

Mobile Physics



for
Symbian S60 5th

Physics engines simulate behaviour and motion of objects in a virtual world. With the increased processor resources available on today's PCs, almost every game integrates a more or less advanced physics engine.

Even if the dedicated physics PCI card for the PC, the *PhysX by AGEIA*¹, did not really succeed in reaching the mass market, it increased the awareness that the game experience is greatly enhanced if physics are accurately simulated. Nowadays, NVidia² has bought this company and physics simulations are often calculated directly on the 3D graphics hardware.

The oldest game I can remember that heavily relied on physics simulation was called *The Incredible Machine*³. Released in 1993, players had to place various objects in a 2D plane to solve puzzles. This included placing machines, lights, ropes, balls and much more.

Another game, *Bridge Builder*⁴, has now been around for quite some time (first release in 2000) and also uses physics as the main gameplay element. Players have to build bridges and ensure that they do not break. Later examples like *World of Goo*⁵ follow a similar basic concept, but make the game a lot more accessible by integrating a different scenario and pleasant graphics.

Another possibility for games that mainly rely on physics simulation is represented by *Crayon Physics*⁶. In a pre-defined scenario, players have to move an abstract object (like a circle) from its starting position to a target. This can be done by drawing 2D objects (like other circles that behave like balls, rectangles, or ropes); physical attributes are applied to those. Of course, solving the levels gets very challenging over time.

¹ <http://en.wikipedia.org/wiki/PhysX>

² http://www.nvidia.com/object/nvidia_physx.html

³ http://en.wikipedia.org/wiki/The_Incredible_Machine

⁴ <http://www.bridgebuilder-game.com/>

⁵ <http://www.worldofgoo.com/>

⁶ <http://www.crayonphysics.com/>

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Even if advanced 3D physics like found in *Half Life 2*⁷ would still be too much for today's mobile devices, they are certainly up to the task of running 2D physics engines. A good example is *Numpty Physics*⁸, available for free for the Maemo-platform.

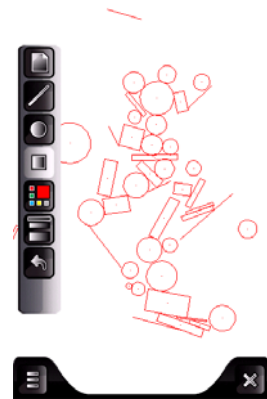
David Berger⁹, a student in the 3rd semester of Mobile Computing in Hagenberg, has now ported the open source 2D physics engine called *Chipmunk*¹⁰ to the S60 platform.

With the help of the *OpenC++ libraries*¹¹, it was possible to run the engine without any serious modifications. As the foundation for the user interface, he used the *Mobile Paint*¹² example from Nokia. All objects that you draw on the screen instantly get physical properties and move according to the current gravity level as well as collisions with other objects.

David's video on YouTube¹³ demonstrates how well the engine works. Unfortunately, there were some problems with regards to the screen update and the TV out when drawing – but as you can see in the video, the engine works totally fluid and fast. Now, I'm looking forward to seeing the first physics-based games on the S60 platform!

More information, the download of the demo plus source code is available on David's website¹⁴ as well as on the project website on [symbianresources.com](http://www.symbianresources.com)¹⁵.

- Andreas Jakl
andreas.jakl@fh-hagenberg.at



⁷ <http://orange.half-life2.com/>

⁸ <http://numptyphysics.garage.maemo.org/>

⁹ david.berger@fh-hagenberg.at

¹⁰ <http://wiki.slembcke.net/main/published/Chipmunk>

¹¹ http://www.forum.nokia.com/Resources_and_Information/Explore/Runtime_Platforms/Open_C_and_C++/

¹² http://www.forum.nokia.com/info/sw.nokia.com/id/f63ebb0a-3cee-4a02-b4f6-6c9090bfdde9/S60_5th_Edition_Mobile_Paint_Example.html

¹³ <http://www.youtube.com/watch?v=xxNDmP0M5jg>

¹⁴ <http://forum.fantasyhaze.com/index.php?page=Thread&postID=2854>

¹⁵ <http://www.symbianresources.com/projects/chipmunks60.php>