Parker Experience with the Business, Program, and System Management Triad
(and Structured Process Development)

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Need for Structured Process Development

• Part of Lean and Agile Development Initiatives
  – Re-use of plans and decision processes
  – Better defined accountability and visibility to “how I fit in”.
  – Improved visibility of progress and bottlenecks
  – Resource collision avoidance
  – Systematic storage and retrieval of information

• System projects contain more risk and complexity than component projects
  – There are simply too many system parameters, deliverables, stakeholders, interfaces, and risks for the development team to manage without a structured process.
  – System projects require a structured approach to preserve the value of the asset as it is built up.

• Marketing Value
  – Customers are asking to see our process descriptions to gain confidence in our ability to fulfill our commitments.
• Process is what actually happens, specifically;
  – The network of transformations of material and information ending with the delivery of value to our Customers
  – Our company does not have process, it is process

• Process Models represent what happens and are important to us in the same way that System Models are important
  – Provides insight to behavior and relationships
  – Allows simulation and other what-if analyses
  – Enables and validates planning
  – Aids memory
  – *Process Models are models of the System that produces the System Product.*
Structured Process Modeling

- Structured Process Modeling is a Modeling Activity
- Like all modeling activities, the modeler is faced with many open questions
  - What is the purpose of the model? What decisions will it support?
  - What’s inside and outside the model?
  - How much fidelity is enough? Same question for each variable.
  - Does the model have to co-operate with other models?
  - If in a team of modelers, how does each part relate to the whole?
Structured Process Model Context
Model Process Model Process

Process models decomposed in a hierarchical structure

<table>
<thead>
<tr>
<th>FCHSystems Level 1 Processes</th>
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<tbody>
<tr>
<td><strong>1.0</strong> Administtrate Business</td>
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<tr>
<td><strong>2.0</strong> Develop New Business</td>
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<td><strong>3.0</strong> Execute Contracted Projects</td>
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<td><strong>4.0</strong> Support Customer and Product</td>
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<tr>
<td><strong>5.0</strong> Develop Staff</td>
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<td><strong>6.0</strong> Develop Infrastructure</td>
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<td><strong>7.0</strong> Develop Business Relationships</td>
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<td><strong>8.0</strong> Allocate Project Resources</td>
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Outline of Contracted Projects Process

Execute Contracted Projects Process (3.0)

3.5
Monitor and Control

3.5.1 Manage Staff
3.5.2 Manage Contract
3.5.3 Manage Communication
3.5.4 Manage Infrastructure
3.5.5 Manage Risk
3.5.6 Manage Suppliers
3.5.7 Manage Cost

3.2 Develop and Introduce Product

3.2.1 Discover Requirements
3.2.2 Trade and Select Product Concepts
3.2.3 Develop Product Configuration
3.2.4 Integrate Product Configuration
3.2.5 Verify Product Configuration
3.2.6 Validate Product
3.2.7 Introduce Product

3.4 Manage Data / Configuration

3.1 Plan and Organize

3.1.1 Plan and Organize

ACRONYMS
MPP - Master Program Plan
SRR - System Requirements Review
PDR - Preliminary Design Review
CDR - Critical Design Review
TRR - Test Readiness Review
FRR - Flight Readiness Review
CERT - Certification
PRR - Production Readiness Review
PM - Program Manager
SM - System Manager
BM - Business Manager

Uncontrolled Project Data
Configuration Controlled Project Data
Leadership Roles in System Development Projects

Process models associate accountability for project deliverables to Roles.

The **Business Manager** (BM) is the financial and contractual leader of the program and is mainly concerned with **why** we are developing this new business, keeping the **cost** and liability in line with the program objectives.

The **System Manager** (SM) is the technical leader of the program and is mainly concerned with **what** is developed, preserving the value of the asset as it is built up.

The **Program Manager** (PM) is mainly concerned with **who** is working on the program and **when** things need to happen, keeping the program on **schedule**.
How well does the PM/SM/BM Mgmt Triad Work?

- Goodness is achieved by the simple act of partitioning and naming (establishing the notion).
  - People, assigned the role, clearly have decision-making authority and accountability.
  - Co-equal branches prevent the run-away Program Manager or Super Engineer from distorting the purposes of the project.
- Further benefit is obtained through the development of process which includes these “roles” mapped to activities and artifacts.
  - Single most beneficial maps are from:
    - SM to Technical Baseline Control & Tracking Technical Progress
    - PM to People and Time Issues
    - BM to Contract and Profitability Issues
Embedding Process Enabling Elements in Process Models

- Process enabling elements (models, checklists, templates, narrative, etc) provide substantive help.
- Embedding enabling elements in Process Models provides an intuitive means for FINDING them.
- Example:
  - A system parameter list is used to track the system baseline and measure technical progress
  - The parameter list is connected to the:
    - Review process (weekly & major milestone)
    - Simulation process
    - Requirements definition process
    - Interface definition process
Lessons Learned (Process Modeling)

- It is sometimes difficult to even describe the as-is condition
- General resistance to change
- Time to work on the business vs in the business
- Knowing a process and being good at modeling that process is not the same thing
- Start small and expand from local successes
- Spend the time to get the architecture right
- System projects (especially) are embedded in Customer Processes
- Process is the subject of Control, Results are the object of Control
- Good process supports, but does not guarantee, high performance
- System Definition activities involve much iteration and co-dependency making it difficult to describe in usual process model syntax
- Process enabling elements are sometimes more important than the structured process model (and more time-consuming to create)
- Not all activity is structured, or should be