Message

• The Buffer Framework regains **responsive interaction** on large high resolution displays by novel programming techniques.

• It provides **reusable** and **extensible** interfaces to build applications on.
Agenda

• Introduction & Motivation
• Challenges of Large Displays
• Concept
• Implementation & Results
• Summary & Future Work
Why Large Displays?

[Dietz et al., 2001]

[Magerkurth et al., 2004]

[Cutler et al., 1997]
Interaction is different

[Dedicated Software]

[Bezerianos et al., 2005]
Challenge: Pixel Count

- 1.9
- 2.6
- 5.9
Challenge: Software and Interface Design

Traditional Software

Traditional Interface

06/12/2006 André Miede: Realizing Responsive Interaction for Tabletop Interaction Metaphors
Challenge: Number of Objects

[Hinrichs et al., 2005]
General Idea

Buffer Framework

Buffer Concept (Performance) ⊕ Framework (Software)

Faster Software in Less Time
Buffer Concept: Computer Graphics

property sampling on regular grid

interpolation

fast lookup of values
Buffer Concept: Swarm Intelligence

- single swarm entities
- local data processing
- local awareness
Local Awareness and Processing
Buffers + Swarm Intelligence
Concept Refining

Visualization Objects

Interface Components with Local Buffer Stacks

Global Buffer Stack
Example: Result
Framework Idea

Buffer Framework

Application Code

Input Toolkit

Other Toolkits And Frameworks
Framework Details

Dynamic Link Library (DLL)

Builder Pattern

Composite Pattern

Buffers

Application Code

Toolkit

Renderer
Framework Layers

Base Layer

Buffers

Renderer Layer

OpenGL
DirectX

Content Base Layer

Content Layer
Implementation and Results

- 24 fps
- 100 objects
- 1400 objects
Summary

• The Buffer Framework regains responsive interaction on large high resolution displays by novel programming techniques.

• It provides reusable and extensible interfaces to build applications on.
Future Work

• Extensions
  – New metaphors/ new buffer types
  – 2.5D
• Richer input capabilities
• Wrapper for high-level languages
Thank you for your attention