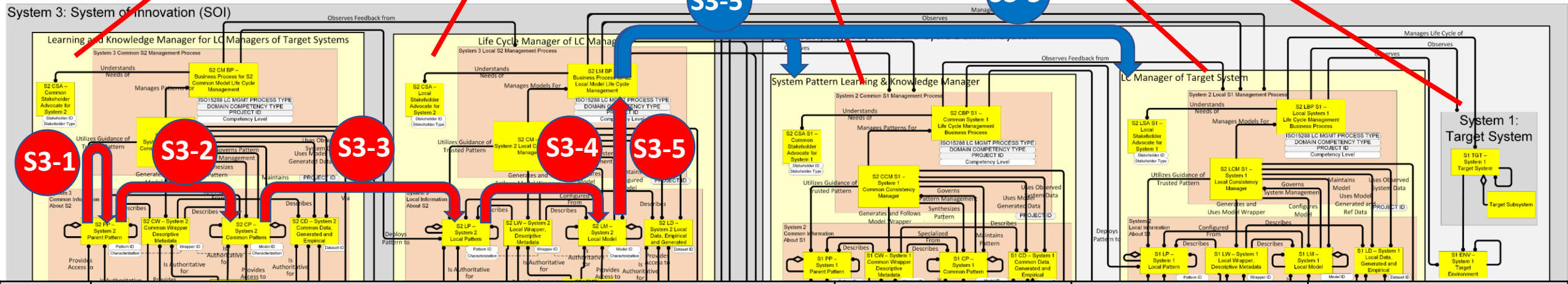
Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S3-1	ASELCM Pattern version release as a Parent Pattern to an enterprise's System 3 Parent Pattern Library.	S*Patterns Community	S2 PP -- System 2 Parent Pattern (in S3)	Information Transfer



