

What Progress Have We Made So Far With Evolutionary Development?

Fact Based

Multiple theses:

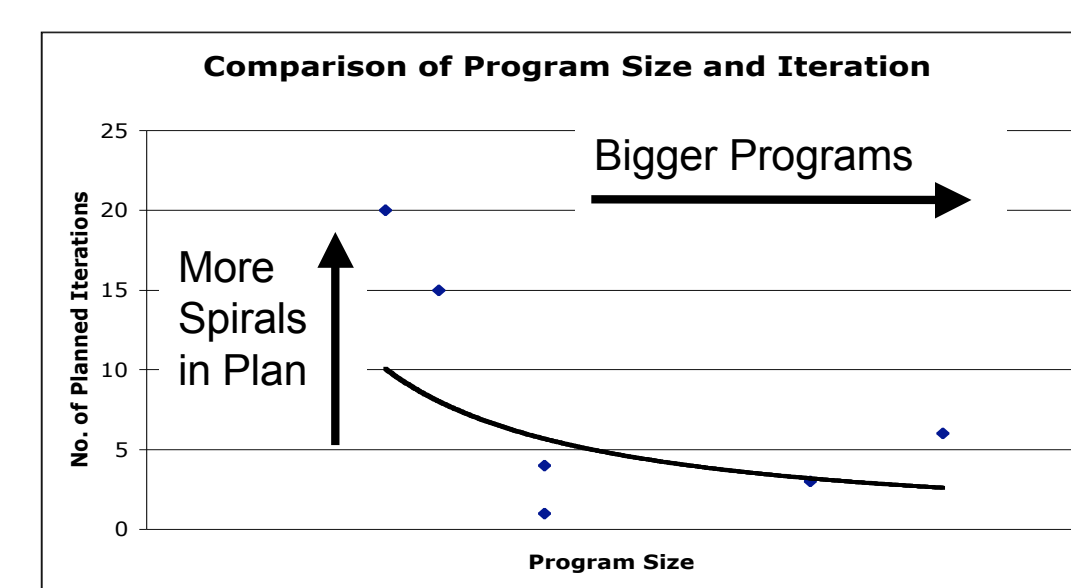
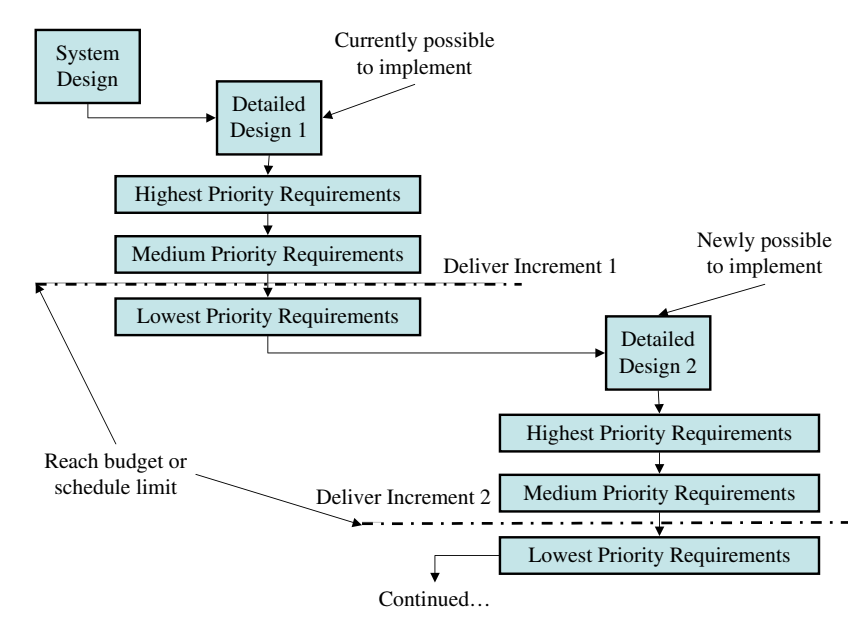
- Ferdowsi (2003)
- Derleth (2003)
- Spaulding (2003)
- Roberts (2003)
- Tondrealt (2003)
- Shah (2004)
- Additional relevant and related theses from past LAI research

