FlowVR

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SEARIS workshop 08

INRIA GRENOBLE UNIVERSITÉS

Goals

- Middleware for high performance interactive applications

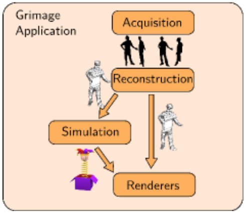
Focus on

- Modularity: hierarchical components
- Clusters, grids

Lecteur Kaffeine
Fichier Affichage Lecteur Liste de lecture Configuration Aide
INRIA
Grimage
at Siggraph 2007 Emerging Technologies

Development chain

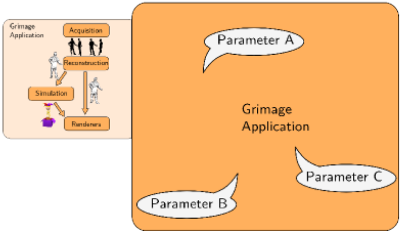
Component design
and assembling



Development chain

Parameters specification

Component design and assembling

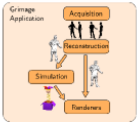


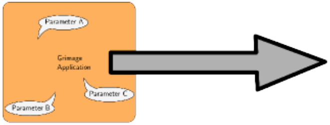
Development chain

Compilation

Component design and assembling

Parameters specification





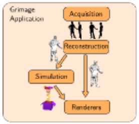
Development chain

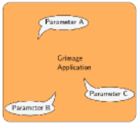
Component design and assembling

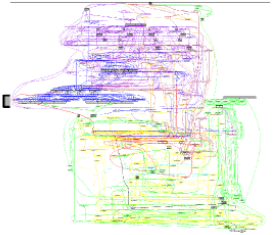
Parameters specification

Compilation

Application description







Development chain

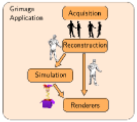
Execution on a cluster

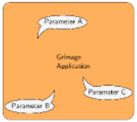
Component design and assembling

Parameters specification

Compilation

Application description





Development chain

Component design and assembling

Parameters specification

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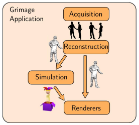
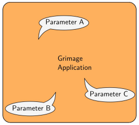
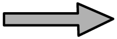
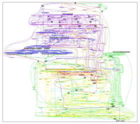
Application description

Execution on a cluster

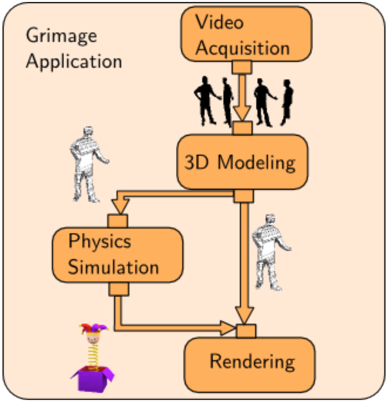




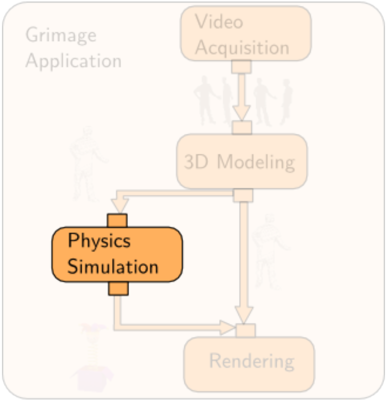




Application Skeleton



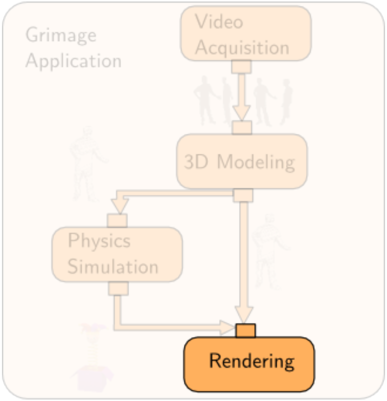
Application Skeleton



Outlines

1. External Libraries Integration: *Physics Simulation*

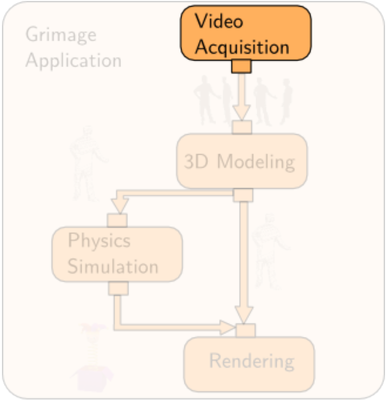
Application Skeleton



Outlines

1. External Libraries Integration: *Physics Simulation*
2. Hierarchical Component: *Rendering*

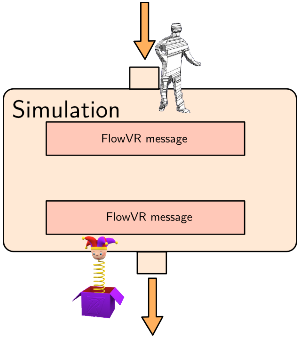
Application Skeleton



Outlines

1. External Libraries Integration: *Physics Simulation*
2. Hierarchical Component: *Rendering*
3. Advanced Hierarchical Component: *Video Acquisition*

