

CROSS-PROGRAM WEAPONS SYSTEM SOFTWARE ACQUISITION CAN SAVE BILLIONS

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May 17, 2012

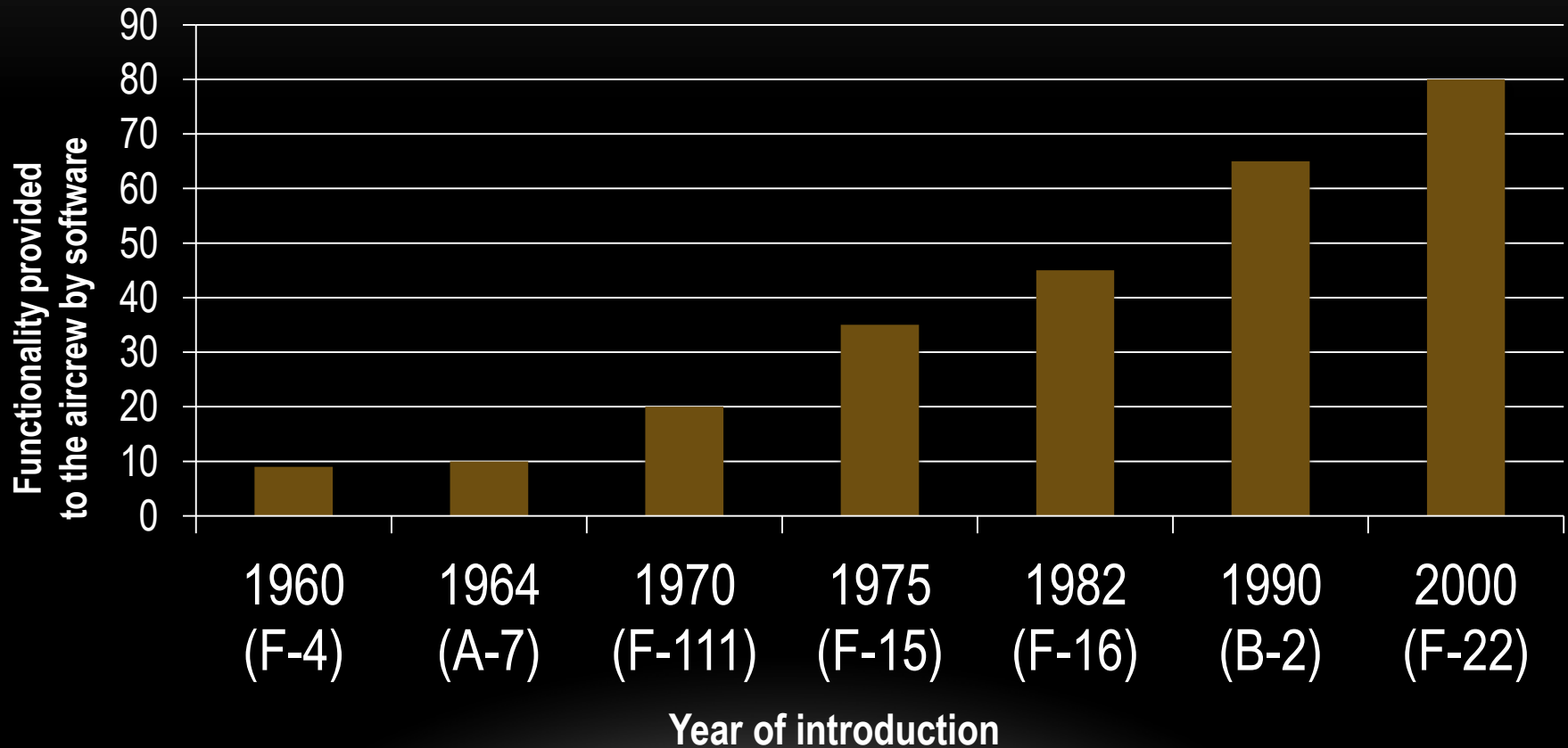
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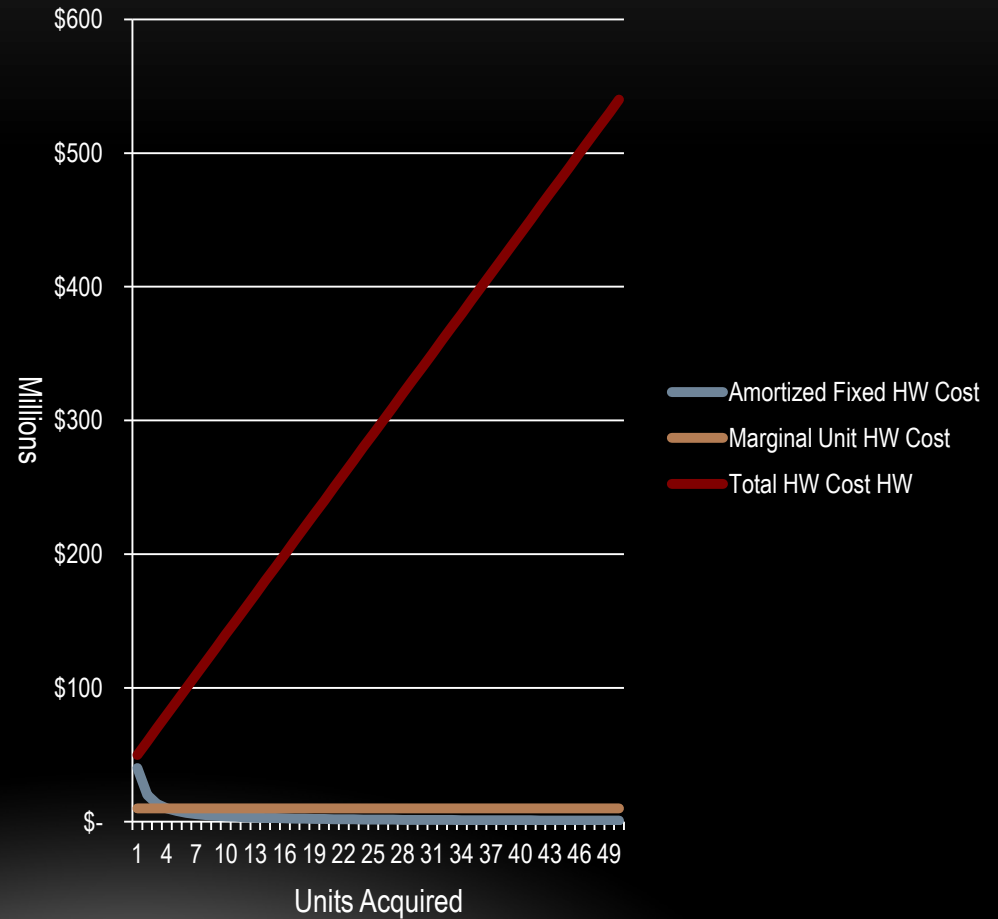
SOFTWARE IN MILITARY AIRCRAFT



