28th Annual INCOSE international symposium
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July 7 - 12, 2018

Information Technology Governance through the Complex System Governance Lens

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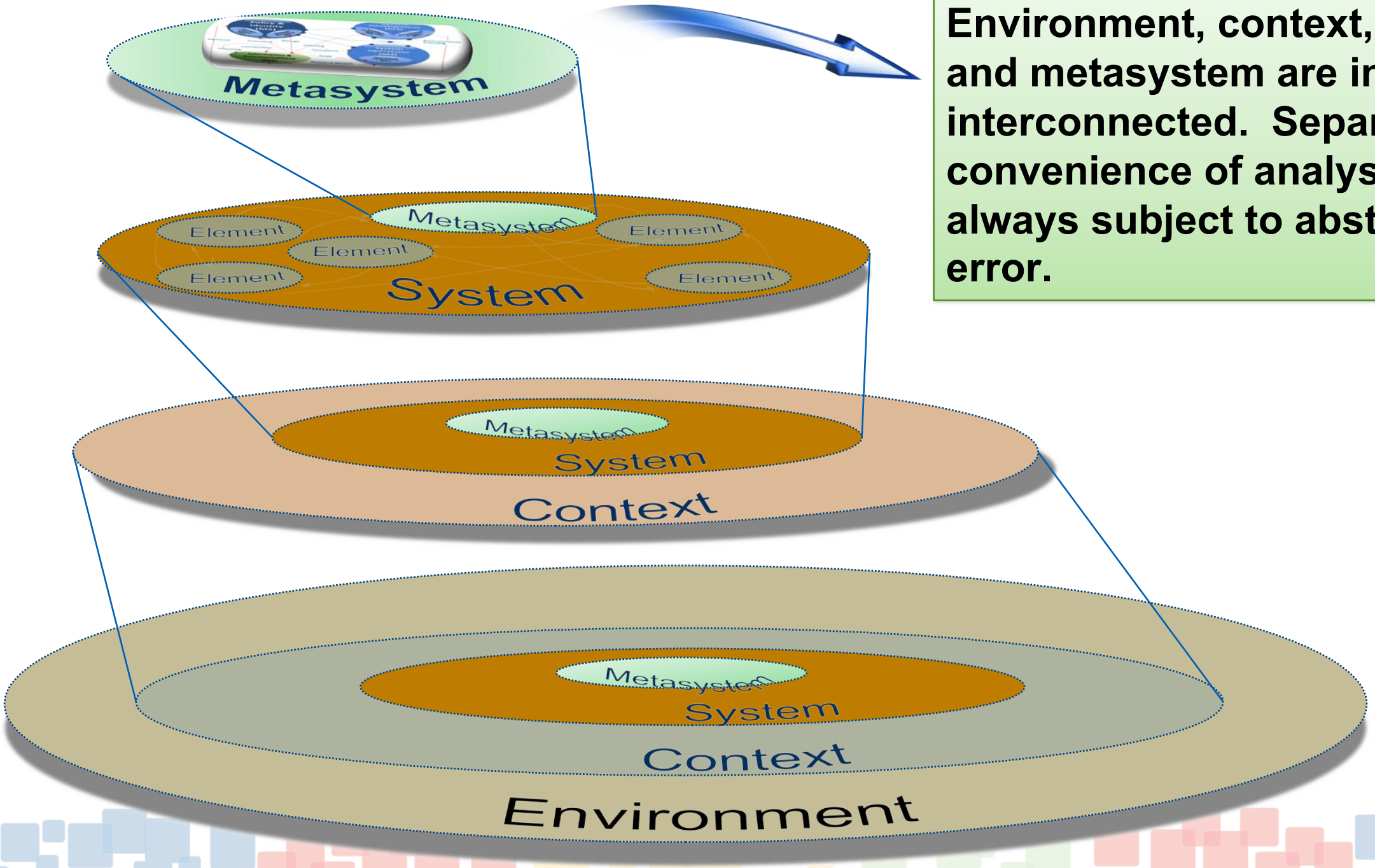
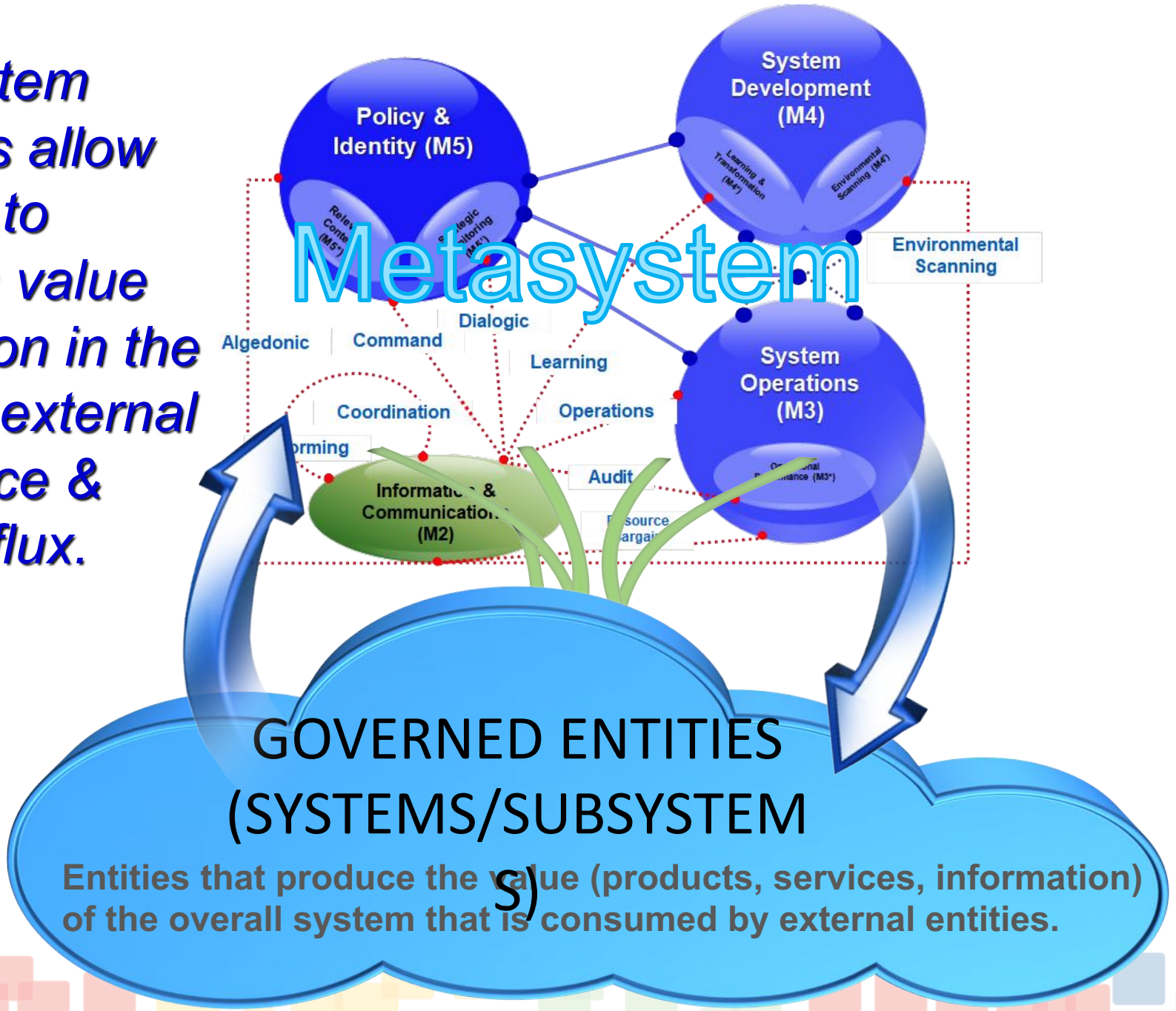
Once upon a time…

