Realistic and Adaptive Interactive Learning System (RAILS)

Realistic and Adaptive Interactive Learning System (RAILS) Exploiting 3D Video Games

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"A Passion for Practical Solutions"

Realistic and Adaptive Interactive Learning System (RAILS)

RAILS DEVELOPMENT HAS BEING FUNDED IN PART BY THE DHS DOMESTIC NUCLEAR DETECTION OFFICE UNDER CONTRACT HSHQDC-10-C-00119

RAILS is being developed by SLI and our partners in response to DHS DNDO SBIR 09.1, Topic 2: "Innovative Training Technology for Preventive RAD/NUC Detection"

- **RAILS:**
  - **Provides a set of 3D game environments with realistic radiation physics in which radiation detection skills may be practiced in many simulated Real World Environments**
  - **Accurately models the performance of selected RAD/NUC equipment**
  - **Enables instructors and administrators to track performance relative to individual training objectives and to adjust training scenarios accordingly**
- **SLI Team includes:**
  - **Kalloc Studios , Carlsbad, CA - *Video Game Engine***
  - **Indiana University of Pennsylvania , Indiana, PA – *Provider of CBRNE Training for the 60 National Guard Civil Support Teams (CST)***

REALISTIC ADAPTIVE INTERACTIVE RAILS LEARNING SYSTEM

RAILS Goals

- **RAILS has the potential to significantly reduce the cost for required annual refresher training.**
- **RAILS can provide metrics that will enable an engaging training paradigm keeping users engaged continually rather than on an intermittent schedule.**
- **The goal is to better enable trainers to develop qualified operators who will:**
  - Quickly learn characteristics of new Radiation Detection devices
  - Learn how to use those devices in a nearly limitless variety of environments and scenarios
  - More readily retainknowledge and skills over time

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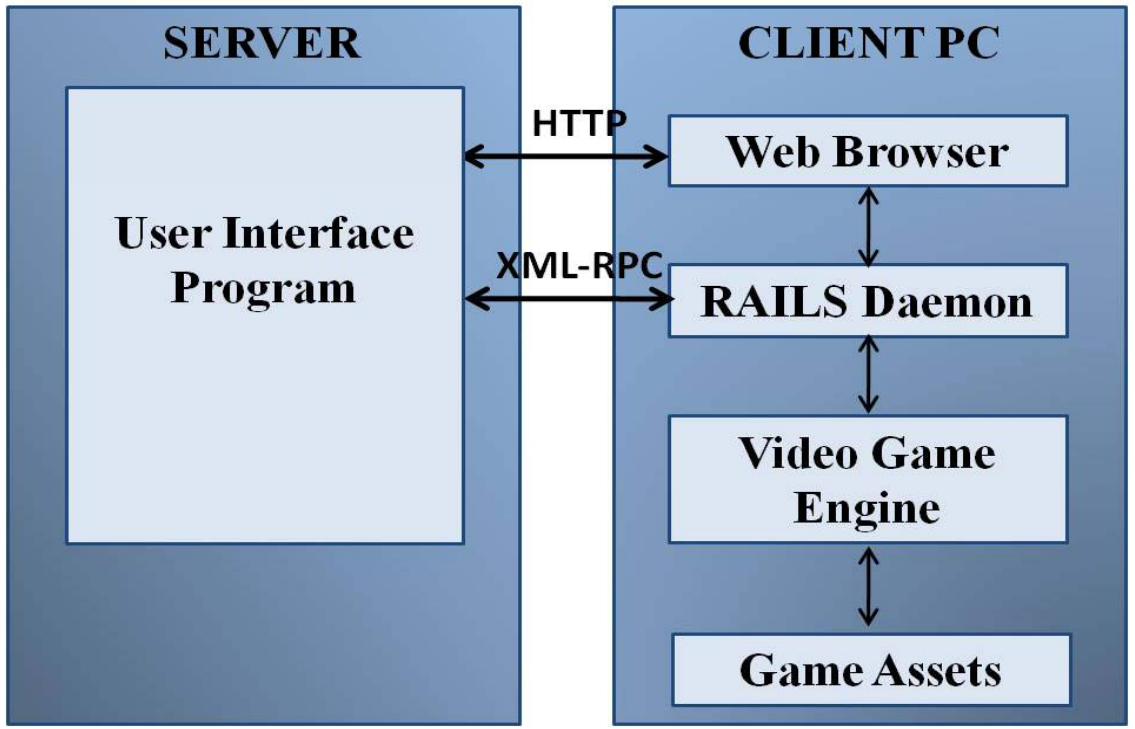
RAILS Software Components

