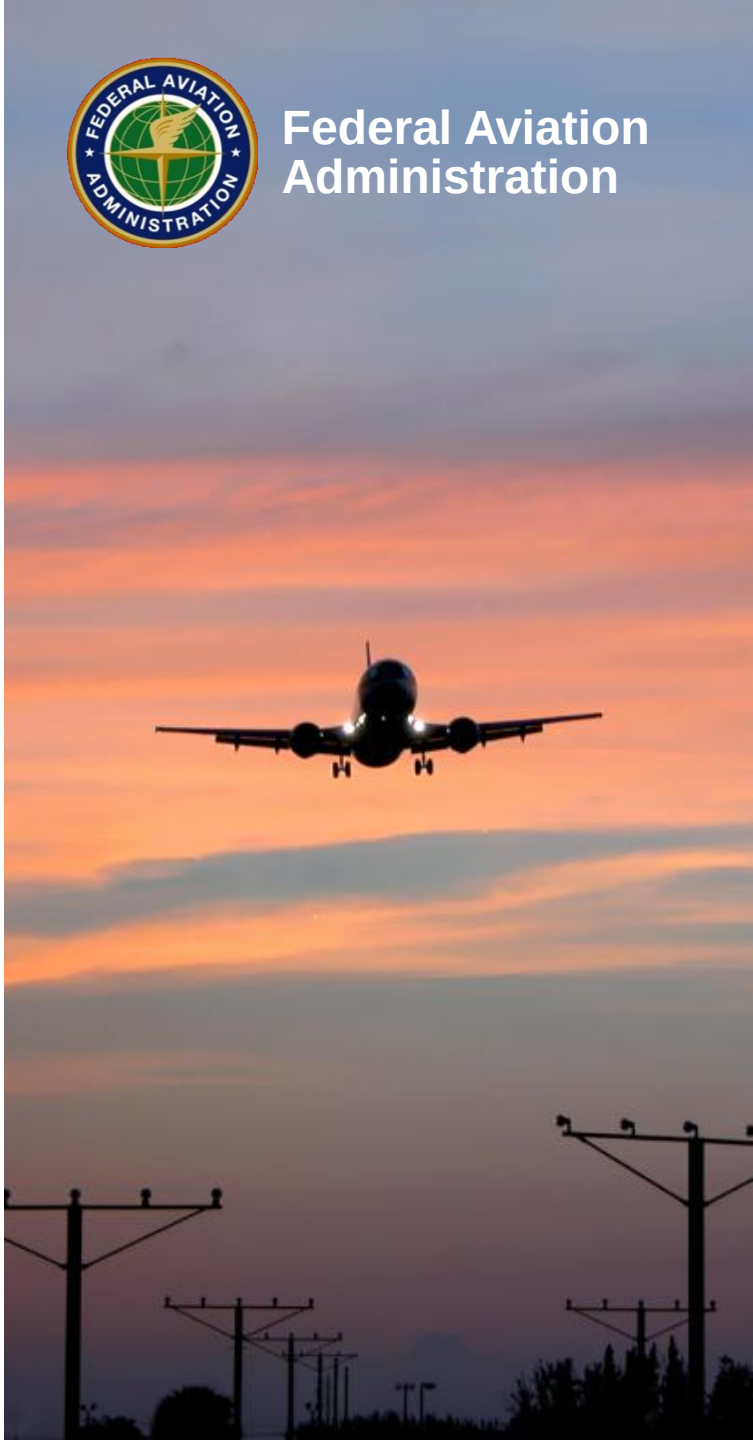
T&E for Event Driven Programs

Federal Aviation Administration



Presented to: 2012 ITEA International Symposium

By: John Frederick, FAA

Valerie Lee, FAA

V2

The effectives of T&E is maximized

when integrated into a structured knowledge-based (event driven) programmatic approach.

Contrasting Characteristics

Schedule-driven projects are performed and managed under the overriding constraint of time. Time becomes the key condition for making project management decisions.

Event-driven projects use success criteria to assess technical progress. These criteria are intermediate targets on the path to meeting desired capabilities.

Government Policies

- **Promote Event Driven Programs**
- **Recognizes the Benefits of Event Driven - Knowledge Based Practices**

Yet many programs inevitably drift into a schedule driven strategy that is contrary to quality T&E practices.

T&E vs. Schedule

The fundamental purpose of T&E is to provide knowledge to assist in managing the risks involved in developing, producing, operating, and sustaining systems and capabilities.
DAU

Who usually wins?

The Integrated Master Schedule is a time-based schedule containing the networked, detailed tasks necessary to ensure successful program/contract execution. DAU

When Event Driven Drifts to Schedule Driven

- **When an Event Driven structured program adopts Schedule Driven tactics:**
  - Many programs tend to perpetuate the one thing that they set out to avoid:

Schedule Slips

- Eventual cost overruns
- Reduced deployed capability

Schedule Driven Mistakes

"I never guess. It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts."

Sir Arthur Conan Doyle

When is Schedule Driven the right approach?

