

Combat Scenario Development and Gaming Level Editor - A Comparison of Procedures -

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Outline

- Definitions
- Issues
- Goals
- Assessment of Techniques
- Potential Payoffs for DoD
- Potential Topics of DoD Interest
- Summary

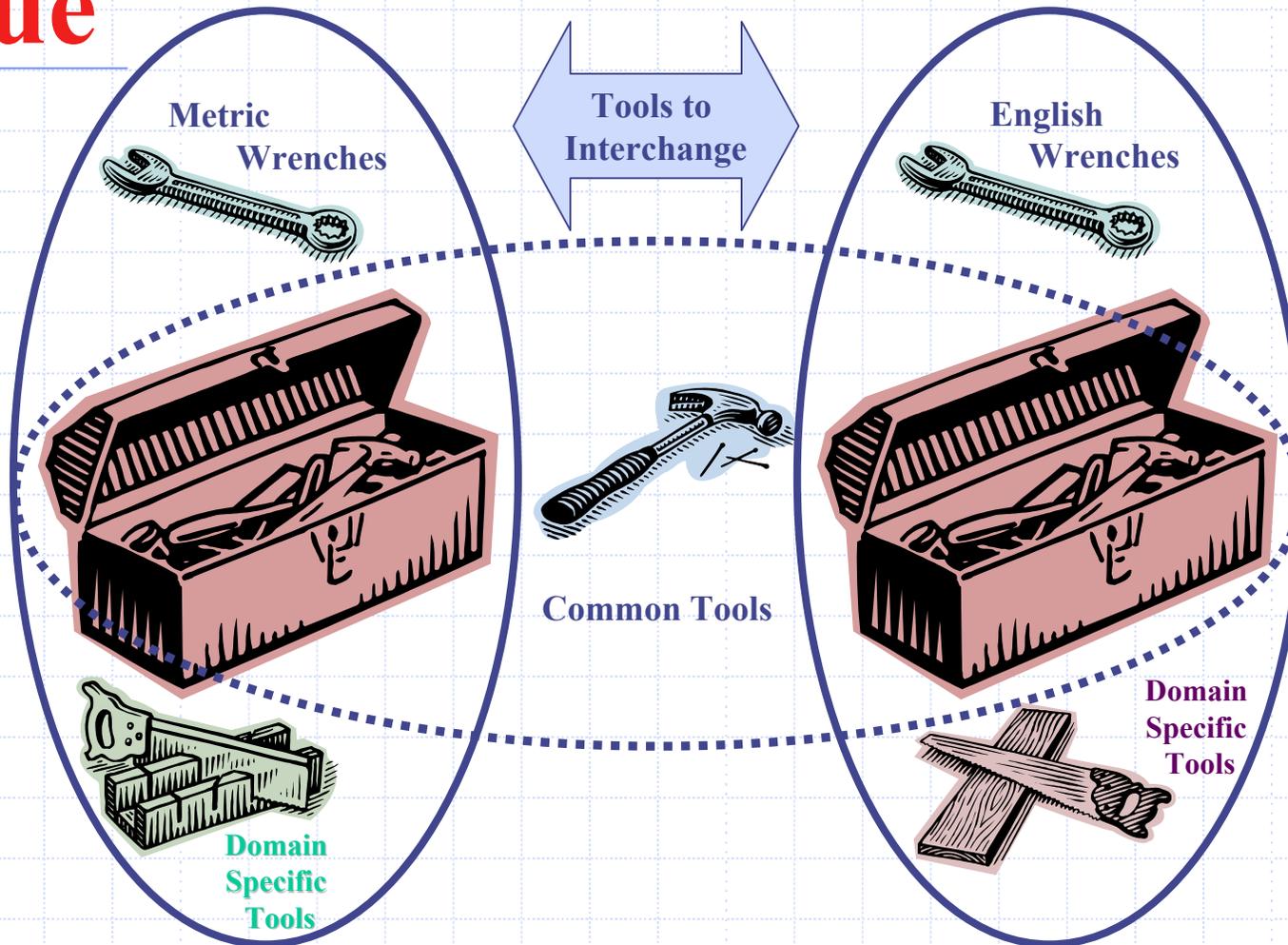
Definitions

- Simulation Scenario:
 - Provides a real world context and scopes the simulation objects and environment requirements
 - Often used to initialize data to start a simulation
 - In some cases, the scenario specifies scripted events
 - Reference: Army Standard Repository System (ASTAR); Military Scenario Definition Language (MSDL) SNAP Submission:
http://www.msrr.army.mil/astars/obtain_doc.cfm?record_id=REF_1000103

Definitions

- Game Level:
 - A section of the game
 - Most modern games require the computer to process a tremendous amount of information. These data cannot be stored in the computer's main memory at the same time. Thus, the game is broken up into sections, or levels. When a game level is to be played, the computer loads only the information which is required for that section of the game.
 - Reference: GameDev.net – Game Dictionary:
<http://www.gamedev.net/dict/browse.asp?Section=0&CategoryID=10>