A condensed overview of Complex System Governance (CSG)



Environment, context, system, and metasystem are inseparably interconnected. Separation is for convenience of analysis and always subject to abstraction error.

Metasystem functions allow the SoS to maintain value production in the midst of external turbulence & internal flux.



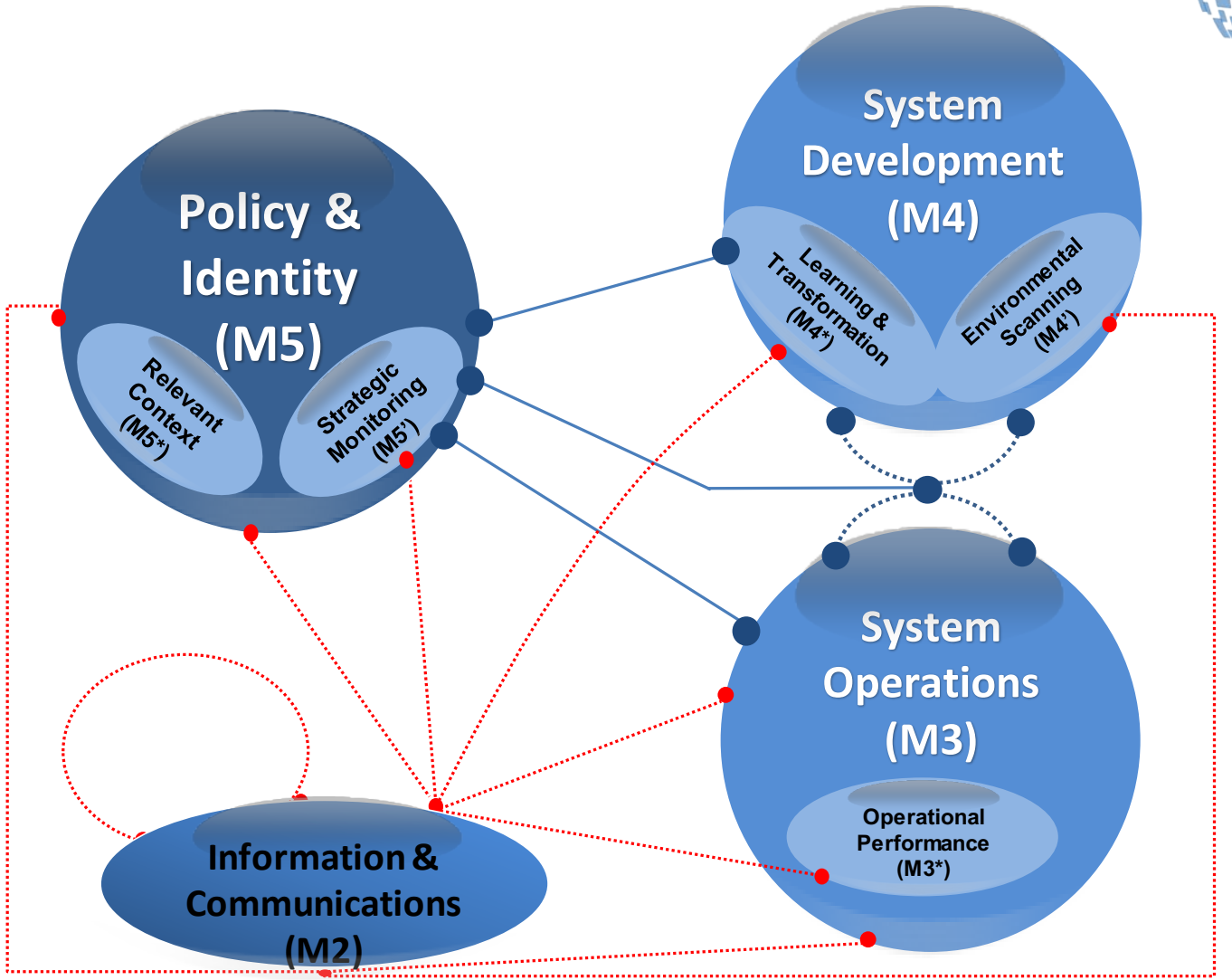
9 Meta-functions provide system governance