Source: NASA Study on Flight Software Complexity

Physical Goods Cost Behavior

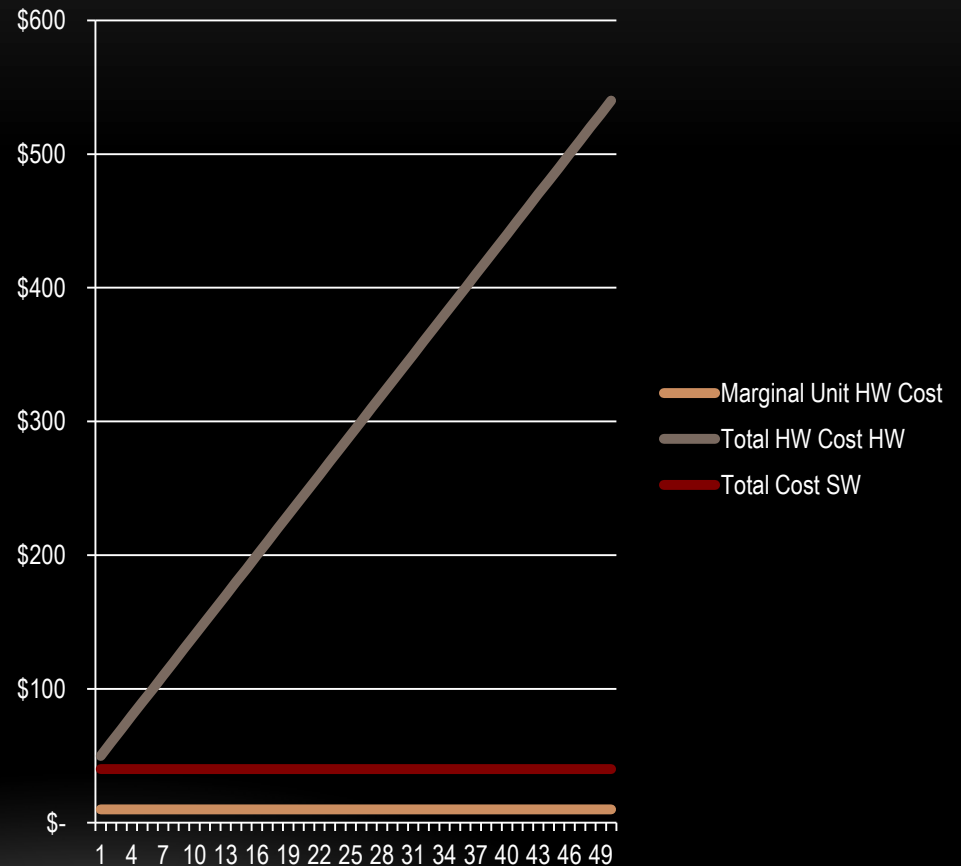
- Notional example:
 - \$40 million for development, integration, test, certification, and other non-recurring costs
 - \$10 million for manufacturing, test, distribution, integration, and other recurring, per-unit costs
 - 1 core capability delivered
 - 50 units built