Issue

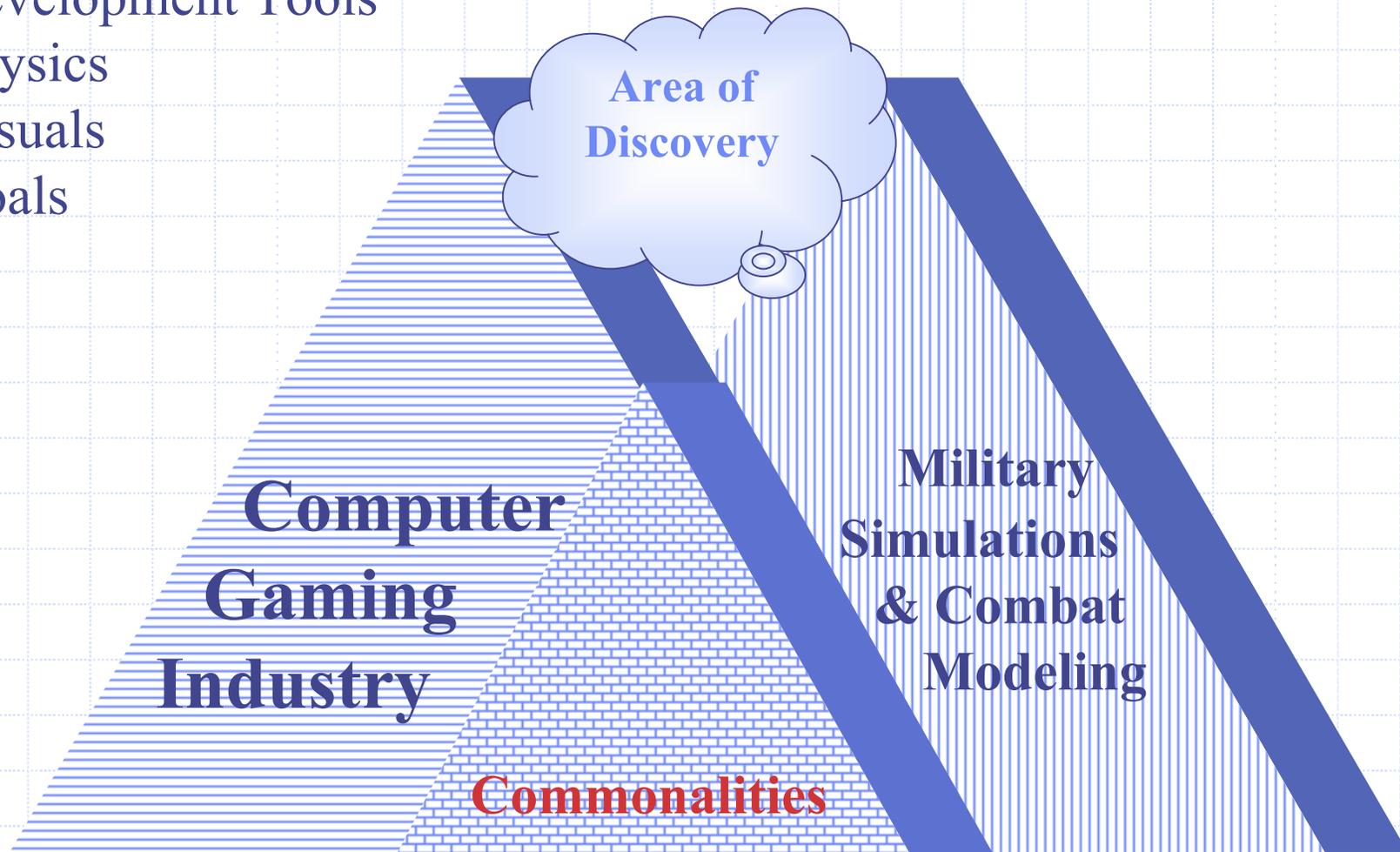


Game Developers' Toolkits

Military Simulations
&
Combat Modelers' Toolkits

Issue

- Development Tools
- Physics
- Visuals
- Goals
- AI



Goals

- Identify the strengths of military model scenario development and gaming world level development techniques, respectively
- Determine potential areas of cross pollination that could enhance the performance of each community