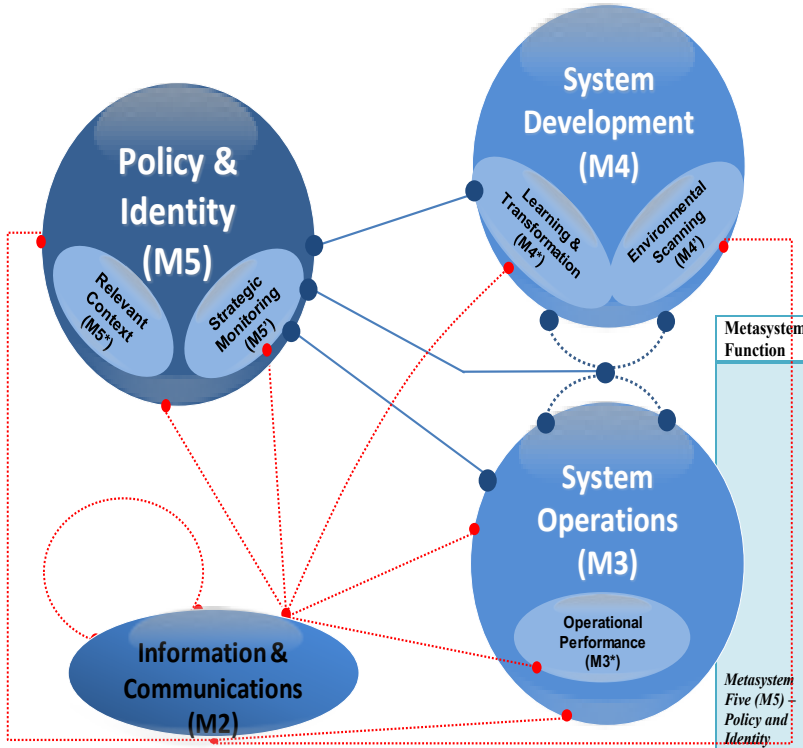
Policy and Identity (M5) – overall steering and trajectory for the system, includes context and monitoring.

System Development (M4) – models current and future system, includes learning and environmental scanning.

System Operations (M3) – day to day execution of the metasystem, includes performance monitoring.

Information and Communications (M2) – flow and interpretation of information necessary to execute metasystem functions, the "spine" of the system.