Tool/process development

- MATECON with multiple spirals and options

Key Finding:

- Programs leading in implementation of evolutionary acquisition are largely using variants of well-known program strategies (e.g., block upgrades, P3I)



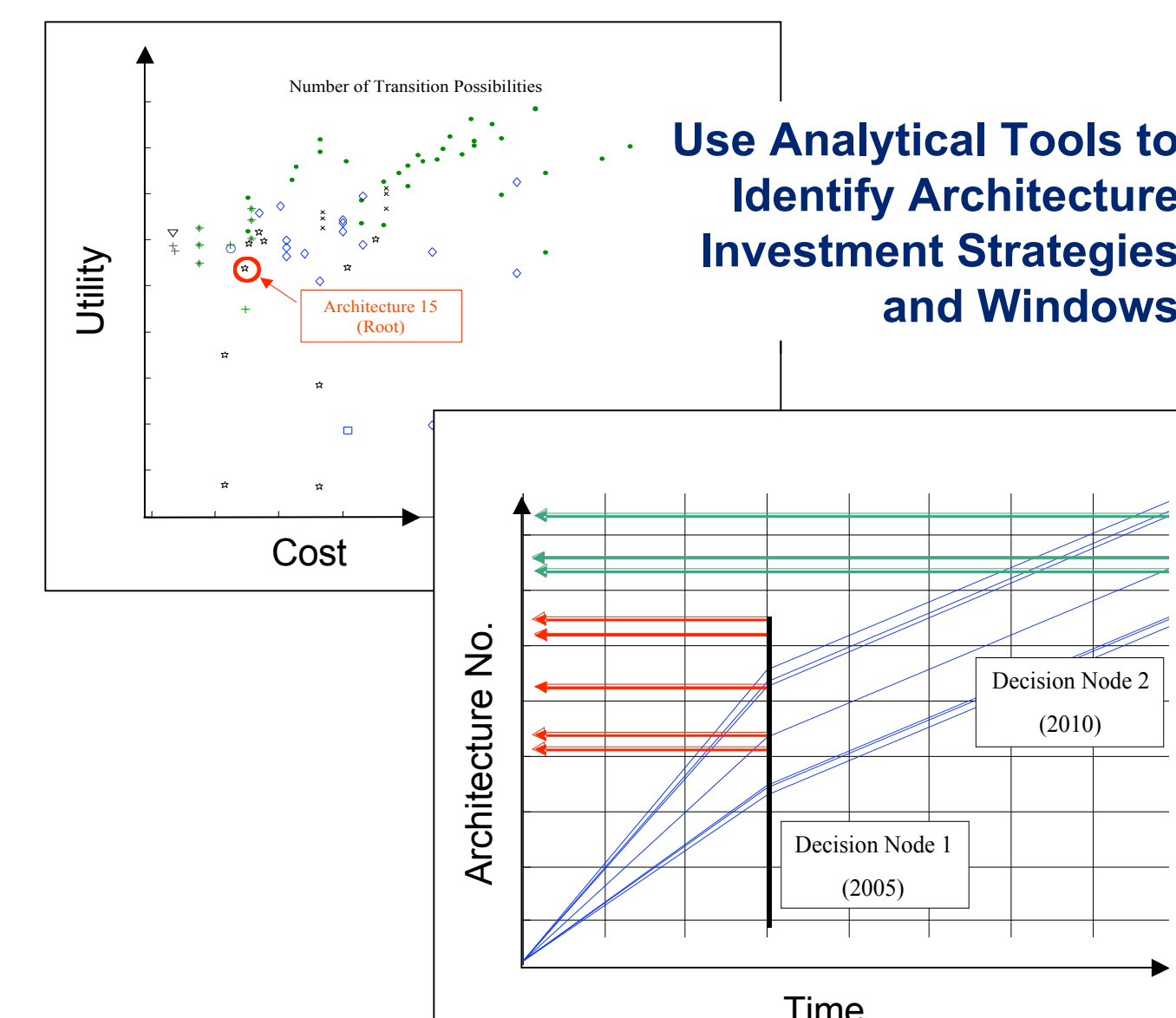
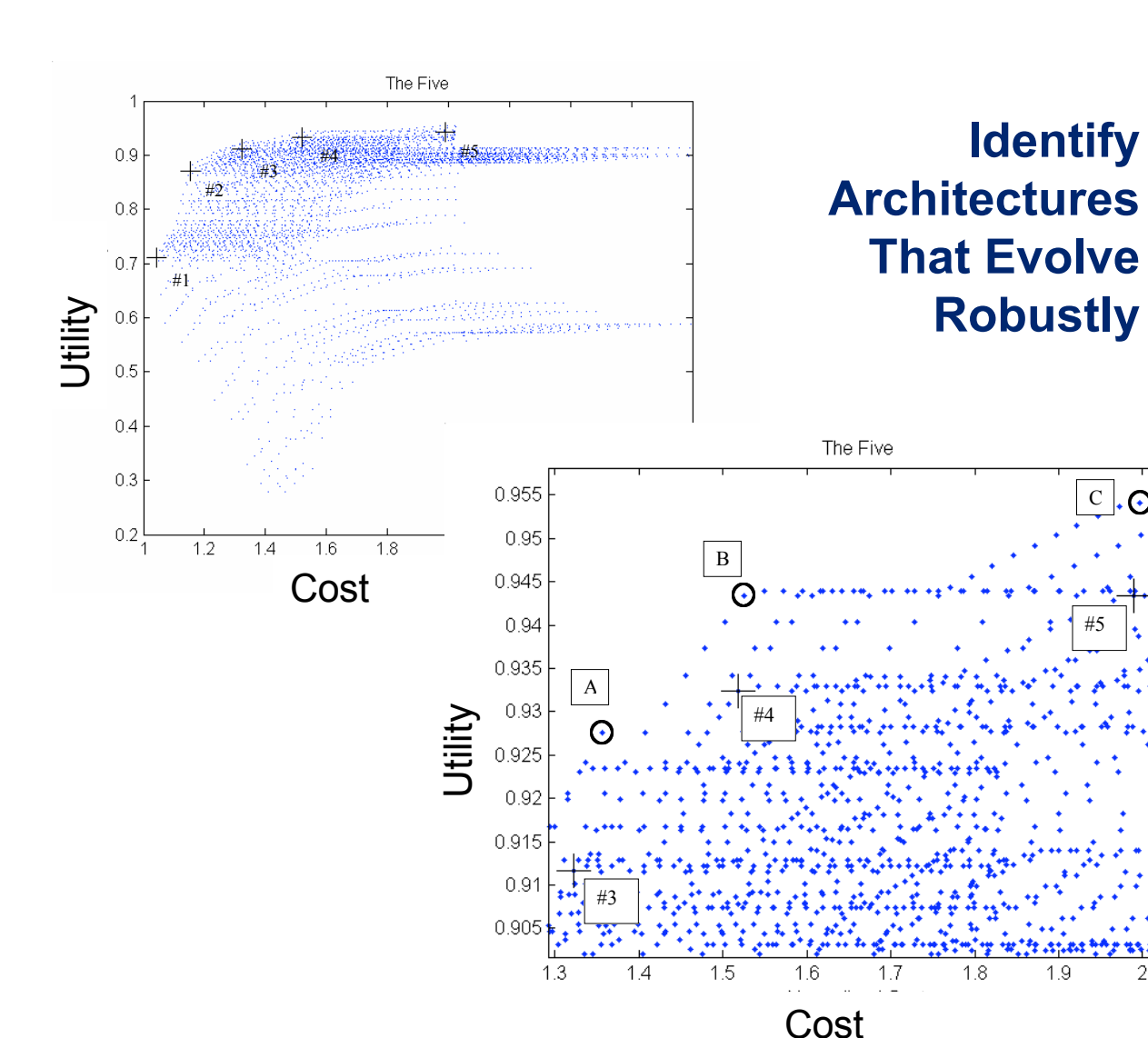
Key Finding:

- Current strategies generally mean increased concurrency, more steps to be executed for an evolved capability

PD and enabling infrastructures are recurring components of evolutionary programs

- Iteration and concurrency can require stakeholders to work harder and faster
 - Need enterprise lean to eliminate waste
 - Need advanced decision-making tools to work smarter
- Product design and architecture issues are more important
 - COTS no simple solution
 - Modular system architecture helps, but interfaces in systems of systems can still dominate

- Planning
 - High concurrency in programs meant managers were working on one increment while planning for the next
- Contracting
 - More increments meant more contracts
 - Contracts were not as flexible as the programs
- Engineering
 - Concurrency often meant that testing for one phase was going on at the same time as engineering for another -- engineers were no longer available to address testing finds
- Logistics
 - Multiple configurations of the same system
 - Upgrading existing systems to new standards was not always easy
- Testing
 - Increased testing loads associated with multiple increments
 - Increments are tested as if they were completely new systems



What does it do?

- Assess current state of evolutionary development
- Identify issues for research and practice
- Develop methods and tools to help improve evolutionary development performance

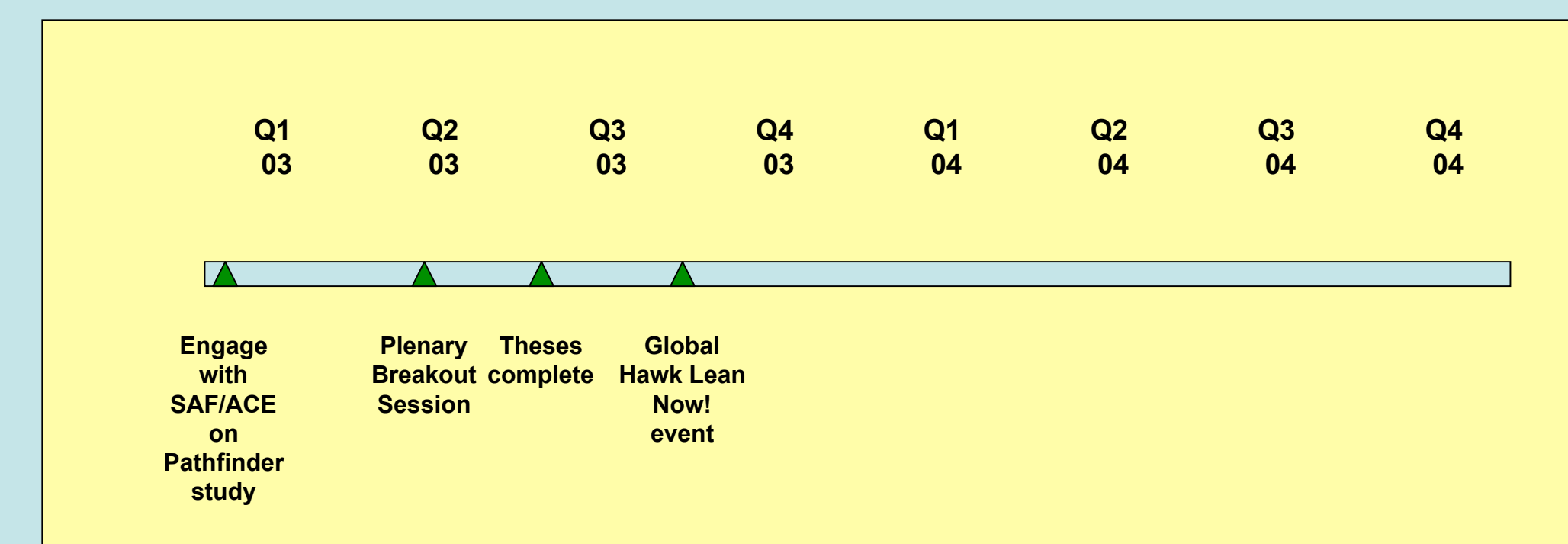
Who should use it?

- Program managers/planners
- SPOs
- Acquisition policy makers
- Researchers

What are the benefits?