Software Cost Behavior Comparison

Notional Example:

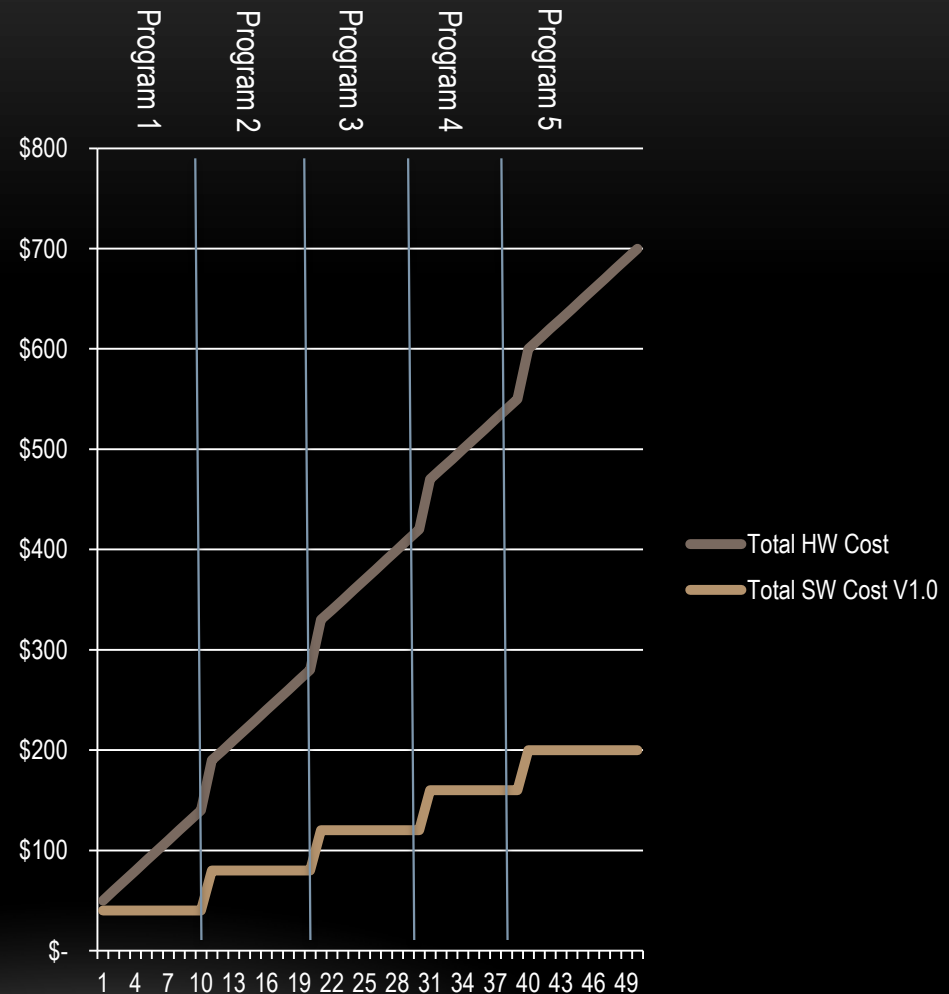
- \$40 million for development, integration, test, certification, and other non-recurring costs
- \$0 for manufacturing, test, distribution, integration, and other recurring, per-unit costs
- 1 core capability delivered
- 50 initial software instances built



Economic Effect of Stovepiping

Notional Example:

- Each program builds a unique hardware and software product
- \$40 million fixed development cost for each hardware product
- \$10 million marginal manufacturing cost per hardware unit
- \$40 million fixed development cost for each software product
- \$5 million fixed development cost for each software version after V1.0
- \$0 marginal manufacturing cost per software instance