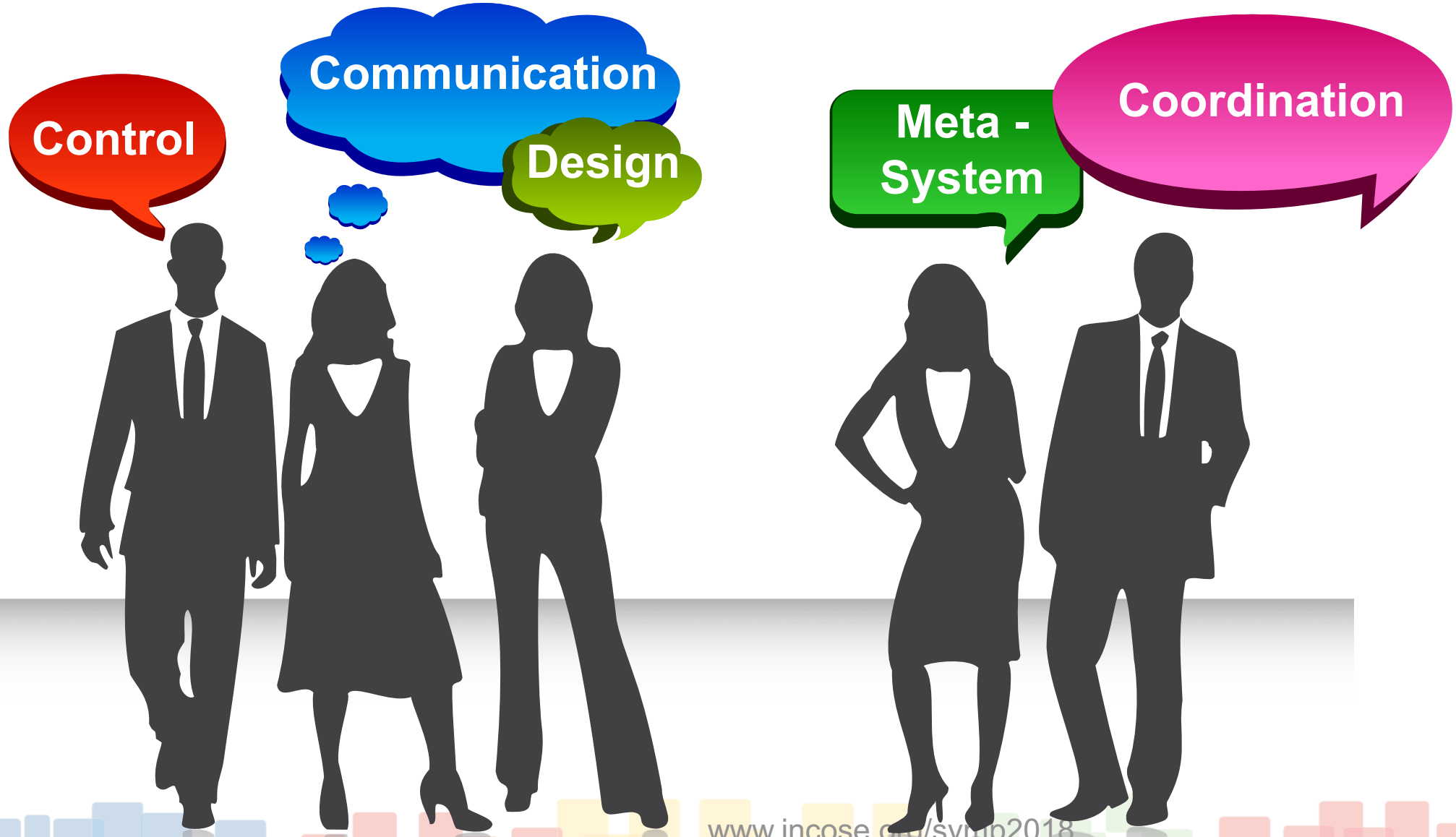




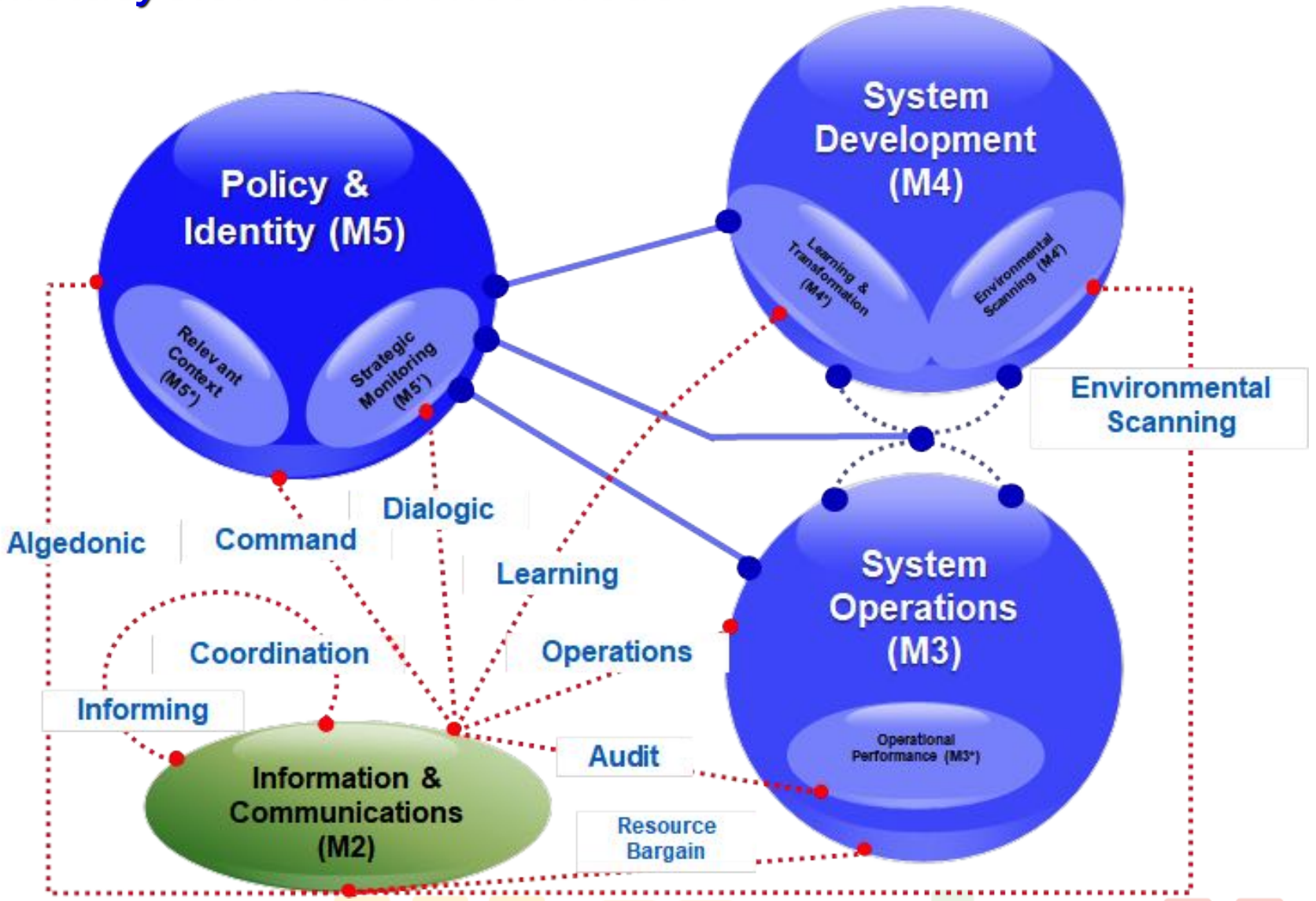
Metasystem Function	Primary Role	Responsibilities	Implications for Acquisition
Metasystem Five (M5) – Policy and Identity	Primary function is to provide direction, oversight, accountability, and evolution of the System. Focus includes policy, mission, vision, strategic direction, performance, and accountability for the System such that: (1) the System maintains viability, (2) identity is preserved, and (3) the System is effectively projected both internally and externally.	▪ Establishes and maintains system identity in the face of changing environment and context ▪ Defines, clarifies and propagates the system vision, strategic direction, purpose, mission, and interpretation ▪ Active determination and balance for system focus between present and future ▪ Disseminates strategic plan and oversees execution ▪ Provides for capital resources necessary to support system ▪ Sets present and future problem space for focus of product, service, and content development and deployment ▪ Sets strategic dialog forums ▪ Preserves autonomy – integration balance in the system ▪ Marketing of system products, services, content, and value ▪ Public relations planning and execution ▪ External mentorship development (e.g. Board of Directors) ▪ Establishes system policy direction and maintains identity of the system -- executed through strategic direction ▪ Represents the system interests to external constituents ▪ Defines and integrates the expanded network for the system (strategic partnerships) ▪ Evolves scenarios for system transformation and implements strategic transformation direction	▪ Each acquired system has its unique identity that establishes its appropriateness