Assessment of Techniques

- Gaming Level Development Tools

- Unreal Editor



- Military Simulations & Combat Models

- CASTFOREM

- COMBAT^{XXI}



- JSAF

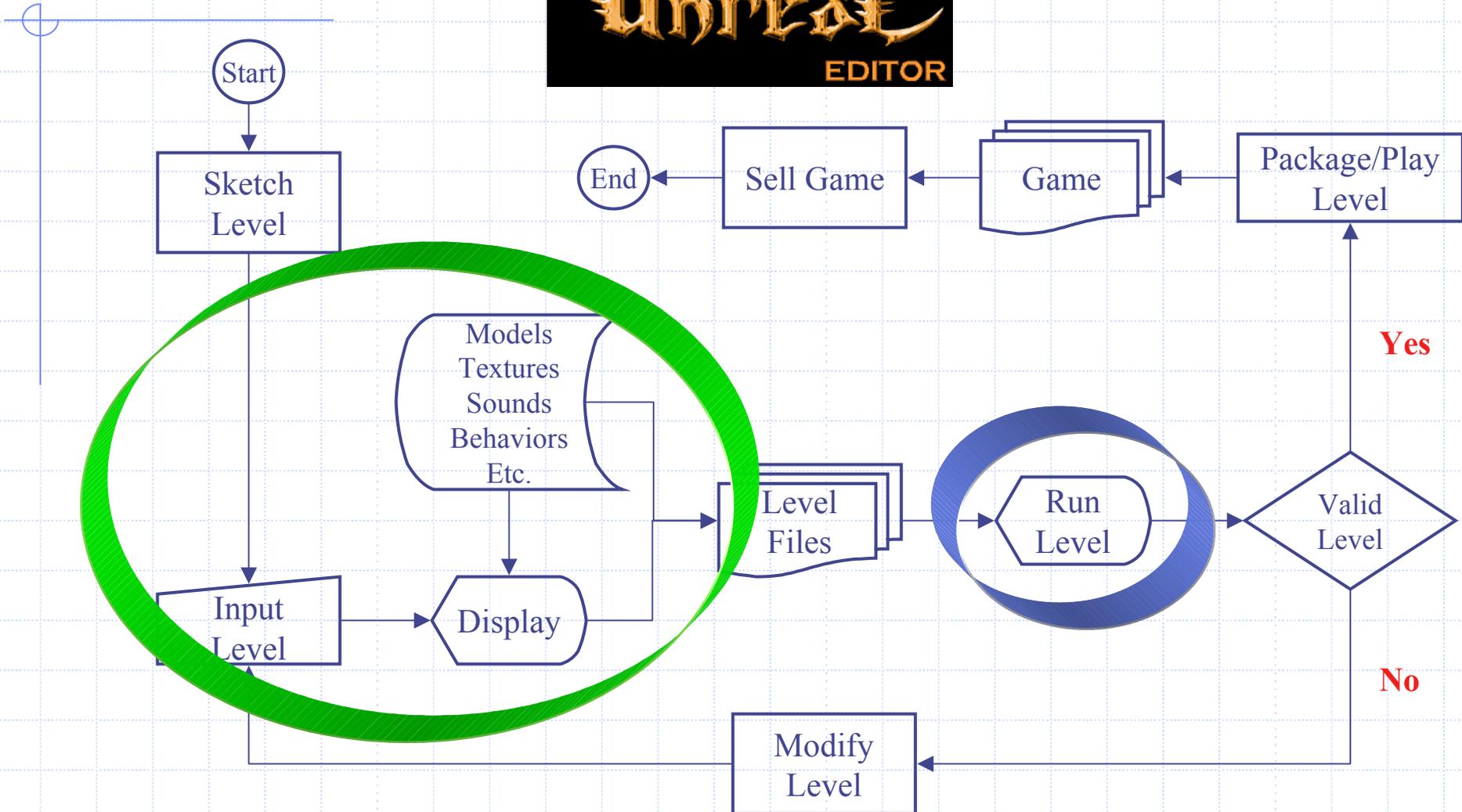
- OneSAF Testbed Baseline (OTB)



Assessment of Techniques

- Gaming Level Development Tools
 - Provide a means for rapid level creation
 - Provide seamless transition into 3D visualization of the level
 - Produce nearly photo realistic 3D worlds
 - Limited requirements for number of entities and scenario complexity
 - Realism is suspended to achieve “fun” or “entertainment” factor(s)
 - Cognitive architectures are usually limited to lookup tables and scripting

