



OpenNICTA Open Source Software Information and Video Transcript

Software name: Castalia

Software description: A simulator for Wireless Sensor Networks (WSN), Body Area Networks (BAN), and generally networks of low-power embedded devices. It offers an accurate channel model based on empirical measurements that supports mobility and temporal variability. It also offers many features that are often neglected in network-level simulation, such as realistic radio modelling and access, node clock drift, and physical process modelling. Castalia is an expandable, modular and user-friendly simulator with a growing research community.

Project description: Castalia is a generic tool that spans projects. Its creation started within the now completed Macro-Programming for Wireless Sensor Networks Project and continues within the Human Performance Improvement Project with a focus on BAN.

Link to Software: <http://castalia.npc.nicta.com.au/>

Video Transcript

Interview with Athanassios Boulis

Tell us about yourself and the research you are currently working on

Athanassios: I am a researcher here at NICTA since September 2004. I belong in the Networked Systems Team. My experience is with wireless networks with low-power devices – a classic example being the wireless sensor networks. Right now, the project I'm involved with is called Human Performance Improvement, and we are trying to develop a set of technologies for Body Area Networks.

Tell us about your open source software

Athanassios: Castalia is a simulator – it's a simulator for wireless sensor networks, and networks of similar low-power devices. It came out of our need to validate some of our protocols and the existing simulators out there weren't up to the challenge, so we had to step in and build our own software. Castalia offers some very nice advantages compared to other simulators out there – most important of them being the most accurate modelling of the radio and the wireless channel for those low-power devices. It also integrates very well the physical process modelling and sensing devices modelling side of sensor networks with the communications side.

Why open source?

Athanassios: I think there are two main reasons for that. The first reason being that simulators are the main tools to validate what we, as network engineers and scientists, propose, the solutions we propose. So, if we are having a tool that nobody uses or nobody knows about, then our proposals won't carry much weight. Since all the other simulators out there were already open source, if we

provide a solution that was closed source, proprietary, it wouldn't be adopted by anyone else and nobody else would know what this tool is. The second reason is that apart from the community of users we wanted to develop, we wanted to develop a community of developers. Building simulators, especially refining a simulator is a huge task, so we wanted to get all the help we could get. And that has started happening already - we have people contributing to different parts of the Castalia simulator and enhancing it. That's very encouraging. Having said that, I have to point out that the way we structured this openness is in a way so individual contributions or contributions from different companies are very clearly separated and very clear IP rights, so yes it is all open source, but we know which module belongs to who.