for performing a particular mission, in a particular context, within a particular environment. ▪ Diffusion or ambiguity of system identity can degrade design trade-offs, capabilities, or compromise mission performance ▪ The *acquisition system-in-focus* (be it the more expansive FAR acquisition system or an individual program) also has an identity (tacitly or explicitly known) that guides consistency in thinking, decision, action, and interpretation – ambiguity in this identity is an invitation to inconsistent performance ▪ The acquisition system-in-focus identity is a reference point that is non-negotiable – if the identity is challenged, the system responds in kind to protect that identity ▪ A weak or muddled acquisition system-in-focus identity fosters inconsistent execution of the system and that which it produces ▪ The articulation, propagation, and maintenance of the acquisition system-in-focus identity by active design is a leadership function that cannot be delegated ▪ If the acquisition system-in-focus is continually disappointing expectations, consistency in identity to provide sufficient integration must be questioned ▪ Acquisition system-in-focus identity must be compatible with the context, environment and supporting infrastructures (policy, implementing systems, strategies, etc.) ▪ The performance and evolution of the acquisition system-in-focus should consider the explicit articulation, measurement, and maintenance of system identity as central to continued viability of the overall system.

The CSG Reference Model defines each meta-function, describes the responsibilities and the required products of that meta-function. The Reference Model also provides insights on implications for the situation of interest.