- **RAILS can be**
  - Modified to enable a diverse set of scenarios
  - Integrated with various training environments
  - Adapted to accurately depict new instruments
  - Used for team (multiplayer) training environments
  - Able to track progress interactively via the net



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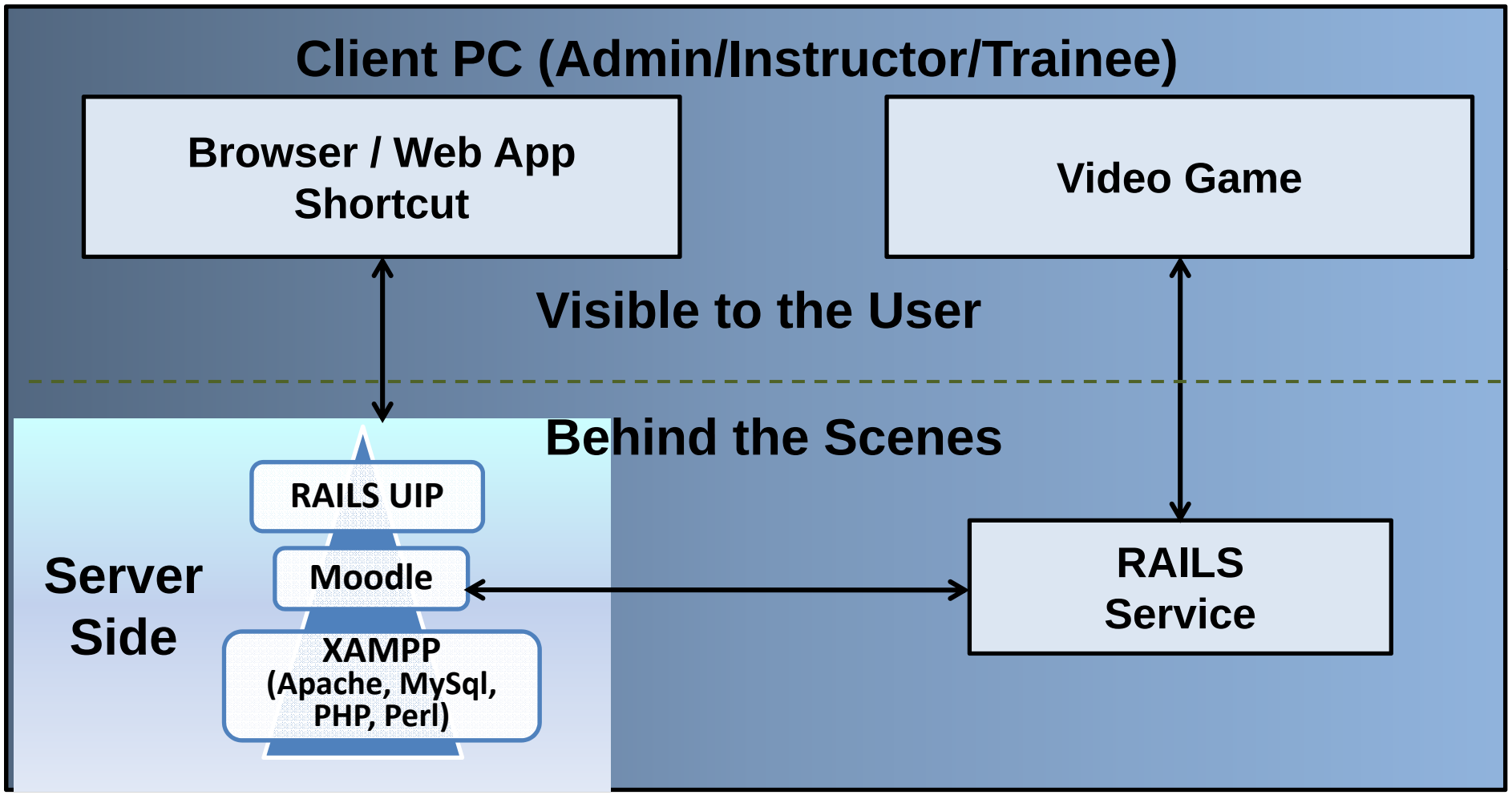
RAILS User-Program Interaction



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RAILS Screen Pages

User Interface Program Browser Screen

RAILS Video Game Simulations

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What is unique about RAILS?

