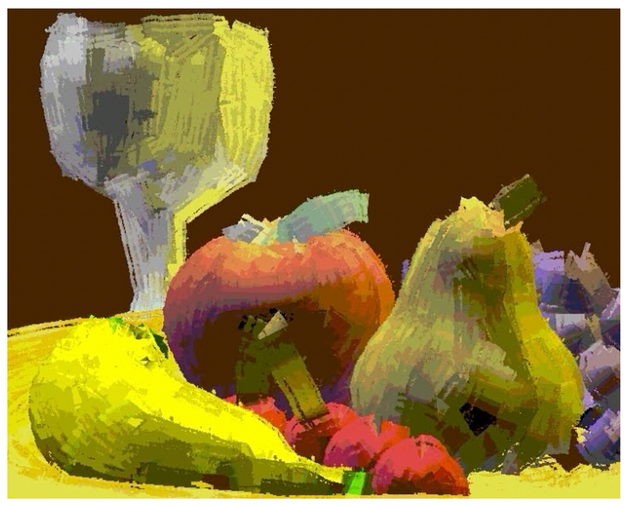
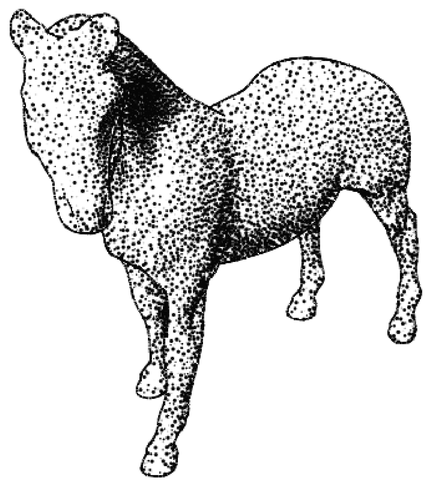
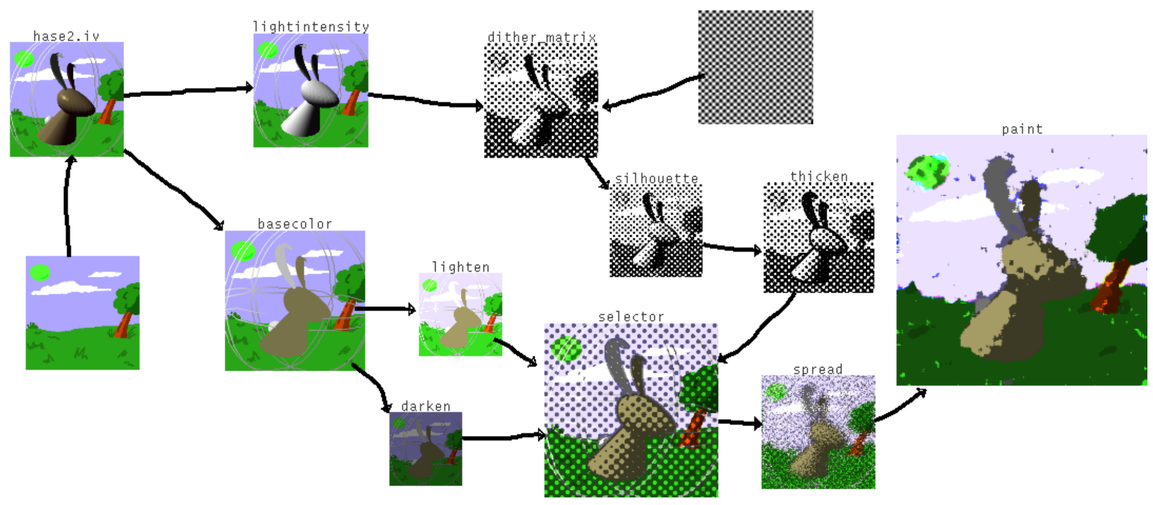
OpenNPAR

A System for Developing, Programming, and Designing Non-Photorealistic Animation and Rendering

Nick Halper, Tobias Isenberg, Felix Ritter,
Bert Freudenberg, Oscar Meruvia, Stefan Schlechtweg, and Thomas Strothotte