When circumstances call for it…

- **Expectations are set**
  - E.g. Deployed product may be immature
- **Risk mitigations are in place**
- **Time is of the essence**
- **Final delivery date is the overriding constraint**

… Plan on consuming whatever resources are required to ensure delivery on the established milestone…

Pitfalls of Time Based Decisions

- **The program is at risk of advancing without full knowledge**
- **The program may be essentially guessing or hedging that the product is ready**

Putman Model: Productivity

Productivity = Size/(Time x Effort)

- **Event driven programs adjust time and size if the product has an unplanned or unexpected effort increase - to maintain productivity**
- **Schedule based programs increase effort without adjusting size or time - which decreases productivity**

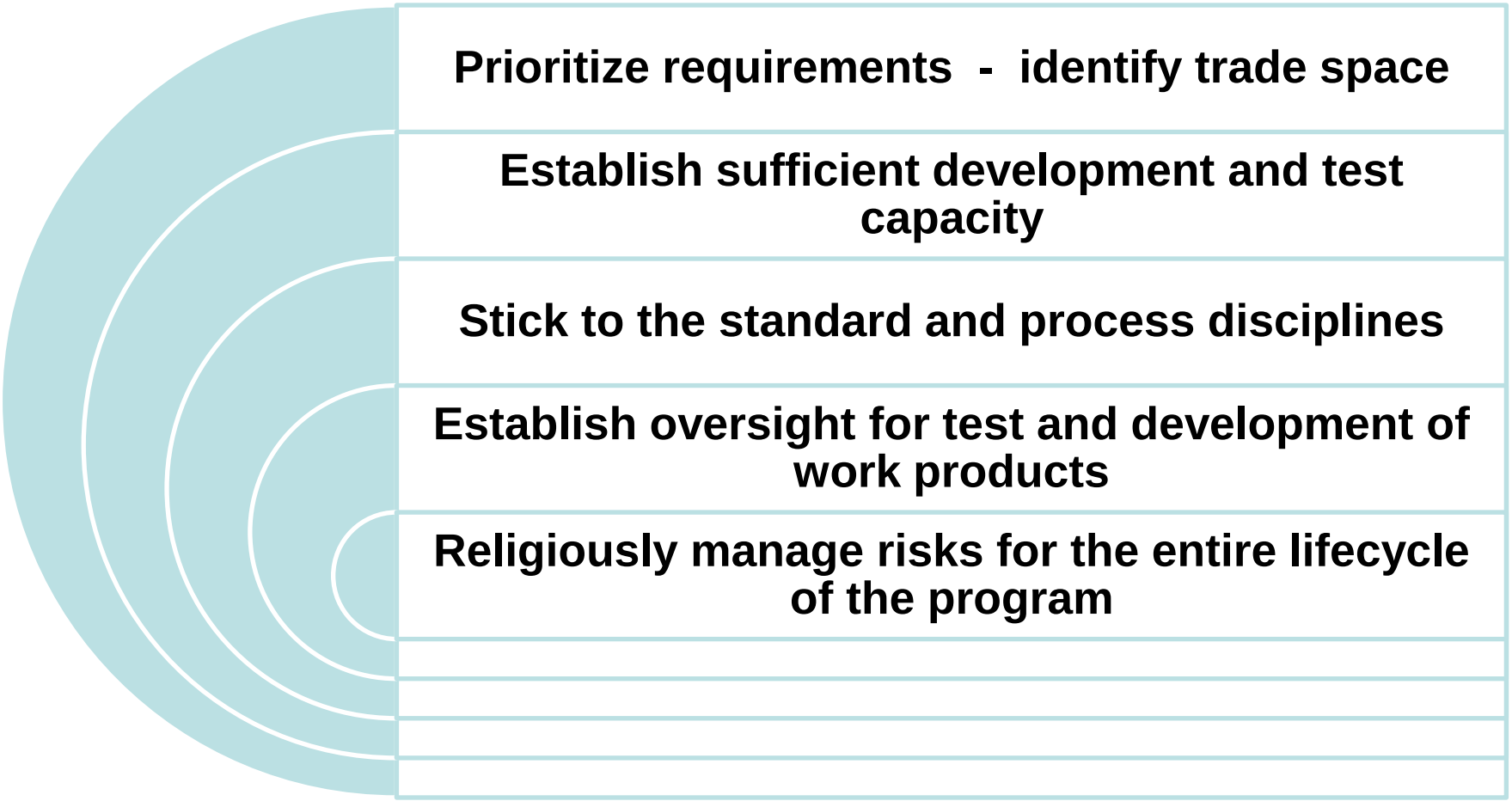
Schedule based programs risk reduced productivity (and quality) to achieve an on time deployment

T&E is the key to avoiding program miscalculations and oversights in meeting the mission

T&E Objectives for Event Driven Programs

- **Program proceeds with knowledge and managed risk**
- **T&E providing the knowledge along the way to:**
  - Risk management
  - Product development
  - Production
  - Operational and capability assessments
  - Deployment implementation and integration
  - Sustainment

Balancing productivity, size, time & effort



Summary

- **Understand the differences between Event and Schedule Driven Acquisition practices**
- **Be Aware when a program drifts to schedule driven and encourage event driven strategies**
- **Promote T&E practices for knowledge and criteria based decision making and milestones**

Acquisitions that capitalize on effective T&E benefit with efficient programs and high quality products.

BACKUP SLIDES

Putnam Model

- **Created by Lawrence Putnam, Sr.**
  - QSM (Quantitative Software Management. Inc) founded by Larry Putnam 1978
  - Considered to be among the top problem solvers in the software estimation and measurement field
- **Putnam used his observations about productivity levels to derive the software equation:**

$$\frac{B^{1/3} \cdot \text{Size}}{\text{Productivity}} = \text{Effort}^{1/3} \cdot \text{Time}^{4/3}$$

Putnam Model cont…

- **Size is the product size (whatever size estimate is used by your organization is appropriate) such as lines of code or functional size measures.**
- **B is a scaling factor and is a function of the project size.**
- **Productivity is the Process Productivity, the ability of a particular software organization to produce software of a given size at a particular defect rate.**
- **Effort is the total effort applied to the project in person-years.**
- **Time is the total schedule of the project in years**