- **Training Mission Specific –**RAILS Real World Game Environments provides actual training practice without experiencing exposure to Radioactive Materials
- **Facilitates Avatar Radiation Search Actions –** enables the user to practice operation of realistically simulated instruments through articulated avatar actions

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What is unique about RAILS?

- **Graphic Capability Suitable for Law Enforcement Training –** enables movement of radiation sources on Non Playing Characters, Trucks, or Autos and within simulated environments
- **Reach-back –** A key Preventative Nuclear Detection issue is to communicate accurate data to State, Local, and National resources, thus RAILS gives the user practice at sending ground truth data and responding to directions from central authorities

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What is unique about RAILS?

- **RAILS uses Moodle, a SCORM compliant Learning Management System (LMS), to integrate Game Results:**

(SCORM is a US DoD LMS specification)

— RAILS facilitates setting rules to specify the order in which content objects are encountered, personalizing student or group's training path

— RAILS permits the learner to "bookmark" progress when taking breaks

— RAILS provides for recording of game performance and post game tests to measure student progress and adjust training paths as required

Student progress and learning path are easily monitored and managed while providing valuable feedback to both student and instructor

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RAILS Screens for Trainees and Instructors

Logon will direct user to the appropriate Instructor or Trainee Main Screen

Logon Through Internet or Local Network with Web Browser

Instructor

Scenario Management

- Place Source Challenges
- Choose PRND Instruments
- Add References
- Create/Modify Quizzes and adjust Scoring Parameters
- Review Results

Results Stored in Database for Instructor Review

Debrief - - Test

Trainee

3D Game Access

Virtual Mission Challenge

References
Videos
Tech Manuals
Instruction Guides

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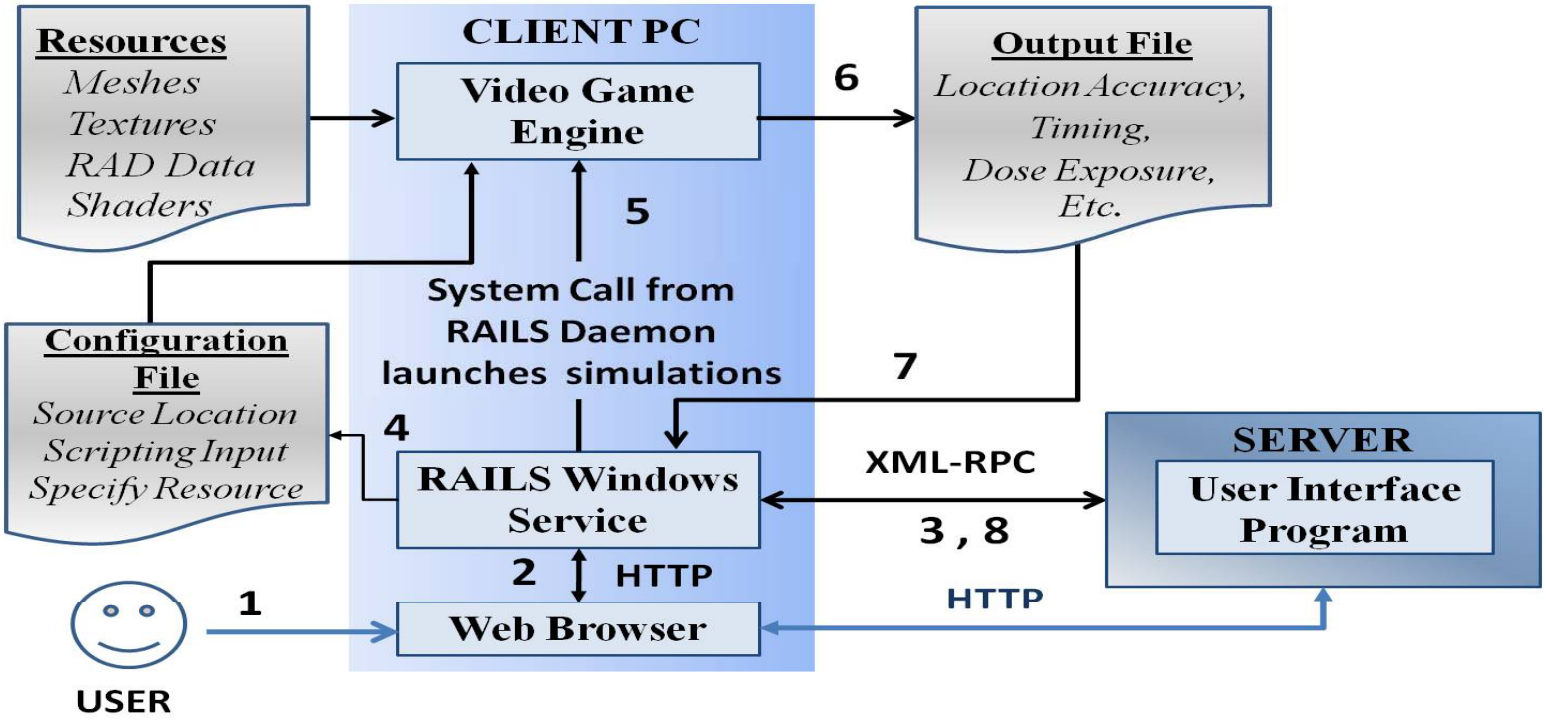
RAILS Processing Sequence