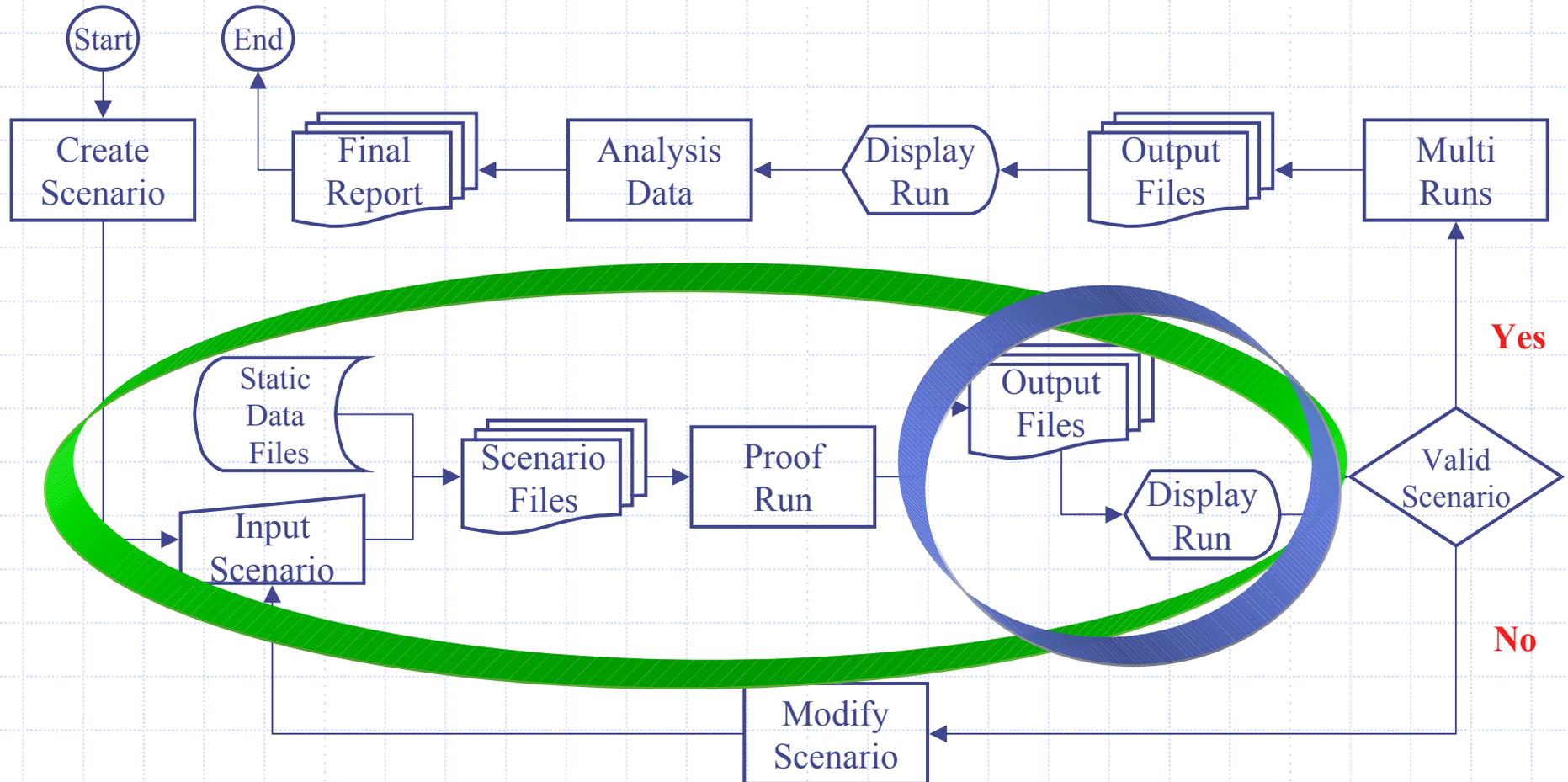
Unreal Editor (Level Development)



