The Game Grid: Research Vision

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Overview

- Research Problems
- Approach
- Related efforts
- Conclusions
<table>
<thead>
<tr>
<th>Rank</th>
<th>Game</th>
<th>Players</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Half Life</td>
<td>10,148,497</td>
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<td>Medal Of Honor</td>
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<td>Quake III Arena</td>
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<td>Unreal Tournament</td>
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<td>Return to Castle Wolfenstein</td>
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<td>Unreal Tournament 2003</td>
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<td>7</td>
<td>Soldier Of Fortune ii</td>
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<td>Quake II</td>
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<td>America's Army</td>
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<td>11</td>
<td>Tribes</td>
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<td>Tribes 2</td>
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<td>Battlefield 1942</td>
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<td>Rogue Spear</td>
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<td>Soldier Of Fortune</td>
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<td>Quake World</td>
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<td>Rune</td>
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<td>Star Trek Elite Force</td>
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<td>Legends of Might and Magic</td>
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<td>Deus Ex</td>
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<td>Kingpin</td>
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<td>26</td>
<td>No One Lives Forever</td>
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The **Game Grid**

- A networked, clustered computing environment for researching, developing, playing and experiencing (beyond) next generation computer games and game worlds.
  - Not just Web services framework and computing grid fabric.
- But a *testbed, archive, community* and *venue* for new ways of developing, deploying, and performing game-based synthetic or mixed reality environments across a variety of (heterogeneous) platforms.
- See [http://www.ucgamelab.net](http://www.ucgamelab.net)
(One) Game Grid research problem

• What is the best way to rapidly create networked game worlds and play experience?
  – “best” =>
    • faster, better, cheaper
    • open source (e.g., BSD/MIT style license)
    • (global) community-based development, contribution and support
    • Fun, enjoyable, intrinsically motivating, disruptive, etc.

• Modification, Construction, or Generation?
Proposed solutions

• Modification
  – Hack existing game content, levels, engine
  – Repurpose content/data from other sources

• Construction
  – Scripting (*UnrealScript vs. C-shell/Perl/Python/…*)
  – Custom programming using SDK and other tools

• Generation
  – Parameter value instantiation
  – Macro expansion
  – Language-directed (game) application generation
  – Meta-environments tailored for (game) domain
Proposed solutions: evaluation

- Generation
- Modification
- Construction

Automated support?
Ease of use/development?
Flexibility?
Approach

- Investigate the development and use of *meta-environments* for new game domains
  - Support generation, modification, and construction techniques and tools
  - Target (non-traditional) game domains relevant to artists, scientists, humanists, software developers, gamers, etc.
Related R&D efforts

- visual and performing arts
  - e.g., *machinima*
- science and technology education
  - informal education in science
- humanities and social sciences
  - graphic narratives for storytelling
- alternative game cultures and venues
  - hot rod game machines and *GameCon’s*
Informal Science Education as a Game Grid Community?

• Quantum Physics Game
• Classical Physics Game
• 3D MEMS Device Design as new game?
• MEMS Device vs. Mighty Mite game?
TOOLS

Accelerate the Particle

PLAY GAME

(may take a few moments to load)

game created by CERN
Hot Rod Computing Culture

• Examples of “open hardware” mods applied to realize a *hot rod* PC (for computer game playing)

• Venue for hot rod PCs: QuakeCon
  – QuakeCon2002 LAN party w/>1700 PCs
  – QuakeCon2003 LAN party w/>3200 PCs

• Other large LAN parties appearing as meeting place for hot rod PCs
Hot rod PCs
QuakeCon on TV again!

QuakeCon will be hitting the small screen once again! Starting today and running throughout the week, G4 - TV of Gamers will be running a show with heavy focus on QuakeCon 2002. The show is called Pulse, and you can get more information and peruse the schedule on this page here. G4 is available to many satellite and digital cable subscribers.

New movie

I was just sent a cool new addition to the QuakeCon 2002 video library. The employees of Netzone Centers in Houston have put together a 7 minute, 24mb video of the event. It chronicles their trip to Mesquite and the excitement they found there. Go watch it now!

The camera men/editors are red falcon (Laurence Johnson), Lightning Quick (Josh Garcia), Warrenkreus (Warren Akhtar), and Wolfwood (Brian Buffington)

Good work guys!
Related Research

- Free/Open Source Software Development
- *Fourth* most popular area for F/OSSD with >8000 projects on SourceForge.org
- Tools, techniques, and concepts for
  - Game development (e.g., game modding)
  - F/OSSD, and
  - Emerging game grid domains (physical sciences, nanotechnology, visual/performing arts, massively multi-participant worlds for living narratives, GameCons, etc.)

...can be brought together for mutual benefit.
Conclusions

• Game Grid partners are jointly conducting R&D in computer game culture and technology
• Breaking down barriers between art, science, technology, culture through computer games, game environments, and experiences
• Creating a new generation of informal learning tools and techniques, together with a global community of developers and users, through a massively shared, participatory computing grid.