- Insight to avoid potential system problems
- Tools for better strategic decision-making
- Identify areas for investment, action, education, and training

- The Evolutionary Acquisition Enterprise
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- Early engagement with SAF/ACE on evolutionary acquisition pathfinders
 - Building on successful research to develop innovative new ways to model system evolution
 - Applying knowledge from research base to inform action on Lean Now!



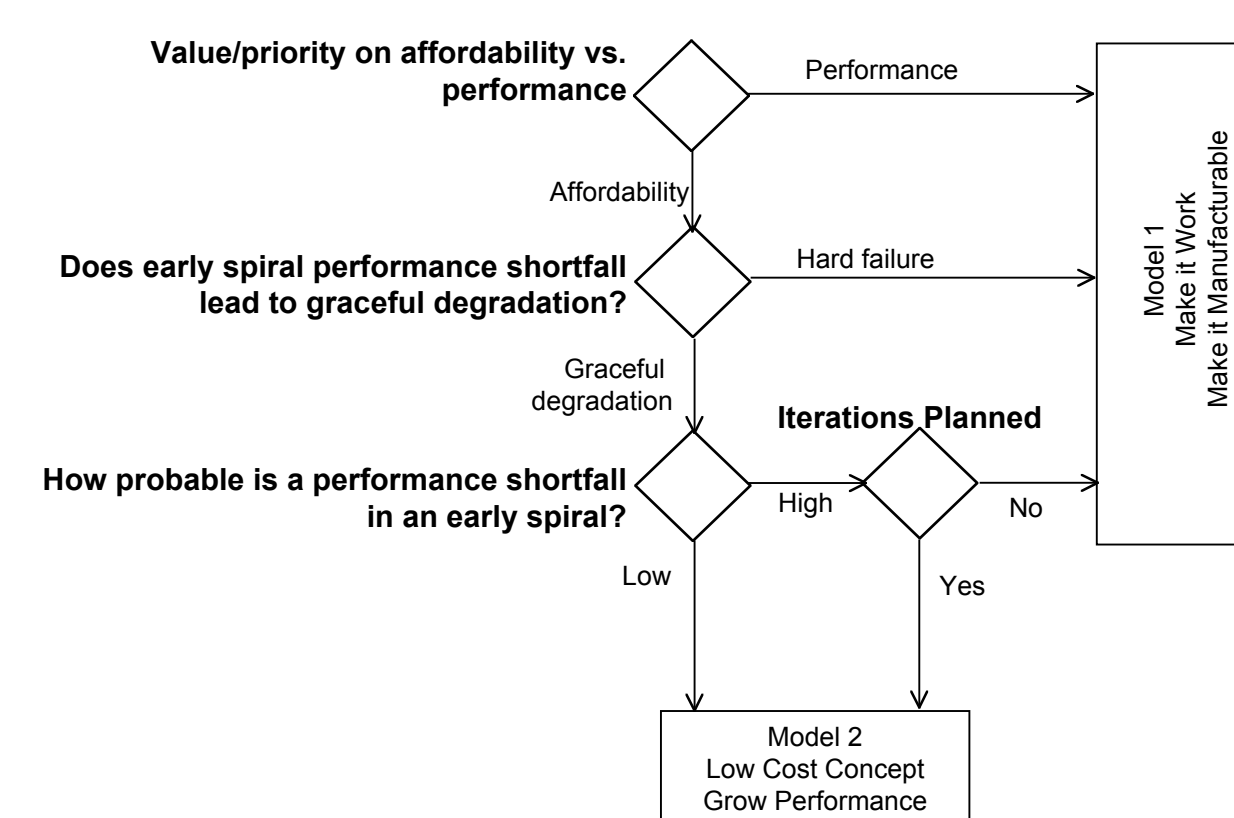
Action Oriented

- Global Hawk Lean Now! event
 - Help streamline recurring engineering processes to enable spiral program strategy
- Evolving toolset
 - MATECON
 - Small diameter bomb, space-based radar models demonstrate evolving capability
 - LAI Enterprise lean tools and Lean Now! lessons potentially helpful in diagnosing enabling infrastructure and interface issues