External Libraries Integration: *Physics Simulation*

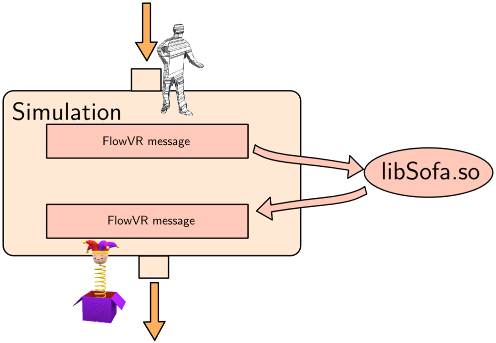


```
while(module->wait())
{
        module->get(portIn, msg);

        compute(msg);

        module->put(portOut, msg);
}
```

External Libraries Integration: *Physics Simulation*



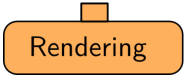
```
while(module->wait())
{
        module->get(portIn, msg);
        wrapper_From_FVR_To_Sofa(msg);
        sofa->compute(msg);
        wrapper_From_Sofa_To_FVR(msg);
        module->put(portOut, msg);
}
```

Coupling with

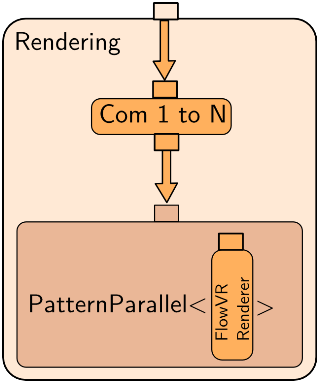
- multi-threaded, CUDA (GPGPU), etc ...

Hierarchical Component: *Rendering*

- High level representation



Hierarchical Component: *Rendering*



- Architecture independant implementation

Hierarchical Component: *Rendering*

```
void Rendering::execute()
{






 }
```

- Architecture independant implementation

Hierarchical Component: *Rendering*

```
void Rendering::execute()
{
  Component* com =
        addObject(Com1ToN
              <Connection, RoutingNode>("com"));
  Component* renderers =
        addObject(PatternParallel
             <FlowVRRenderer>("renderers"));



}
```

- Architecture independant implementation

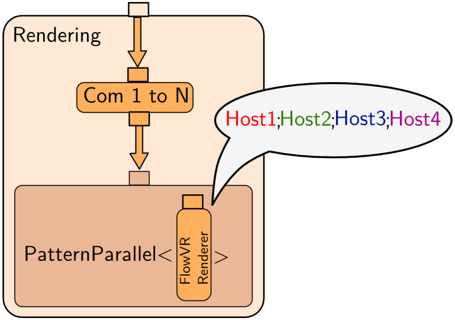
Hierarchical Component: *Rendering*

```
void Rendering::execute()
{
  Component* com =
        addObject(Com1ToN
              <Connection, RoutingNode>("com"));
  Component* renderers =
         addObject(PatternParallel
              <FlowVRRenderer>("renderers"));

  link(*getPort("scenes"), *(com->getPort("in")));
  link(*(com->getPort("out")), *(renderers->getPort("scene")));
}
```

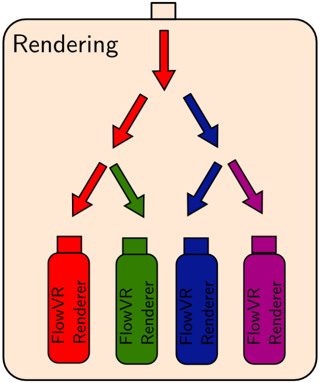
- Architecture independant implementation

Hierarchical Component: *Rendering*



- Hosts list as a parameter

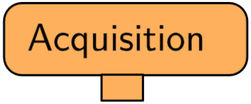
Hierarchical Component: *Rendering*



Host1;Host2;Host3;Host4

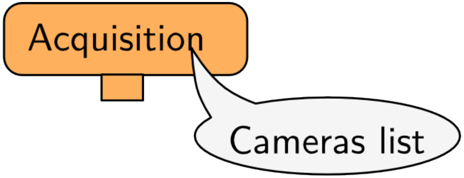
- A 4-tiles display walls implementation with swaplock and datalock.

Complex Hierarchical Component: *Video Acquisition*



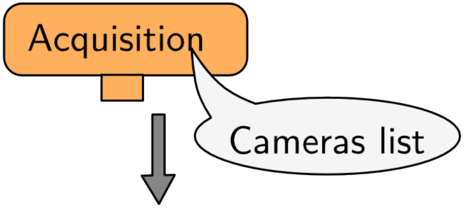
- High level component

Complex Hierarchical Component: *Video Acquisition*



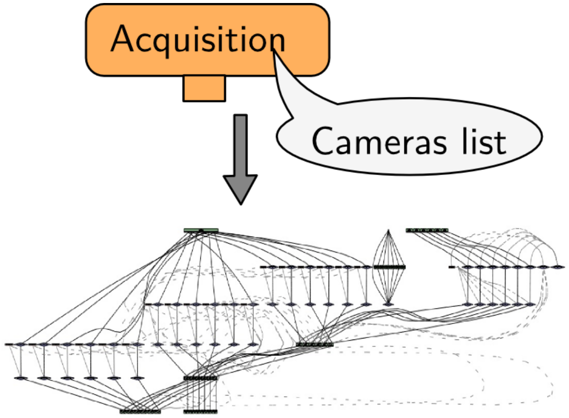
- Specify cameras list

Complex Hierarchical Component: *Video Acquisition*



- Compilation

Complex Hierarchical Component: *Video Acquisition*



- Acquisition component implementation

FlowVR Summary

Components Available

- VTK (visualization toolkit)
- FlowVR-Render (distributed rendering)
- VRPN library (VR devices)
- Sofa (physics simulation)
- Mplayer, 3ds Viewer
- External contributions welcomed!

- Linux, Mac OSX
- March 08: 1.5 released