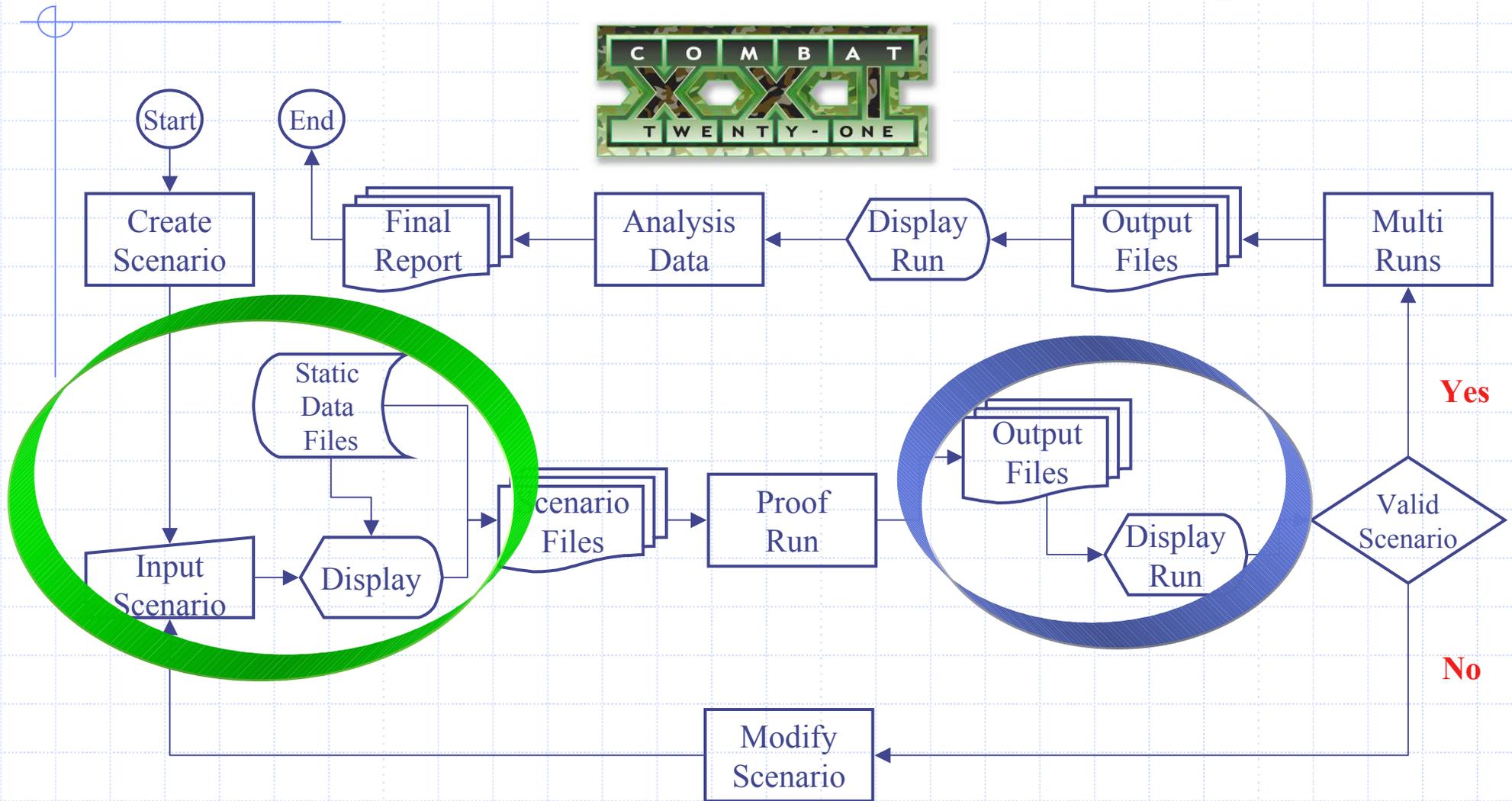
Assessment of Techniques

- Military Simulations and Combat Models
 - Complex simulation environments with numerous entities and varying levels of realism/fidelity
 - Realistic behaviors and physics are a requirement
 - Cognitive architectures are being extended to provide more realistic behaviors
 - Have requirements for data capture and replay capabilities
 - Complex tools often with limited or no graphical user interface (GUI) assistance
 - Symbolic and visual portions of the model developed separately and then fused together to create the virtual environment required for use in training or analytical analysis of combat systems