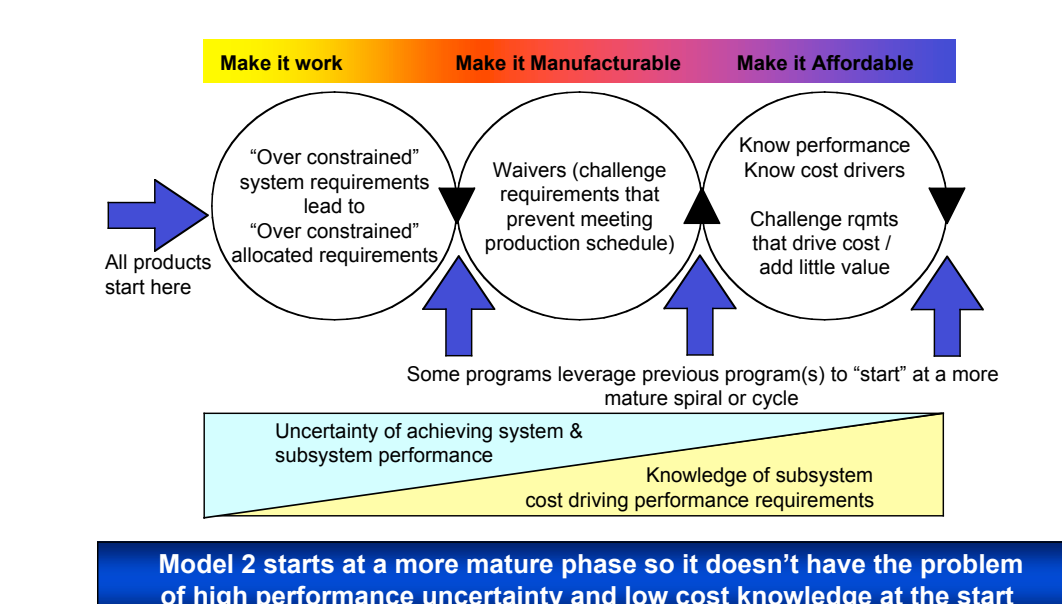


Decision Guidance for Program Strategy

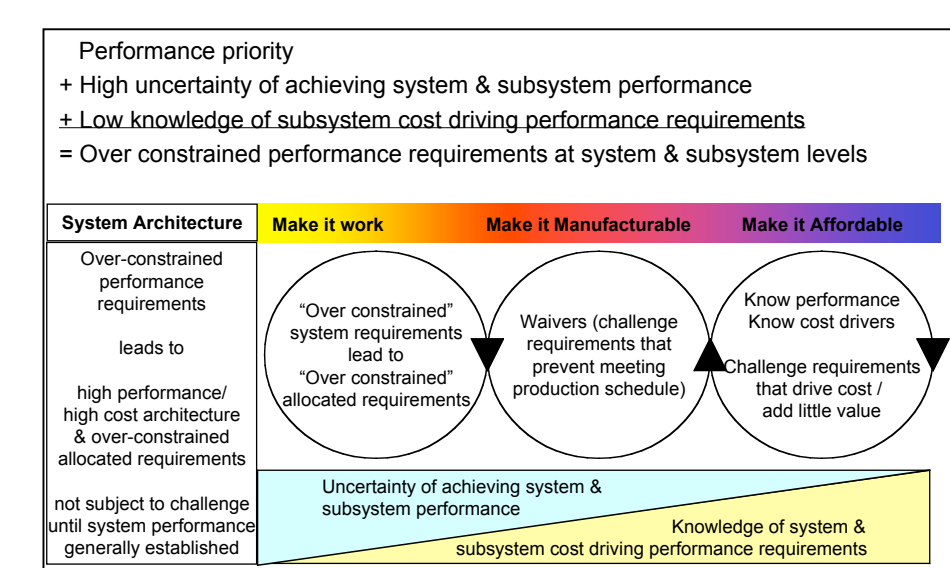
Deciding Between Different Evolutionary Development Objectives



Affordability-focused Model



Performance-focused Model



Key Finding:

- Modular and open architectures are helpful, but real limitations emerge in interdependencies in systems of systems