Definitions Matter



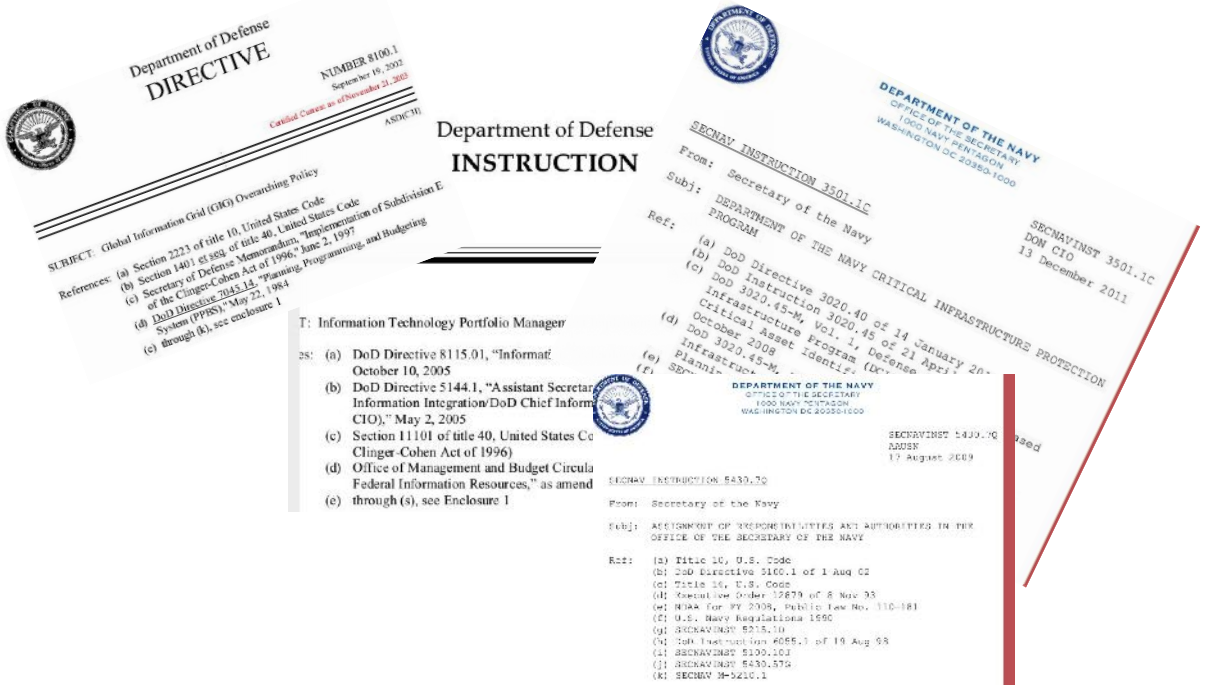
Complex System Governance Metasystem Reference Model



Keating, C.B. and Bradley, J.M. (2015) 'Complex system governance reference model', *Int. J. System of Systems Engineering*, Vol. 6, Nos. 1/2, pp.33–52.

CSG applied as a lens to IT Governance

Moving from the general to the specific

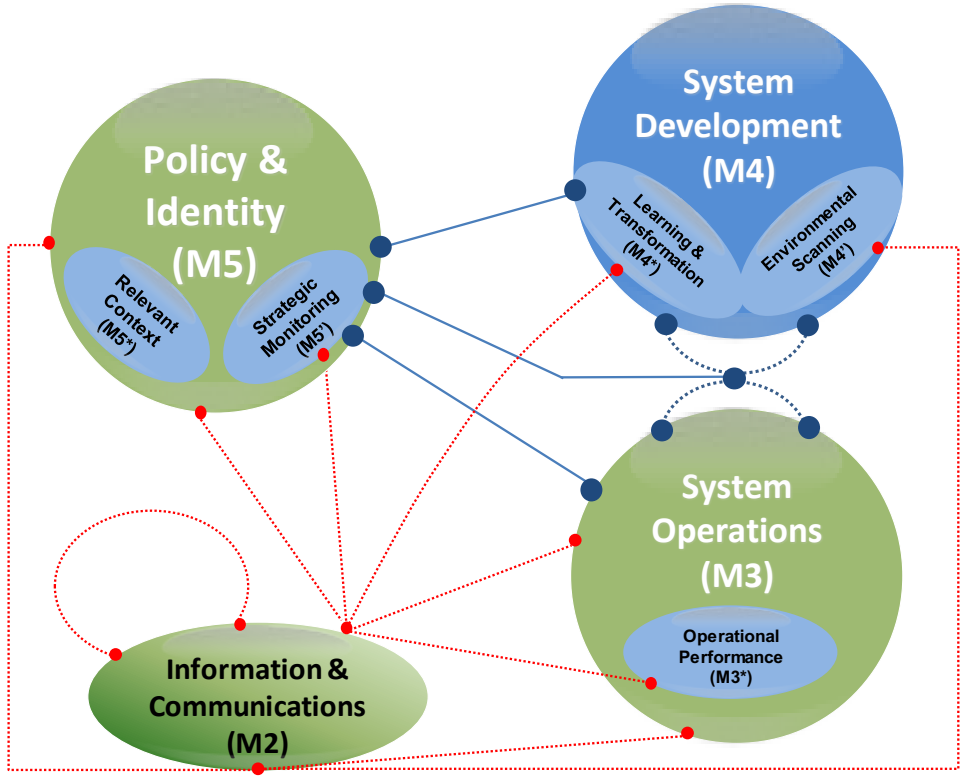


To accomplish this review, we [Bradley and Soule] broke down the 5000.36 instruction by its major elements,

