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Digital System Model - A Raytheon Perspective

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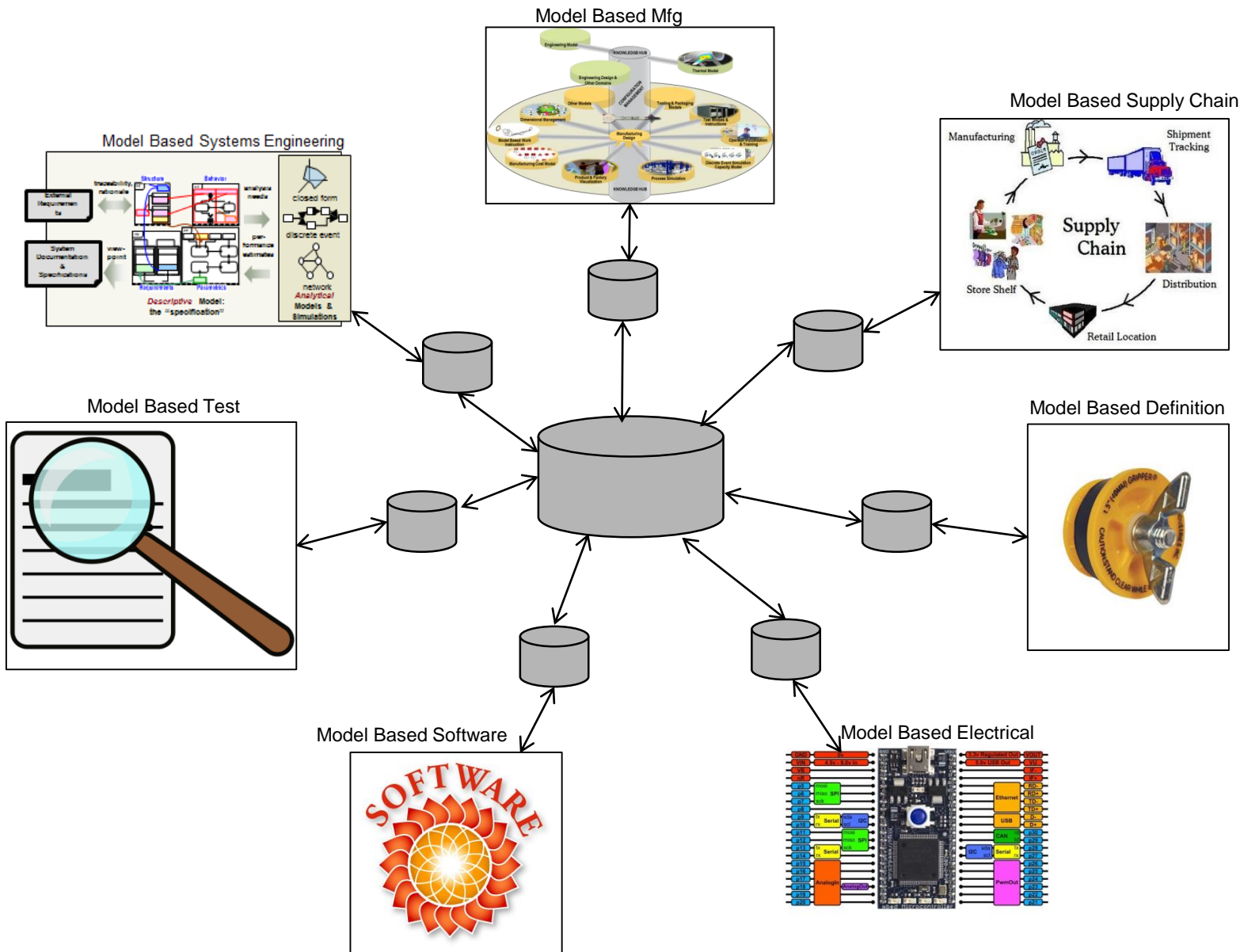
Model Based Engineering

- Current state: everyone uses models in one form or another **in isolation** and communications happens in the form of separate, disconnected documents

- Future state: our models are **linked** through an **information infrastructure** that contains an **authoritative source of truth**
 - It is NOT one large, linked simulation or even a set of large, linked simulations that totally represent our solutions
 - Our Technical Data Package is represented by a **federation** of models that all draw from the linked, authoritative source of truth
 - Our model data is then turned in to **actionable information** as part of the overall design processes
 - **Design decisions** are then **linked** and **consistent** across the solution space

The Models are the Master

The MBE Model Eco-System



Value Proposition

- Because information is linked and does not live as stove-piped information in documents or disconnected models...
 - We can perform automated impact analysis on proposed changes
 - We can make changes in one place and not risk missing key work products or causing disconnects / escapes
 - We can perform early and continuous verification, integration and test through the use of models
 - Including with our suppliers and “competimates” (e.g., interface verification)
 - Information about our product solutions is easy to find and stakeholders know what the “current” information is
 - Models may be re-used across disciplines (systems to systems test), across the life cycle of a program (from concept design through manufacturing and support) and across programs
 - Includes not only the models but the resulting supporting data
 - We can communicate more effectively across stakeholders because of the graphical nature of many types of models

The Digital System Model

- Since Systems Engineering is responsible for the integrity of the system design as a whole, it must encompass the interconnectedness of the various aspects of the system
- The digital system model must encompass all relevant discipline specific models
- We as systems engineers must advocate for an eco-system that allows for the linkages of system design elements.
- This must be done while still maintaining diversity of the various tools and information structures that other disciplines use for their design / development activity
 - We cannot dictate a common tool or even common “database”
 - Requires open interfaces and application of standards

Recommendations

- The systems engineering community should
 - Participate in linked information standards bodies (e.g., OASIS – OSLC, STEP, etc) to ensure open standards provide mechanisms for linking information
 - Participate with our tool vendors to ensure consistency with standards and open interfaces to access information
 - Work within our own organizations to encourage the linking of the design information