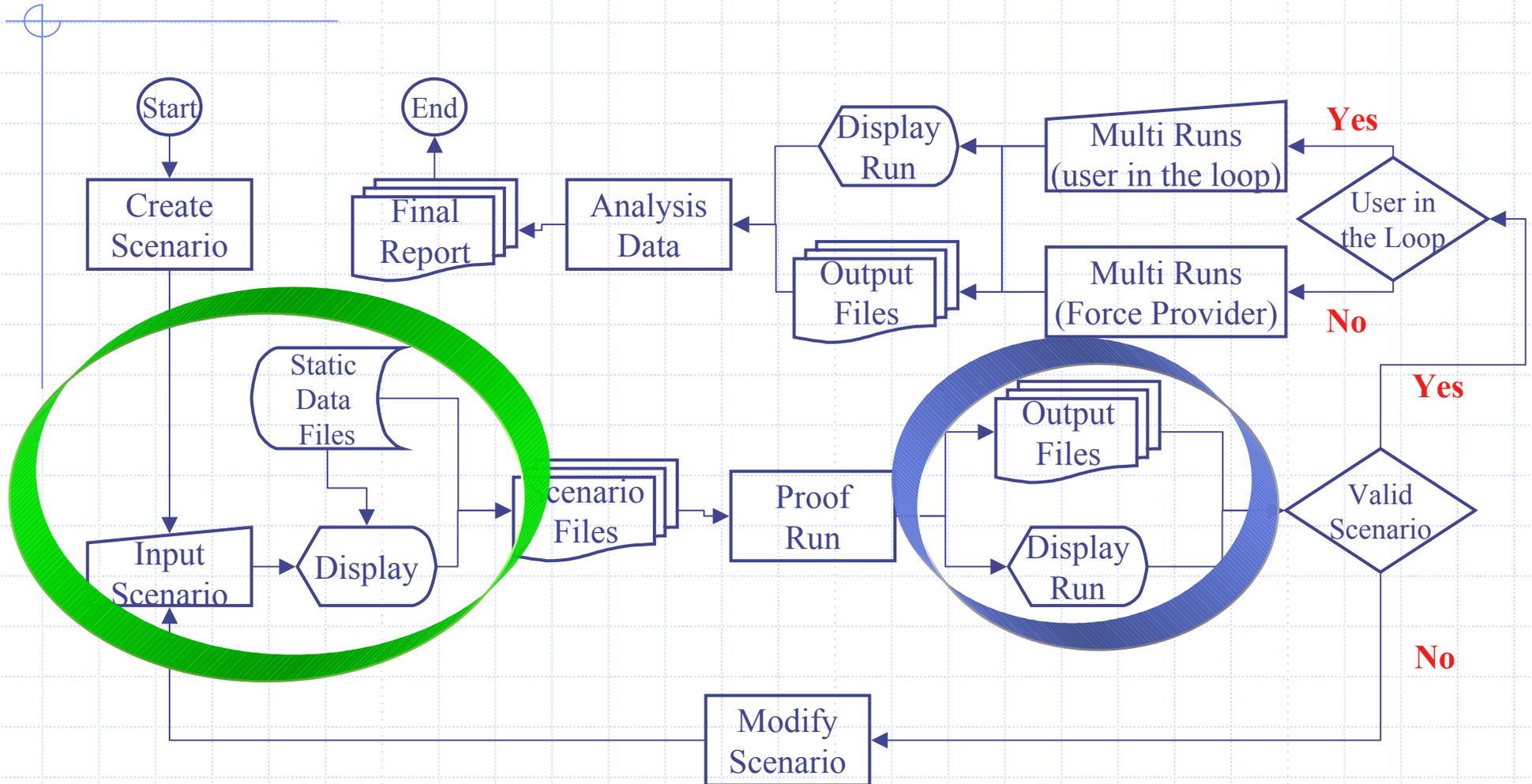
CASTFOREM – Scenario Development



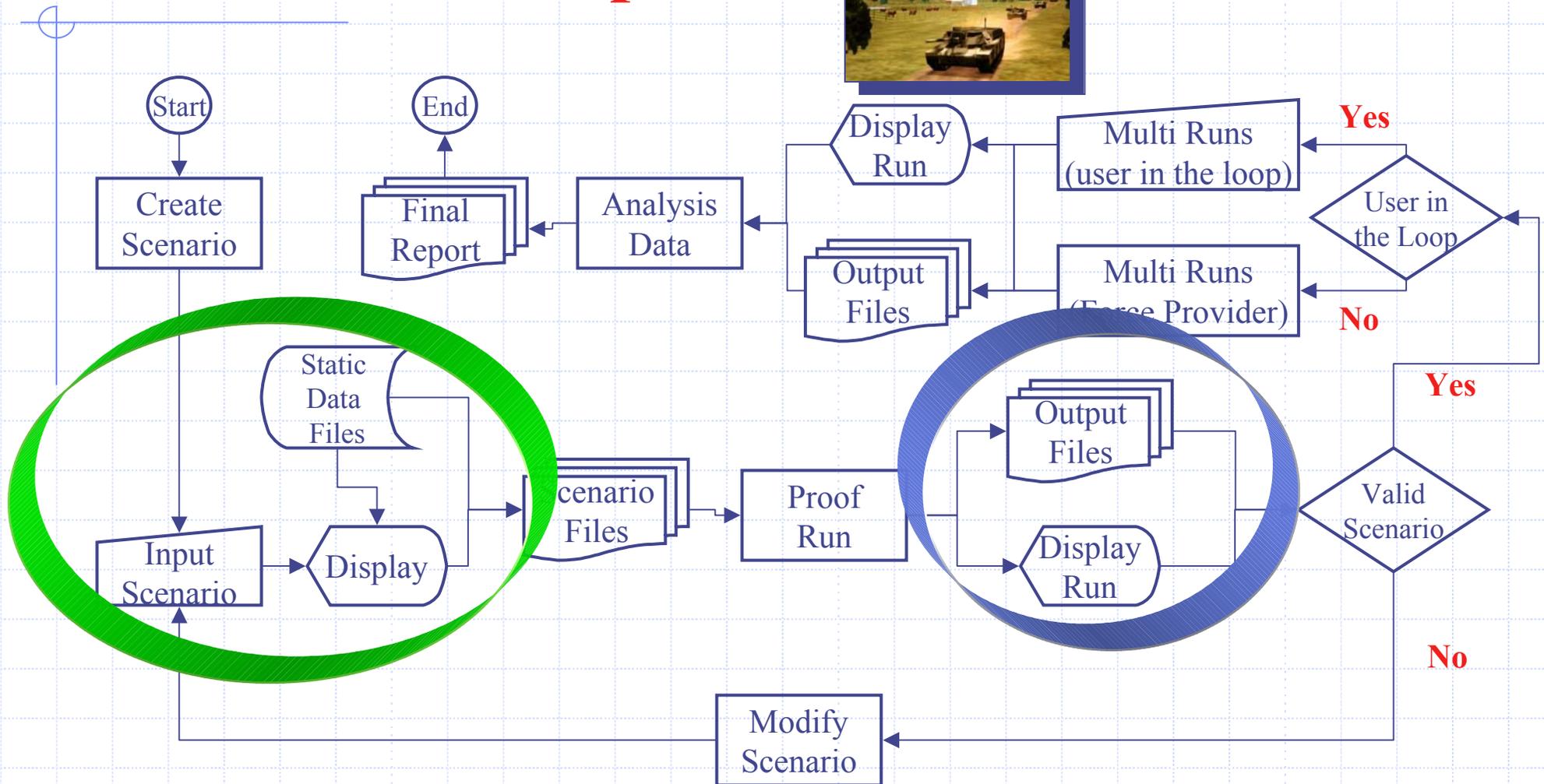
COMBAT^{XXI} – Scenario Development



JSAF – Scenario Development



OneSAF Testbed Baseline (OTB) – Scenario Development



Assessment of Techniques

- Emergent Technologies
 - Commercial off the shelf viewers and development products
 - Hardware and operating system advancements
 - Advancements in programming languages (C++, Java, etc.) and data storage languages (XML, etc.)
 - Developments in Human Computer Interaction