1) **Purpose,**
2) **Background and Policy, and**
3) **Responsibilities**

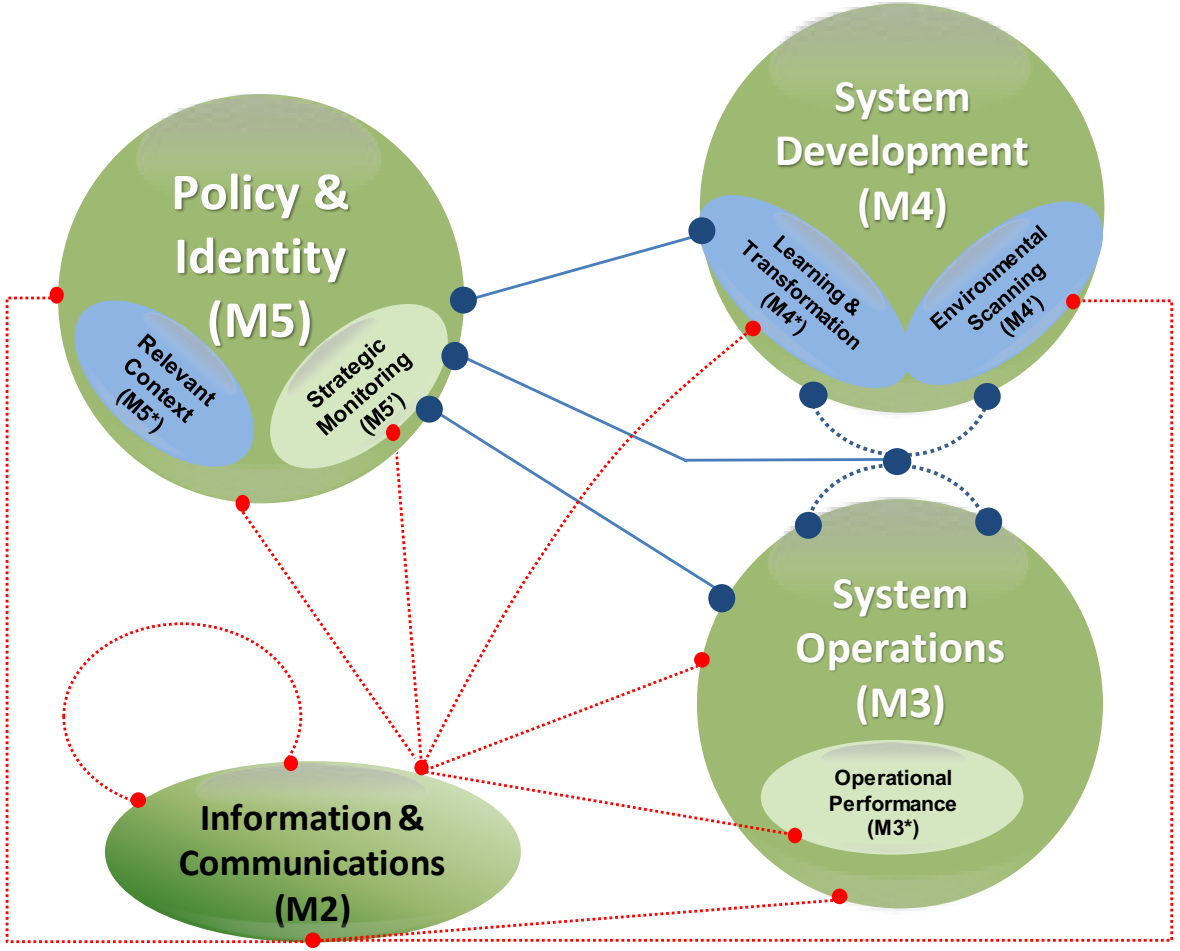
We analyzed each paragraph to connect the document elements to the respective metafunction of the CSG model.

Purpose



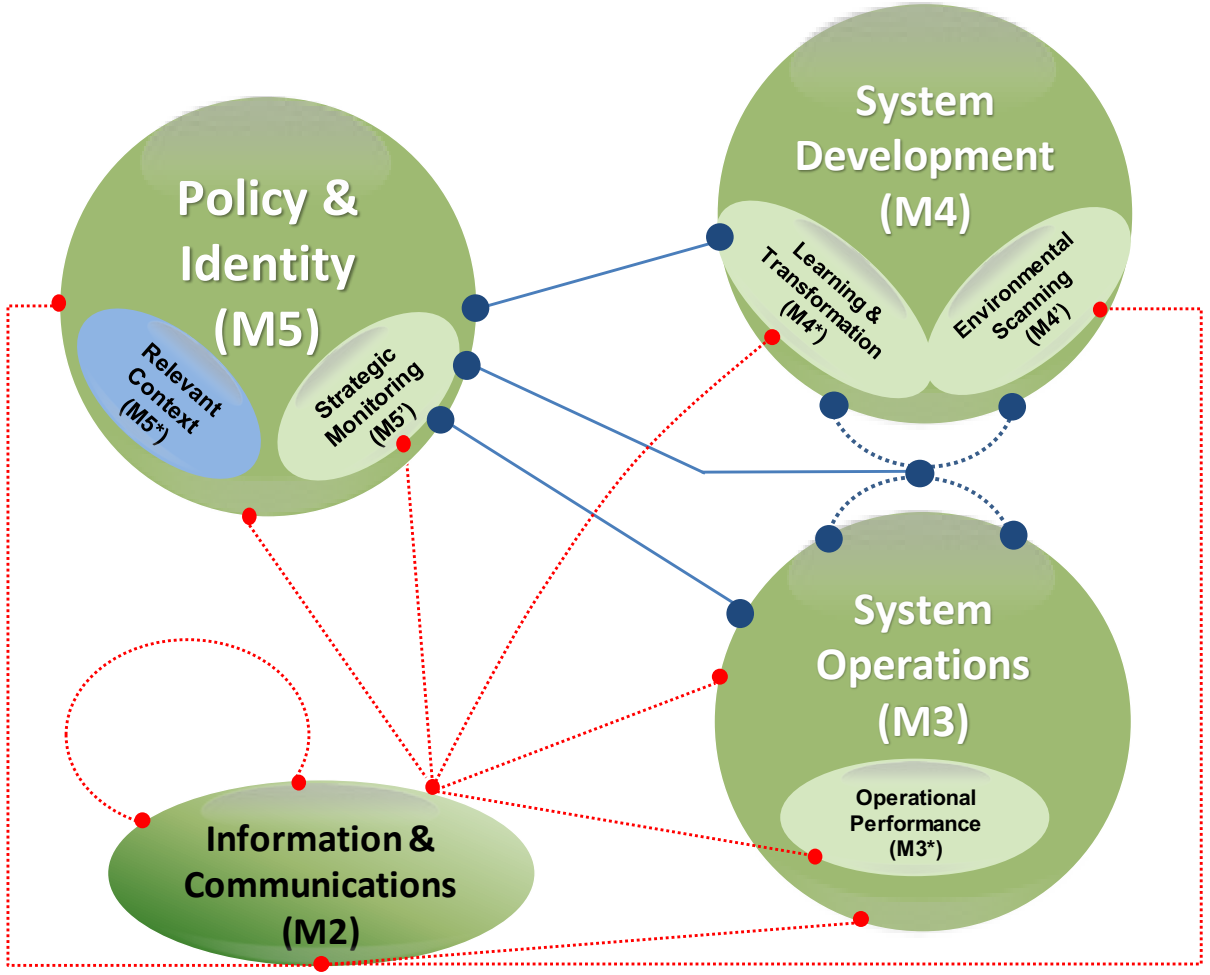
- Addresses
  - Policy
  - System Operations
  - Communication

