

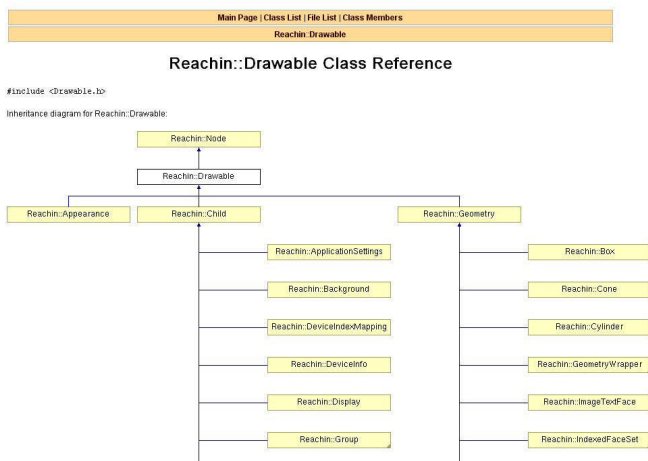
Reachin API

Rapid Development of High Fidelity Haptic Enabled Applications

Reachin API is a modern object oriented development platform for creating real world touch applications with unprecedented fidelity and sense of reality. The API encapsulates and integrates highly sophisticated haptic and graphic rendering capabilities into one easy to use software package.



Reachin API transparently manages the complexity of multi-sensory rendering, freeing the developer to focus on the application itself and the user interaction with the application, i.e. the user interface. The Reachin API lets the developer create haptic applications that open up new quality dimensions of reality and a stunning correlation between what you see and what you can actually feel.



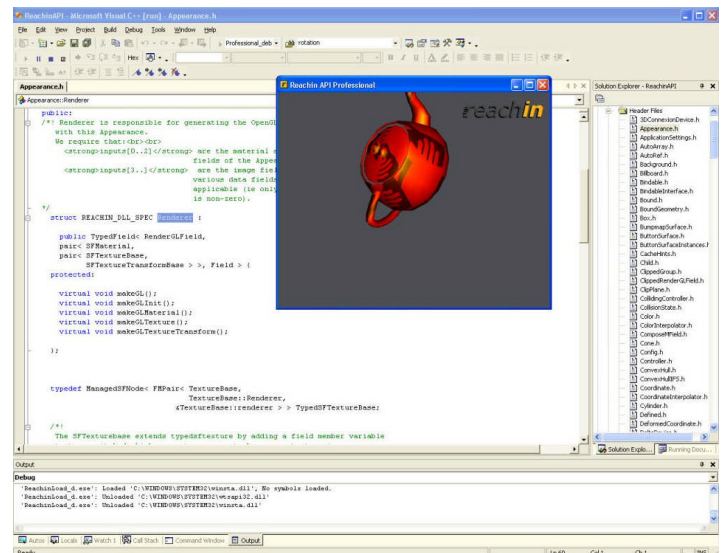
The Reachin API presents an extensive library of nodes, which simply translates your applications into the look and feel of your preference. Shape nodes, surface nodes, simulation and scripting nodes, and control nodes for the various haptic and tracking devices that you intend to use with your application. Simply define the geometric objects, their relationships and assign the attributes such as surface qualities and the Reachin API takes care of the graphics rendering, their appearance, and their interactions.

Despite the inherent complexity of synchronizing the haptic and graphic rendering, the Reachin API encapsulates the technical complexity while providing both high- and low-level access and control to the developer.

Professional vs. Standard

The Reachin API is available in two editions, Professional and Standard. The Professional edition is designed to give the programmer a fully customizable and extendable development framework for building interactive applications with accurate high fidelity. As such, it can be programmed using VRML and Python as well as C++. All the available nodes in the API can be used, inherited and customized to create both new low- and high-level haptic and graphic functionality.

The Standard edition is designed to give the user a solid platform for rapid development of interactive graphic and haptic environments, while providing the same accuracy and fidelity as the Professional edition. Although extensions of the haptic and graphic functionality are unavailable, the Standard edition offers almost all present functionality in the API through an easy and convenient but yet powerful VRML and Python interface.