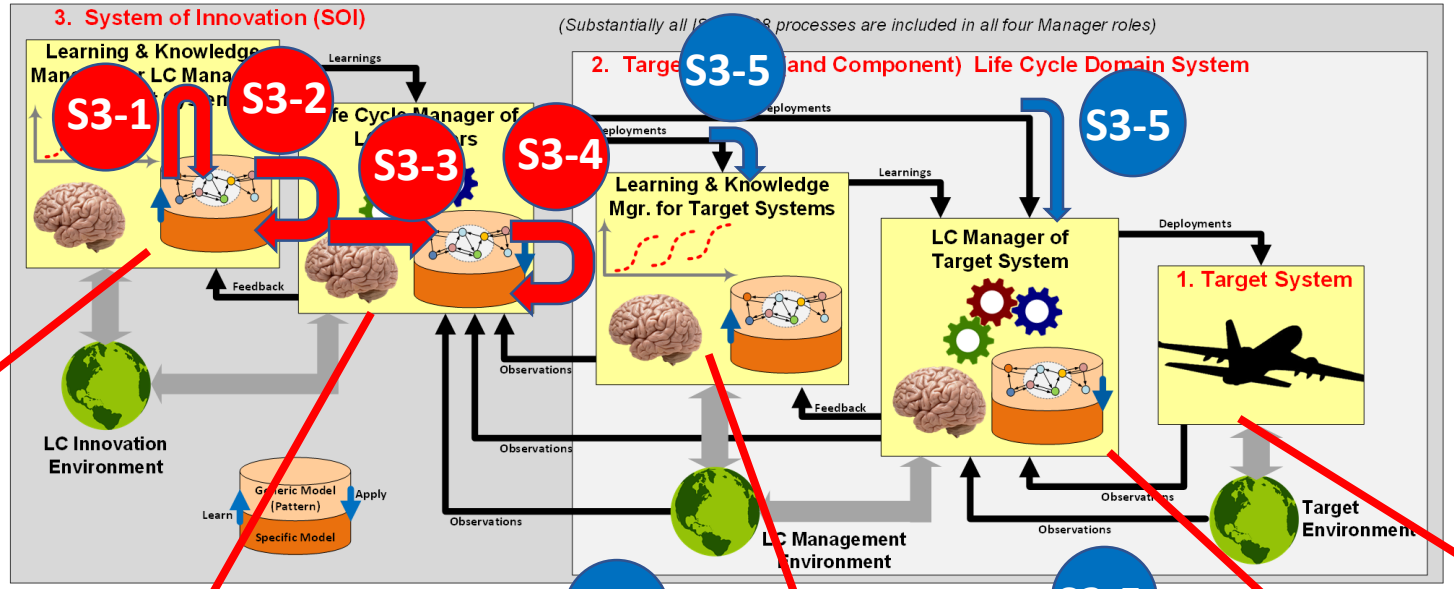


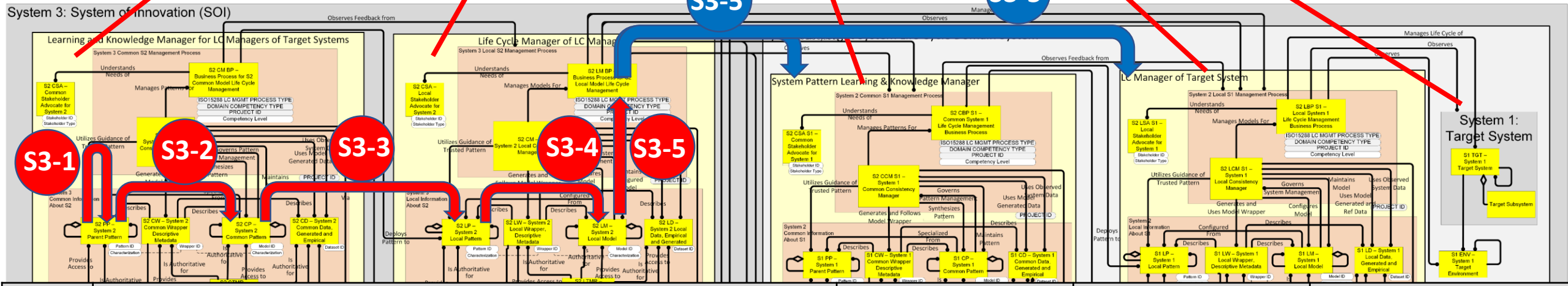
Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S3-2	Configuration of ASELCM Parent Pattern to one or more general System 2 patterns (in System 3) agreeable for use within the enterprise. Point of accumulation of future learning from observing S2 during its projects, or other sources of learning about S2.	S2 PP -- System 2 Parent Pattern (stored in S3)	S2 CP – System 2 Common Pattern (stored in S3)	Information Transformation (Pattern Configuration)