 - Replacement model development
 - ◆ OneSAF
 - ◆ COMBAT^{XXI}

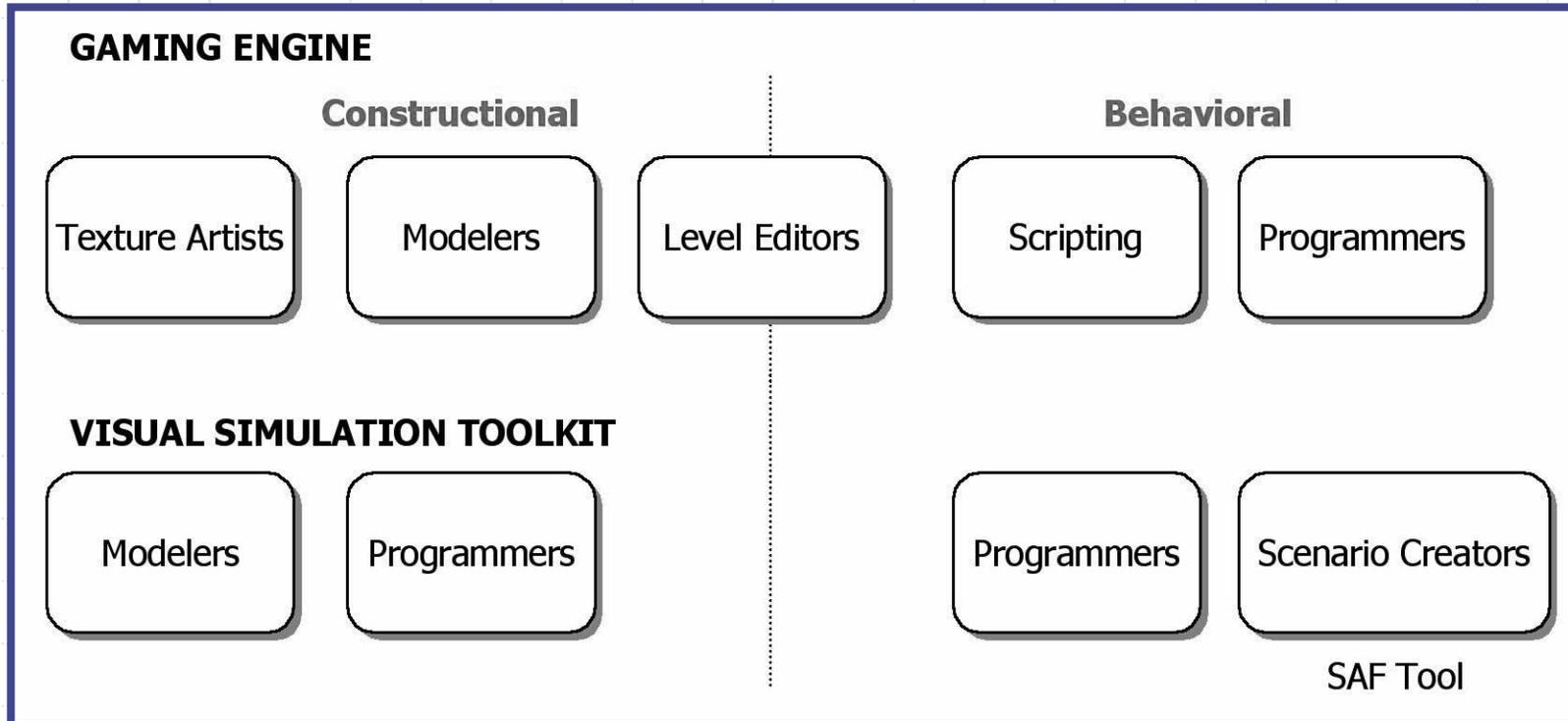
Potential Payoffs for DoD

- Identify techniques used in game level development which could be used to facilitate the design and future construction of a DoD supported framework to bridge scenario development and visual scene construction
- Identify the characteristics required to develop a generic scenario storage format facilitating translation of scenarios into formats usable by current and future military simulations and combat modeling systems