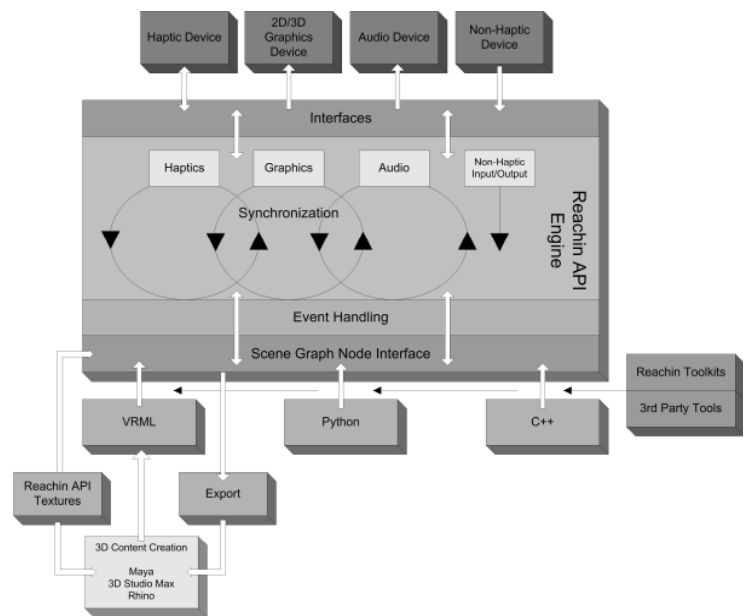


Architecture

Defining an extensive environment of objects and their interaction is a complex task but the Reachin API provides a coherent scheme that enables the developer to grasp and effectively manage the development work. Through a dependency network, Reachin API maps the interaction between objects, dynamics, inputs and responses in a world you can reach into. Developing applications is done by specifying the nodes and the rules that connect them. Reachin API then manages the events that follow from these definitions. A modular and expandable architecture allows the developer to use existing nodes or implement new nodes and customized functionality.

Main Features

- Variable real time haptic loop
- Variable scene graph loop for managing dynamics, collisions, simulations and graphics rendering
- Rapid Application Development using Python scripting or VRML
- Customized and highly optimized development using object oriented technologies and C++ (Professional edition only)
- Haptic force algorithms can be applied to geometries and surfaces
- Rigid body dynamic simulations
- Surface friction and damping
- Proxy layering
- Virtual force rendering for simulating gravity, magnetism, springs etc
- Haptic surface bump maps from arbitrary texture images
- Customize surfaces haptic properties through texture input
- User defined haptic algorithms
- Soft tissue membrane
- Advanced graphics rendering such as vertex and pixel shading
- Advanced 3D Surround Sound
- Support for Microsoft Visual Studio
- Bundled high quality textures
- Easy installation and project setup wizard



Usage

Our customers already have a long history of using the Reachin API for applications in medical simulation, translating finite element calculations into touchable qualities, digital mock-ups, R&D of new human-computer interfaces, mine planning, manufacturing and dentistry. The common factor of all these applications is the need for a new dimension of interaction and realism utilizing high fidelity haptics for sense of touch.

The new Reachin API is even more focused on simplicity and enhanced productivity for the creation of the next generation of high fidelity haptic enabled applications. The combination of high- and low-level functionality, support for Microsoft Visual Studio .NET along with bundled high quality textures and bump maps, provides the necessary tools and framework for successfully developing sophisticated haptic enabled applications.

Reachin Display

Reachin Technologies has a long history and tradition of developing unique combinations of software and hardware for provisioning state-of-the-art haptic enabled solutions. The Reachin Display is our custom designed workstation for a genuine co-located 3D experience. Through an innovative use of a custom designed frame and a semi-transparent mirror, the user is able to see and feel the objects in the same place. Through usage of standard technologies and our architecture, our solutions also support flat panel 3D monitors and solutions from vendors such as Sharp and Siemens.



Requirements

Computer Environment	Microsoft Windows 2000 or XP. Dual CPU or CPU with Hyper Threading or Dual Core Technology. Minimum of 512 MB RAM. Minimum of 80MB of available hard disk space or 4GB if all textures are installed. OpenGL compliant hardware graphics accelerator.
Optional Hardware	Graphics card with 3D stereo support. 3D Shutter glasses. 3D Mouse
Supported Hardware	SensAble, Force Dimension, Immersion, Haption, 3D Connexion, CrystalEye.
Supported Software	Any text editor for developing applications using Python scripting or VRML. Microsoft Visual Studio .NET for C++ development. Any third party API, SDK or Toolkit compliant with Microsoft Visual Studio .NET.
Reachin Technologies	Förmansv. 11, 117 43 Stockholm, Sweden. Phone: +46-8-556 766 00, Mail: sales@reachin.se, Web: www.reachin.se