Goal

- to create a conceptual framework for non-photorealistic rendering (NPR)
- to allow the creation of NPR algorithms by developers, programmers, and designers using this unifying system
- support many different NPR techniques and allow for various combinations of these

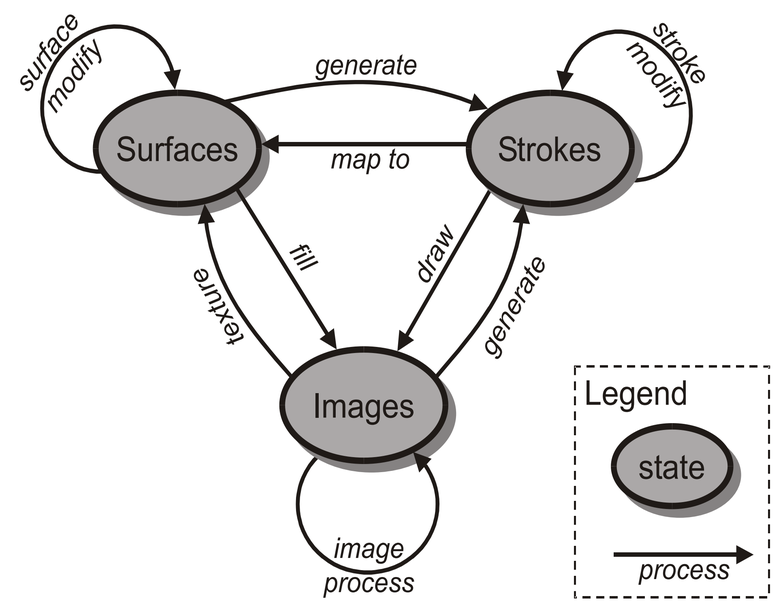
Modular Scene Graph Architecture

- based on Open Inventor scene graph architecture
- using Open Inventor's basic functionality and its VRML based scene descriptions
- extensions through new nodes and elements for NPR algorithms and data
- geometry data structure for local connectivity information: Winged Edge

Classes of Algorithms

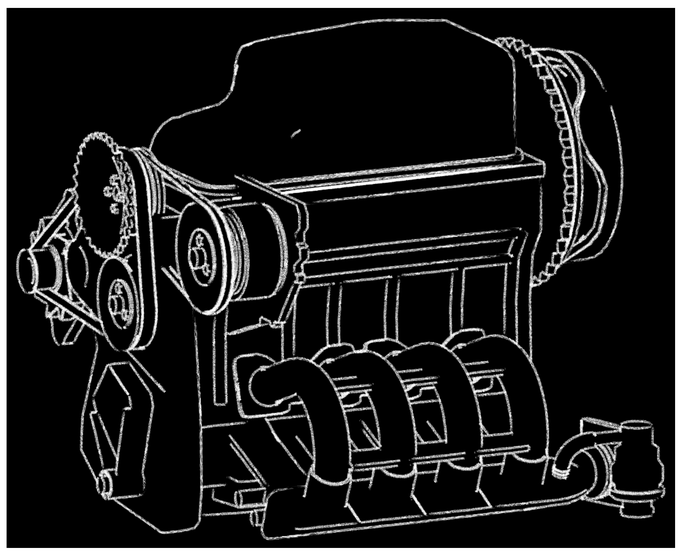
- stroke based methods
- image based methods
- surface based methods
- any combinations of the above

Developer develops modules → elements modules → **OpenNPAR** → modules → **Programmer** uses modules to produce modifiers → modifiers → **Designer** uses modifiers to generate effects → images → **End User** views images