Background and Policy



- Addresses
  - Policy and Identity
    - Strategic Monitoring
  - System Development
  - System Operations
    - Operational Performance
  - Communication

Responsibilities

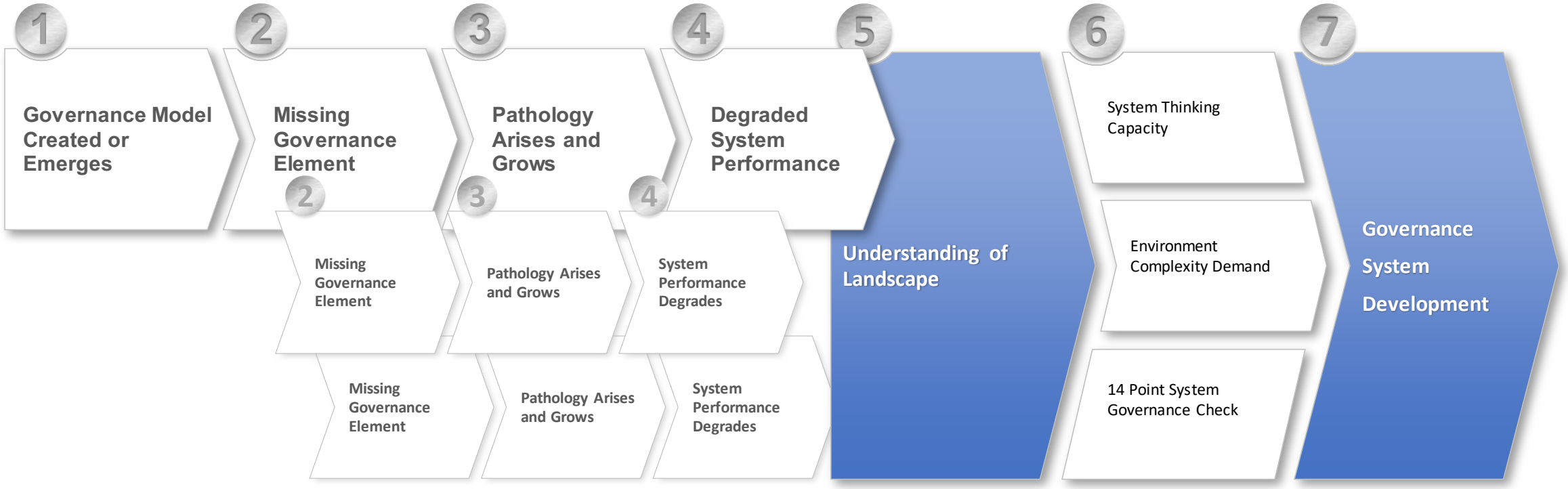


- Addresses
  - Policy and Identity
    - Strategic Monitoring
  - System Development
    - Learning and Transformation
    - Environmental Scanning
  - System Operations
    - Operational Performance
  - Communication

Once we know what is present, we can look at what is missing

Metasystem Function	Primary Role	Missing Responsibilities
Metasystem Five Star (M5') – Strategic System Monitoring	Primary function is to monitor measures for strategic system performance and identify variance requiring metasystem level response. Particular emphasis is on variability that may impact future system viability.	▪ Track ongoing performance of system based on dashboard measures of performance for operations ▪ Disseminates system performance throughout system ▪ Identification, analysis, and maintenance of system context ▪ Conducts inquiry into performance aberrations ▪ Monitors and assesses the continuing adequacy of operational performance measures

Why does this matter? And where might we go?



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