Overview of topics for internships, thesis and PhD			
Internship/Thesis/PhD	**Topic**	**Submitted by**	**Team**
Internship	Design and develop a home automation demo based on the Technicolor Internet Service Gateway SDK (Software Development Kit), demonstrating the capabilities in a creative way (C and Java skills required)	Davy Jacops	
Internship	Write & extend test automation scripts in Jenkins & virtualization environment to test the Technicolor Internet Service Gateway in a fully automated way	Davy Jacops	
Internship	**Design and implementation of an XMPP plugin for Jenkins, which allows fine-grained and scalable triggering of jobs:** XMPP is an XML-based chat protocol, which can be used to pass along information between systems. The build farm is already capable to send all kinds of information over XMPP (e.g. when a label is submitted on a project, when a baseline is created, when a build is ready, …). The idea is to implement a Jenkins XMPP plugin, which can receive and parse XMPP messages, and take action based on the content of the XMPP messages. This would allow much more flexibility for job triggering than we have today, and allow us to use computing resources more optimal.	Frank Vanderhallen	SOA
Internship	**Design and implementation of a Jenkins plugin for device management**: We use Jenkins for testing against target devices (DSL gateways), but we are lacking a system for device management. Device management implies keeping available devices in a database, and provide an API to search for available devices with a particular firmware installed, claim devices and free devices.	Frank Vanderhallen	SOA
Internship	**Extend Jenkins with automatic dependency tracking, to avoid unnecessary compilations and test jobs:** We use Jenkins for Continuous Integration, which means that for every change made in a project, compilation jobs and automatic tests are invoked. Currently, each change triggers all jobs. The assignment is to make use of the dependency tracking functionality that is foreseen in the make system, and only start the relevant jobs in Jenkins which have a dependency on the change.	Frank Vanderhallen	SOA
Internship	**Investigate how Jenkins job management can be improved, and implement the suggested improvement(s):** Job management in Jenkins (creation of new jobs, cloning of existing jobs to another project, deleting of obsolete jobs, …) is only supported on a job-by-job basis. Because we have a large amount of jobs to manage, it is not feasible to do this job-by-job. We have already implemented some scripts to manipulate the job configuration of Jenkins on the file system, but there is a lot of room for improvement. This assignment allows the candidate to build a lot of knowledge about Jenkins, and requires a lot of creativity.	Frank Vanderhallen	SOA
Thesis / Internships	**Wi-Fi interference mitigation**: Wireless are nowadays dominated by interference rather than attenuation from the environment. Technicolor is working on mitigation methods (e.g. a better automatic channel selection method) but lacks the manpower to execute the required tests / studies in order to get crucial information that can drive the interference handling. More specific there an immediate need to start investigating effects such as: - How does a network react on in-band Wi-Fi or non-Wi-Fi interference (effects are typically throughput, Link Loss, PER increasing …)? - How does a network react on out-of-band Wi-Fi or non-Wi-Fi interference? o For 2,4GHz this means the usage of overlapping channels o For 5GHz this means co-channel interference or 40MHz overlap interference Many papers have been written on the matter, though none of them addresses the real issue at hand and are of no practical value to companies such as Technicolor that is involved in actually building products What can the outcome be? - A paper describing real world effects of interference - Guidelines on how interference can be: o Detected by SW/HW o Mitigated - Direct input for the Wi-Fi team on how to modify the current interference mitigation strategy.	Koen Van Oost	Wireless LAN
Thesis / Internships	**Wi-Fi Radiated performance measurement strategy**: Today the Wi-Fi team has been working a lot on the conducted aspect of the WTP (Wireless Test Program). The radiated part is not so straightforward as there is huge variation on the test results due to the fact that parameters such as the environment and actual test spot are not controllable (a DUT is never being placed in the exactly the same way twice, idem for the remote side (client)). The goal is not to perform exact measurements, but trend line analysis. This can be typically done either in the office for 5GHz and in the football cantina (a few miles down the road of the Edegem office) for both 2,4 and 5GHz. The target is to: - Develop a measurement methodology based on “average RF” measurements e.g. via a rotation table - Study path losses on defined test spots and try to predict “expected” throughput at the test spots, finally correlate measurement with prediction	Koen Van Oost	Wireless LAN
Thesis / Internships	**Development of Wi-Fi analysis application on a PC**: Wi-Fi analysis is today cumbersome for non Wi-Fi experts. - There is a lack of understanding what the TCO / statistics parameters mean - There only either CLI or atomic data modeling available without an easy front end to query the info Technicolor is working out ideas to get info out of the gateways and tries to indicate quality via remote applications. What is lacking and virtually impossible on remote devices is an “Expert debugging tool”. The reason is simple, not all of the info can be made available in a data model hence remote applications cannot see the information. A software developer skilled in Wi-Fi (or DSP, telecom, …) could develop a PC application (on Linux, Windows, MAC, android …) which would essentially present a pseudo real time GUI that displays all analytical data that can be pulled out of the Wi-Fi driver. Depending how advanced the skills of the developer are, fully fledged trace dumps or log files can be built and saved, providing excellent debug information to Technicolor’s CTS personnel. Or a console could be foreseen to alter the Wi-Fi configuration and then the tool could show the impact of the changes via the GUI. The tool can also apply data analysis methods in order to predict link quality, interference … The possibilities are limitless. The tool could communicate via telnet or ssh with the gateway.	Koen Van Oost	Wireless LAN
Thesis / Internships	**Wi-Fi coverage improvement through high power TX**: Today, a lot of US companies seem to believe that Wi-Fi High TX power is “the” solution to coverage. Both in 2,4GHz and in 5GHz. Technicolor did some measurements to contradict this but a thorough analysis (based on measurements and an analytical study) could wipe such statements of the table once and for all hence Technicolor can sit around the table with its customers and demonstrate the sense and sensibility of the high power WLAN story. The end goal is to know where the boundaries of the optimization are and create some form of advice towards HW / SW / product management as to what would be the ideal TX power setting (in combination with RX sensitivity, but this will become obvious during the analysis) and demonstrate it practically if possible. The analysis requires to benchmark our gateways versus known client devices (iphones, ipads, android tablets, laptops) in order to see how the commodity of Wi-Fi devices is performing vs. our gateway and how we could optimize	Koen Van Oost	Wireless LAN