1. User Presses Simulation Button	5. RAILS Windows Server Launches Simulation
2. Browser request RAILS Windows Server to start simulation	6. Game creates output file
3. Client requests permission from Server via XML-RPC to start simulation	7. When User exits game, the output file is read by the RAILS Windows Server
4. RAILS Windows Server creates Configuration File	8. Simulation results sent via XML-RPC to server for scoring and storage



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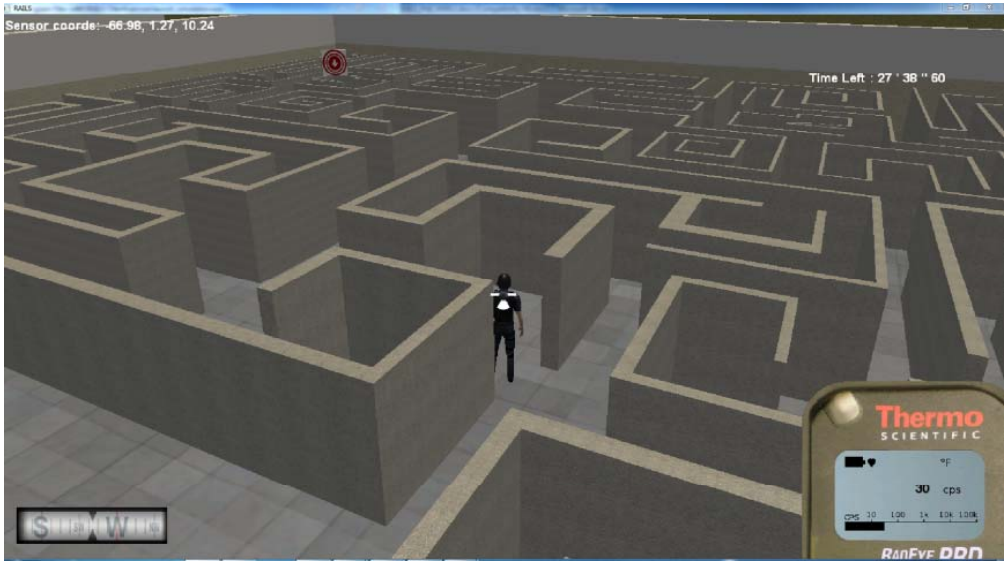
Introductory Tutorials

Since a large segment of the User Community may not be familiar with Games, a tutorial gives practice using the PC Keyboard and/or Controller to navigate and use RAILS features.



