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Context

Existing Approaches

Approach

CM50175 Research Project Preparation

Thomas Smith

Centre for Digital Entertainment University of Bath

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Born Ready Games

- Guildford-based 'indie' games studio
- Sucessful 'Strike Suit' franchise
 - Two games across five platforms
 - Space-based fighter combat at large scale
 - 'Play a key role in a larger story'
- In-house art team, publishing, PR







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Born Ready Games

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Born Ready Games — Strike Suit Zero





Strike Suit and capital ships



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Born Ready Games — Strike Suit Zero





AXE fighter craft and Thule research station



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Born Ready Games

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Art Pipeline

- High production overheads per asset
- Duplication of effort
 - Pristine mesh and textures
 - Damaged mesh and textures
 - Destroyed mesh and textures
- Static damage-based system for swapping meshes
- Procedural impulse vectors for detroyed meshes
- Larger ships have independent weapon hardpoints
- Relatively low variety of ship models in current game





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Art Pipeline

Procedural Destruction

"The aim of the project is to explore and implement a declarative approach to the modelling of structure, so that reasoning about the effects of damage can take place over a knowledge-based representation from which a rendering can be synthesized automatically. The representation evolves over time in response to the damage inflicted, but could also be subject to other forms of failure arising from other environmental events."

— J. A. Padget

Procedural Destruction

Procedural Destruction

"The aim of the project is to explore and implement a declarative approach to the modelling of structure, so that reasoning about the effects of damage can take place over a knowledge-based representation from which a rendering can be synthesized automatically. The representation evolves over time in response to the damage inflicted, but could also be subject to other forms of failure arising from other environmental events."

— J. A. Padget

- Research and build a procedural destruction system
- Generate custom damaged and destroyed appearances
 - Structure-dependent deformation
 - Realistic response to damage type
- Real-time performance necessary

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Procedural Destruction

Context — Sample Capital Ships





U.N.E carrier 'The Arcadia'

MUGE-class cruiser





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Procedural Destruction

Context — Size Comparison



AXE fighter craft vs. MUGE-class cruiser





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Context

Born Ready Games Art Pipeline Procedural Destruction

Existing Approaches

Proposed Approach

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Existing Approaches

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Context

Existing Approaches

Art Swap Material-based

Proposed Approach

Art Swap

- Current implementation in-engine support
- Popular solution, used by many other games
- Low runtime cost

However

- High production cost multiple asset versions
- Visually identical for every instance

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Context

Existing Approaches

Art Swap

Material-based destruction

Approach

Material-based destruction

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Existing Approaches

Art Swap Material-based destruction

Proposed Approach

Proposed Approach

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Integrated Benefits

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Benefits