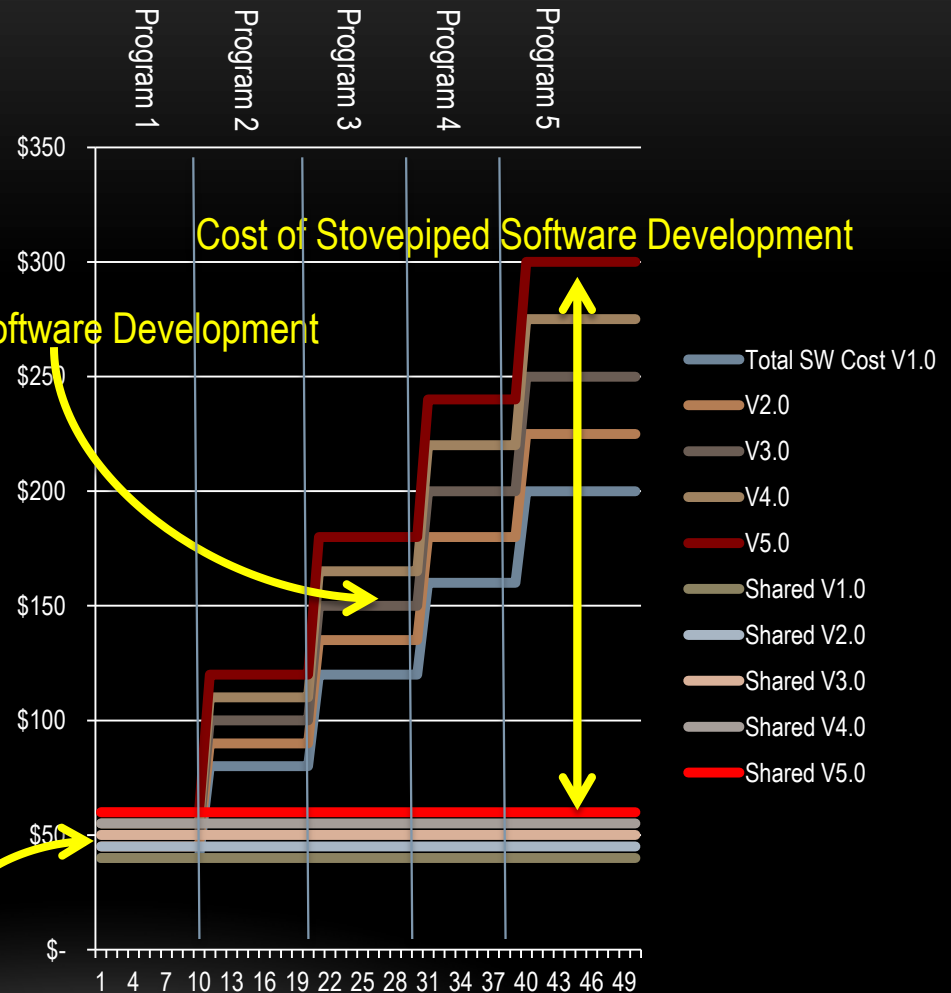
Stovepipe Economic Effects Compounded by Software Improvement Cycles

Notional Example:

- Each program builds a unique software product
- \$40 million fixed development cost for each software product
- \$5 million fixed development cost for each software version after V1.0
- \$0 marginal manufacturing cost per software instance

Shared Intellectual Property

Stovepiped Software Development



THE POWER OF SHARED INTELLECTUAL PROPERTY

- In the best case, once fixed costs for development, test, certification, and verification are paid, the cost to scale software is close to zero
- *Someone* has to pay those up front fixed costs

But *Everyone* Doesn't!

CURRENT BARRIERS TO SHARING IP ACROSS PROGRAM BOUNDARIES

- Requirements development and management structure
 - Funding structure
 - Cultural interpretation of risk
 - Business model
 - Shortage of Government Lead Systems Integrator basic knowledge and skills
 - Systems Command structure
 - Systems Command skillset gaps
-

MINIMIZING SHARING COSTS

- Identify appropriate intellectual property sharing systems targets
 - Facilitate cross-program coordinated software development
 - Cooperative Product Line applications development
 - Community requirements management for frameworks and tools
 - Shared Resources
 - Shared open source software infrastructure
 - Shared, cloud-based development and test environment
 - Policy optimization
 - Financial incentives for programs that cooperate and collaborate
 - Re-thinking of the concept of risk
 - Streamlined IA and safety certification
 - Business Model update
 - Separate physical vehicle acquisition from software applications acquisition
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QUESTIONS?