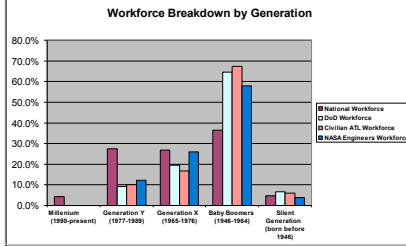


Systems Engineering Experience Accelerator – RT16



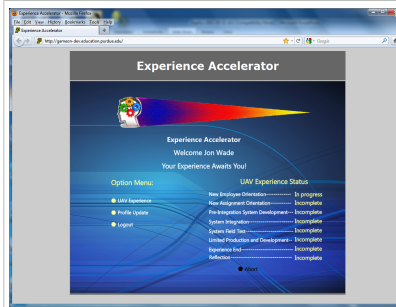
Workforce Demographics



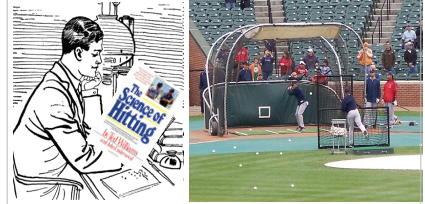
Experience Accelerator Goals

- To build insights and “wisdom” and hone decision making skills by:
- Creating a “safe”, but realistic environment for decision making
 - Exposing the participants to the “right” scenarios and problems
 - Providing rapid feedback by accelerating time and experiencing the downstream consequences of the decisions made

Hypothesis: By using technology we can create a simulation that will put the learner in an experiential, emotional state and effectively compress time and greatly accelerate the learning of a systems engineer faster than would occur naturally on the job.



What's More Effective?



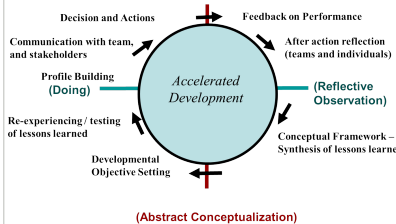
Experience Accelerator Team

- Experience Design:**
- Alice Squires – Stevens
 - Rick Abell - consultant
 - John Griffin - consultant
 - John McKeown – consultant
- Technology & Tools:**
- Jon Wade, PI – Stevens
 - George Kamberov – Stevens
 - Brent Cox – Stevens
 - Vinnie Simonetti – Stevens
 - Yagiz Mungan – Purdue
- Evaluation:**
- Bill Watson, CoPI – Purdue
 - Pete Dominick – Stevens
 - Dick Reilly – Stevens
 - Dana Ruggiero - Purdue
- Simulation:**
- Doug Bodner – Georgia Tech
 - Pradeep Jasahar – Georgia Tech

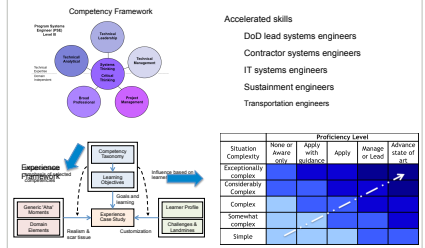
Transforming SE Development

- We postulate that the new paradigm must be:
 - Integrated:** Provides an integration point of multi-disciplinary skills and a wide range of Systems Engineering knowledge in a setting that recreates the essential characteristics of the practicing environment.
 - Experience Based:** Providing accelerated learning opportunities through experience-based interactive sessions.
 - Agile:** Allowing for quality, timely development of course material that is most appropriate for the target students.
 - Time/Cost Efficient:** Compressing multi-year lifecycle experiences into a much shorter period of time.

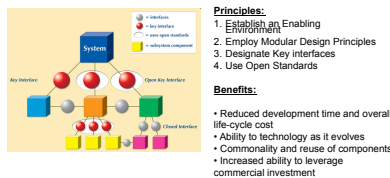
Learning Process (Concrete Experience)



Framework and Applications



Emphasis on Open System Architecture

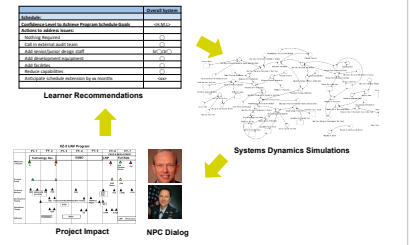


The Experience Accelerator's emphasis on Open System Architecture is coupled with strong preference for use Open Source Software products for implementation wherever appropriate

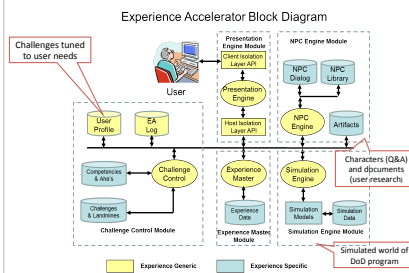
The Experience: A Day in the Life of a PSE

- UAV System:**
- Airframe and Propulsion
 - Command and Control
 - Ground Support
- UAV KPMs:**
- Schedule
 - Quality
 - Range
 - Cost*
 - Sensing*
 - Crew size*
- Phases:**
- EA Introduction
 - Phase 0: New Employee Orientation
 - Experience Introduction
 - Phase 1: New Assignment Orientation
 - Experience Body
 - Phase 2: Pre-integration system development -> CDR
 - Phase 3: Integration -> FRR
 - Phase 4: System Field Test -> PRR
 - Phase 5: Limited Production and Deployment -> ISR
 - Phase 6: Experience End
 - Experience Conclusion
 - Phase 6: Reflection
- * Potential Phase 2 work
- Each session = 1 day

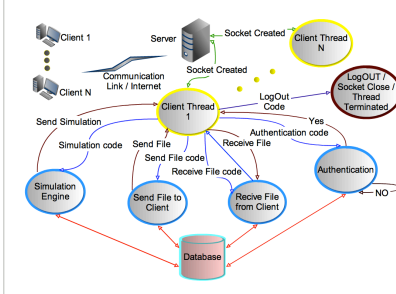
Prototype Feedback Loop



EA Architecture



Multi-Threaded Java Server Architecture



Future Work

- Capabilities**
- Expand first-year prototype with additional capabilities
 - Expand set of challenges and landmines
 - Include cost objectives
 - Enrich user profile and competencies addressed
 - Enhance simulated world features and character interaction
 - Add features to user desktop
- Development Productivity**
- Improve content creation and development tools
 - Dialog authoring
 - Artifact creation
 - Event descriptions and triggering
 - Make Open Source Ready
 - Documentation
 - Source control and defect tracking
 - Port to open development environment
- Evaluate Learning Efficacy**
- User Feedback
 - Develop more detailed feedback linked to competency model
 - Outcomes assessment
 - Establish outcomes assessment plan
 - User reactions
 - Behavior change / performance improvement measures

Contact for more information:
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 Bill Watson, brwatson@purdue.edu
 Doug Bodner, doug.bodner@gatech.edu