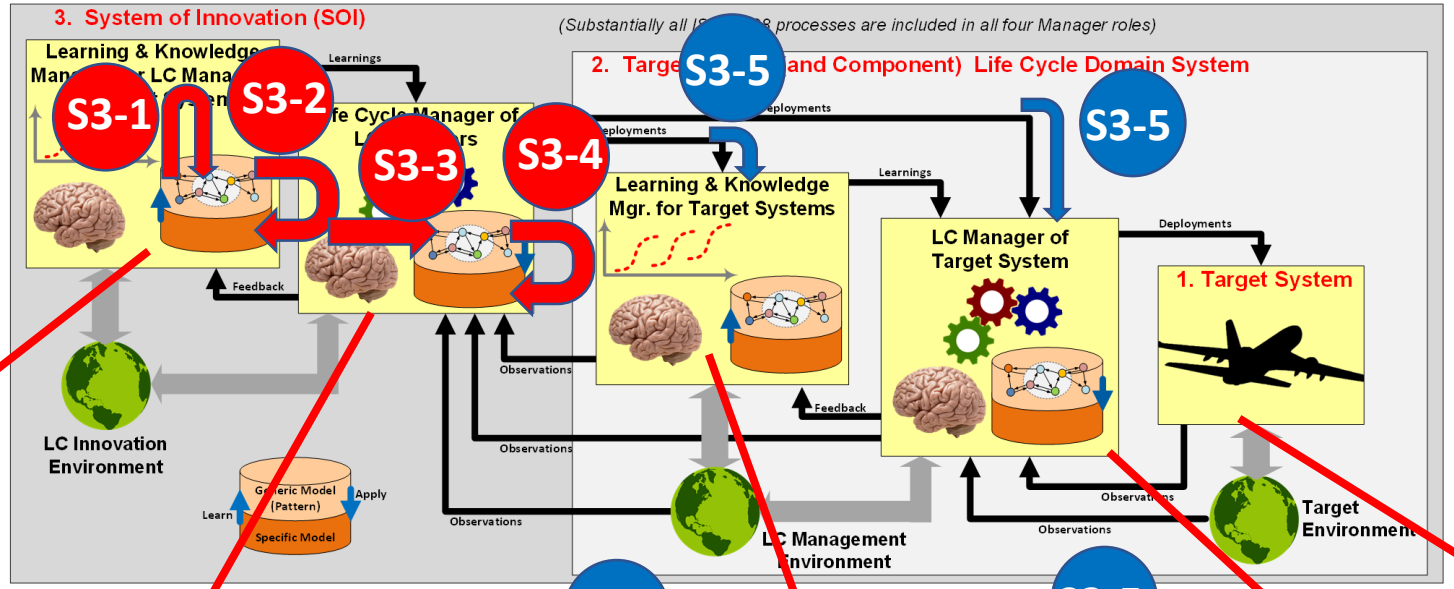


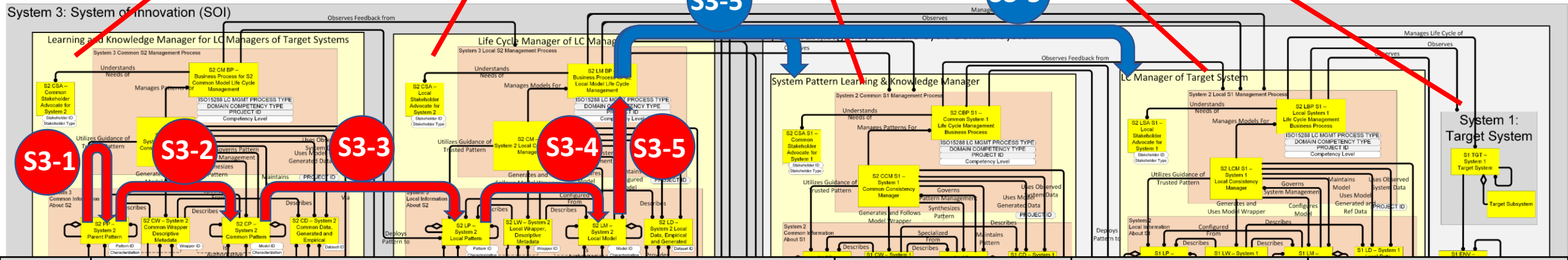
Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S3-3	Typically describes library of types of intended S2 capabilities, but not yet configured to be specific to individual S2 projects or programs as to their quantities or combinations of those capabilities, projects, or programs. Types, but not quantities of instances or combinations of those types.	S2 CP – System 2 Common Pattern (stored in S3)	S2 LP – System 2 Local Pattern (stored in S3)	Information Transfer, but one to many





Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S3-4	Typically each model is specific to the enterprise's managed S2 projects and programs for individual S1 products, as to their quantities and combinations. Quantities of instances or combinations of instances for those S2 capabilities. May be instantiated as individual models for each S2 project or program.	S2 LP – System 2 Local Pattern (stored in S3)	S2 LM – System 2 Local Model (stored in S3)	Information Transformation (Pattern Configuration--usually many)





Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S3-5	This is not primarily an information / model stage, but instead is use of the above S2 Local Model as "S2 blueprints", from which certain S3 Business Processes create and deploy real S2 human and facilities capabilities in S2, though S2 staffing, education, acquisition fabrication, programming, other creation of real world S2 entities. Although many of these are not information per se, a few can be.	S3 Business Processes for S2 staffing, education, acquisition, fabrication.	S2 human staff, computer hardware, software, facilities.	Deployment of real S2 people, capabilities, automation, facilities, as described by S2 LM stored in S3.

Stage	ASELCM Pattern Configuration Life Cycle Stages	Source	Destination	Event Type & Qty
S3-1	ASELCM Pattern version release as a Parent Pattern to an enterprise's System 3 Parent Pattern Library.	S*Patterns Community	S2 PP -- System 2 Parent Pattern (in S3)	Information Transfer
S3-2	Configuration of ASELCM Parent Pattern to one or more general System 2 patterns (in System 3) agreeable for use within the enterprise. Point of accumulation of future learning from observing S2 during its projects, or other sources of learning about S2.	S2 PP -- System 2 Parent Pattern (stored in S3)	S2 CP – System 2 Common Pattern (stored in S3)	Information Transformation (Pattern Configuration)
S3-3	Typically describes library of types of intended S2 capabilities, but not yet configured to be specific to individual S2 projects or programs as to their quantities or combinations of those capabilities, projects, or programs. Types, but not quantities of instances or combinations of those types.	S2 CP – System 2 Common Pattern (stored in S3)	S2 LP – System 2 Local Pattern (stored in S3)	Information Transfer, but one to many
S3-4	Typically each model is specific to the enterprise's managed S2 projects and programs for individual S1 products, as to their quantities and combinations. Quantities of instances or combinations of instances for those S2 capabilities. May be instantiated as individual models for each S2 project or program.	S2 LP – System 2 Local Pattern (stored in S3)	S2 LM – System 2 Local Model (stored in S3)	Information Transformation (Pattern Configuration--usually many)
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