The Maze Tutorial also requires use of 3rd person viewpoints, since the 1st person perspective cannot recognize the pathways

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Radiation Detection Tutorials

Basic principles of Radiation are experienced in lab like environments

The response in the radiation field is observed differently on different instruments

Simple search operations allow familiarization with detector response

Tutorials are always available and always optional

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Basic Law Enforcement Scenarios Practice Fundamentals

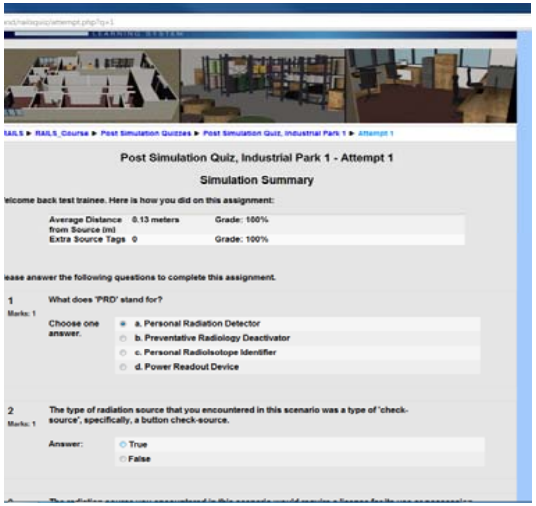
Basic principles, safety, detector operations, and appropriate adjudication in typical law enforcement activities are practiced, including detector capabilities, effect of background, false alarms, and exposure to medical sources. The officer will be graded on performance and a debrief quiz to determine readiness for advancing.

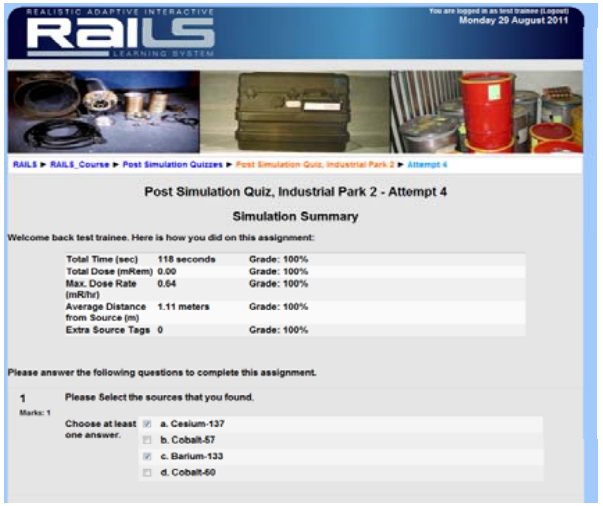
Game capabilities include moving sources, and placing sources on Non Playing Characters or other objects within the environment.

In game communications with instructors the scripting provides the ability to add applicable variables to the scenarios.

Post Game Debrief - Quiz

To validate retention of key points the student is directed to a Debrief-Quiz when exiting the Game. The game also provides the instructor and student with data regarding performance parameters – time to find a source, finding all sources, practicing safety rules, etc.





If the score meets a threshold set by the instructor the student can advance to a more challenging level. Student grades are permanently and securely saved for review by the student and the instructor.

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RAILS enables quick and easy realization of complex scenarios

The automated ability to place or move sources and to set up various environments allows for uniform training across the Nation as new threats surface and to focus on targeted knowledge, skills and abilities needed by Law Enforcement Officers.

Marina Environments

Potential Sources in a Crowd

Proper Labeling

Choke Points

Moving Sources

Reviewing Detectors

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Summary

RAILS applies Video Game Technology to support a major National Goal – protecting our citizens and assets from a nuclear threat. It serves to:

- Supplement classroom training
- Set the stage for field or laboratory training activities
- Prepare for exercises
- Prepare for day to day or large venue high visibility activities
- And most importantly, to ensure adequate refresher training

RAILS can be applied to each level of preventative nuclear detection training:

- Basic Principles, Safety, Detector Operations, Buttonology, and Use
- Detector Capabilities, Background, False Alarms, Protection
- Source Types (Medical-Industrial-Special Material), Malfunctions, Shielding

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Summary

RAILS User Interface Program complements the RAILS Game by:

- Interfacing with the 3D Game
- Provides instructors with valuable feedback on user's knowledge, skills and abilities
- Allows instructor to customize training content
- Facilitates communication with instructors and other trainees

Current Status

- Alpha Release being Tested
- Beta Release planned for February 2012
- Commercial Release planned for July 2012