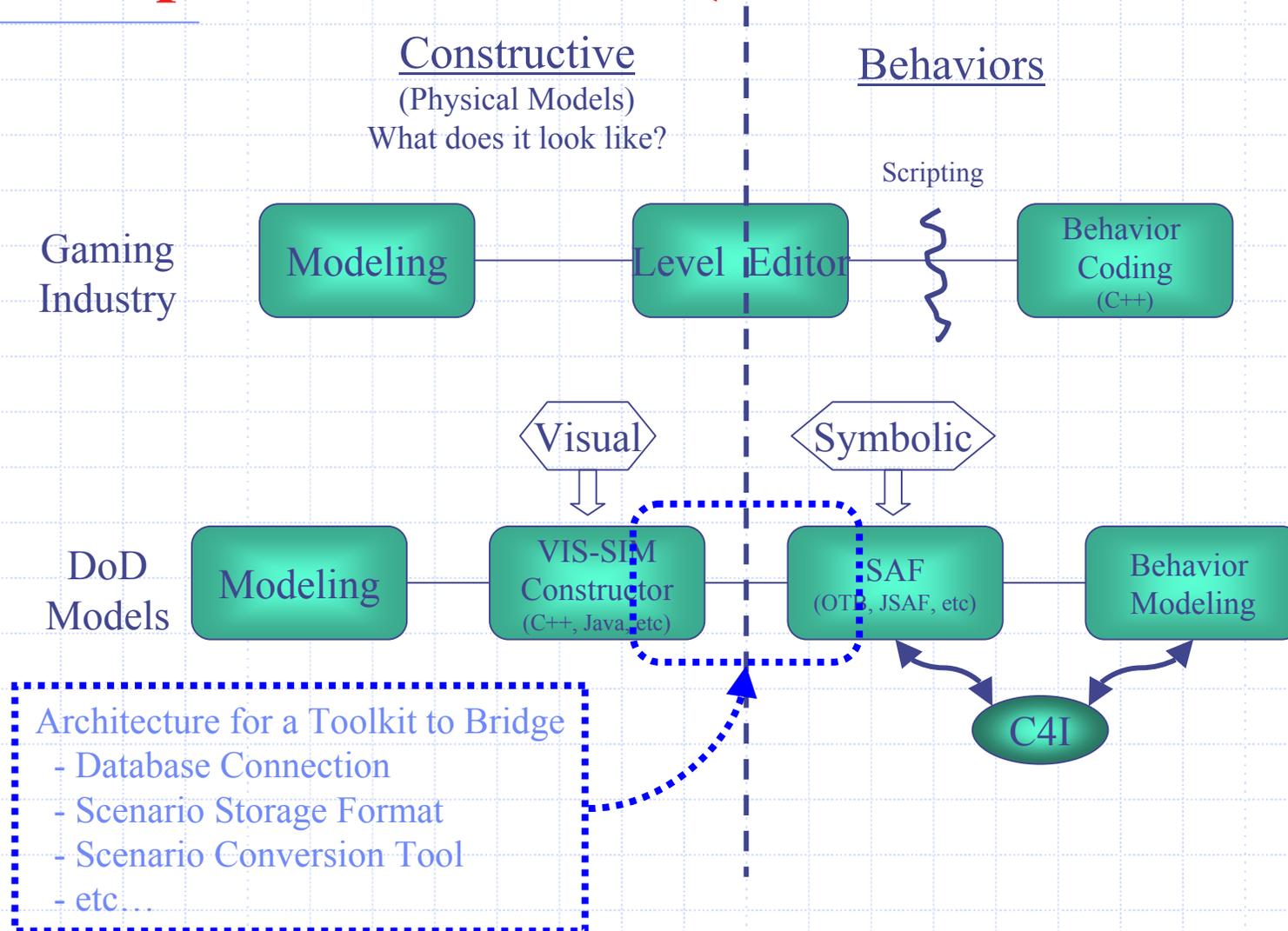
Potential Topics of DoD Interest

- Generic Scenario Development Toolkit
- 3D Visualization Tool available for use during scenario development
- Common storage format for simulation scenarios
- Conversion tool for converting to and from a standard scenario storage format

Gaming Engine and Visual Simulation Toolkit Development Processes



Gaming Engine and Visual Simulation Toolkit Development Processes (Potential Enhancement)



Summery (Assessment of Techniques)

Area of Interest	Stronger	
	DoD Simulations	Games
3D Models		x
Behaviors	x	
Physics	x	
Scenario/Level Generation		x
Visualization		x

Summary

The gaming industry and military simulation & combat modeling communities have different fundamental purposes and requirements. However, each community has strengths which the other can leverage to enhance its ability to produce better products for its end users.

Questions?

References

Army Game Project - <http://www.armygame.com/index.html>

Army Standard Repository System (ASTAR); Military Scenario Definition Language (MSDL) SNAP Submission:

http://www.msrr.army.mil/astars/obtain_doc.cfm?record_id=REF_1000103

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