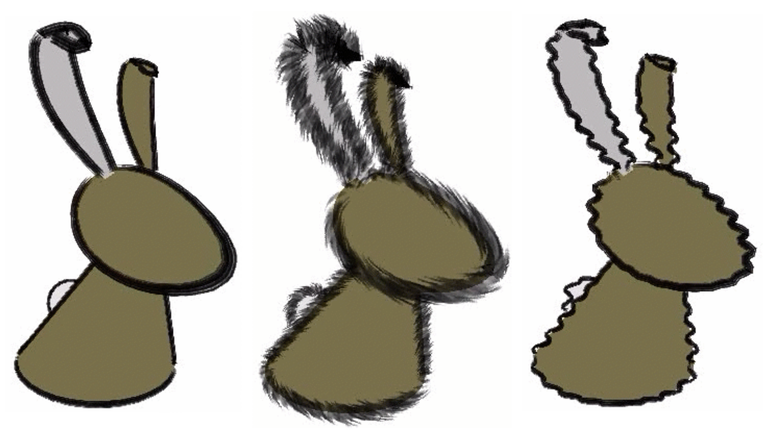
User Classes

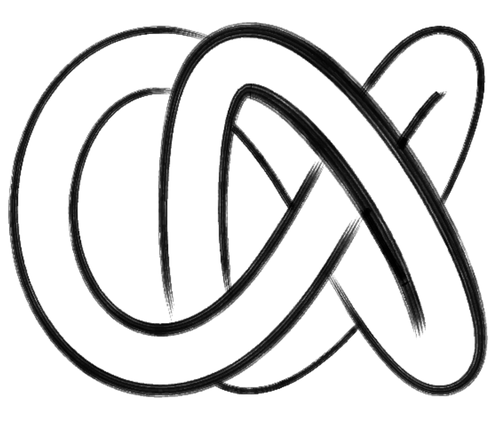
- *developer*: has the scientific knowledge to come up with new algorithms and techniques to produce an effect
- *programmer*: takes these algorithms and turns them into basic building blocks for rendering pipelines
- *designer*: knows how to combine these building blocks and, thus, how to create different rendering pipelines
- *end user*: looks at created renditions or uses applications

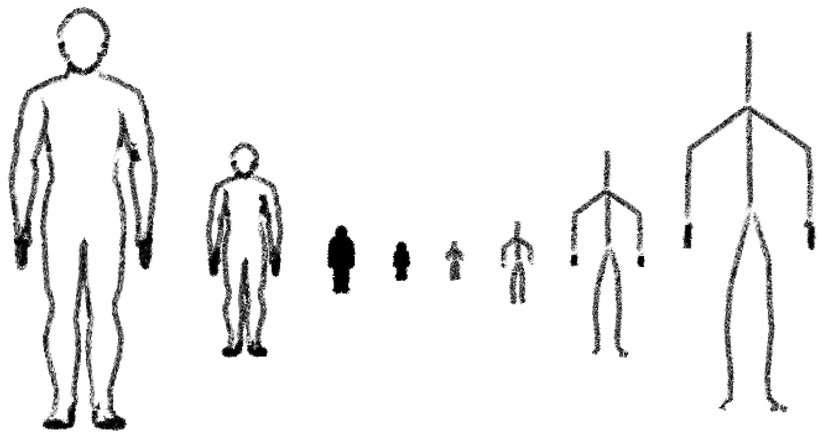


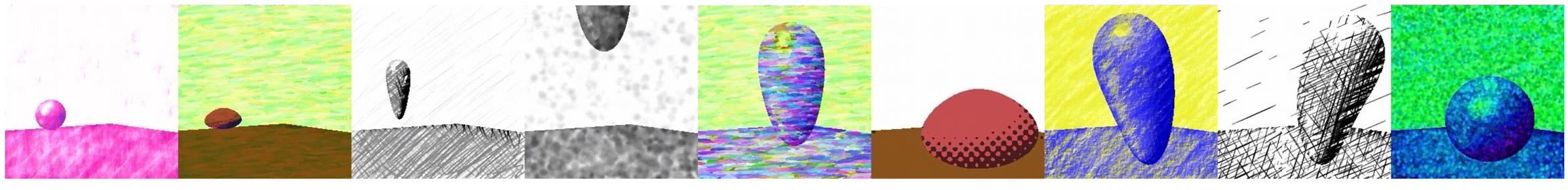
Example Applications

- silhouette rendering
- image modifications
- painting in 3D
- stippling
- real-time techniques
- animation
- designer interaction









WWW: **http://www.opennpar.org/**
Contact:
Nick Halper: nick@opennpar.org
Tobias Isenberg: isenberg@opennpar.org

Department of Simulation and Graphics
Otto-von-Guericke University Magdeburg
Germany