ÍNDICE

1. Introduction

1.1. Object

The object of the present document is presenting an analysis of the integration between subversion (control version mananer) and Altium (schematics and PCB design program). Experiences of its use over the last years will be exposed, as well as suggestions for improvements.

1.2. Scope

During the analysis of requirements for the hardware-software codesign done inside the TWINS project, ZIV has detected that one of the main problems in its design process was the lack of integration of hardware and software versioning control.

While the revision control of software source code was done using MKS (or in the lately subversion), no tool was used for hardware schematics and PCB version controlling; just the storing of files in directories with different release names, and the assignment of a different part number. The interrelation between software and hardware was done in a product using the estructures of Baan.

2. Versioning of hardware schematics and PCB

2.1. Tortoise SVN

The first approach, was to consider that the files produced by a hardware design tool (such as Orcad, Cadstar, Altium...) could be considered as other files, and could be managed by a common subversion client. As such, and taking into account that the hardware design tools are usually developed for Windows, we implemented Tortoise SVN as the subversion client for hardware designers.

The approach was quite correct, and we found that although some of the features of suversion (such as diff or merge) had not much sense with hardware designs, at least we obtained a way to store the different releases of the schematics and PCBs joined to log information about the causes of changes. Last version of the schematics were always ready to be used, and never forgotten in the PC of a hardware designer.

The main problems of the Tortoise SVN approach were two:

- The versioning tool was not integrated with the hardware design tools.
- Tortoise SVN support for Windows Vista had some problems.

2.2. Altium

During the development of TWINS (but with no relation to this project), a "new" hardware design tool was tested in ZIV. Its name was Altium.

When analysing the features of this new tool, it was found that it had methods to connect to a subversion client, so that the revisioning was done within Altium.

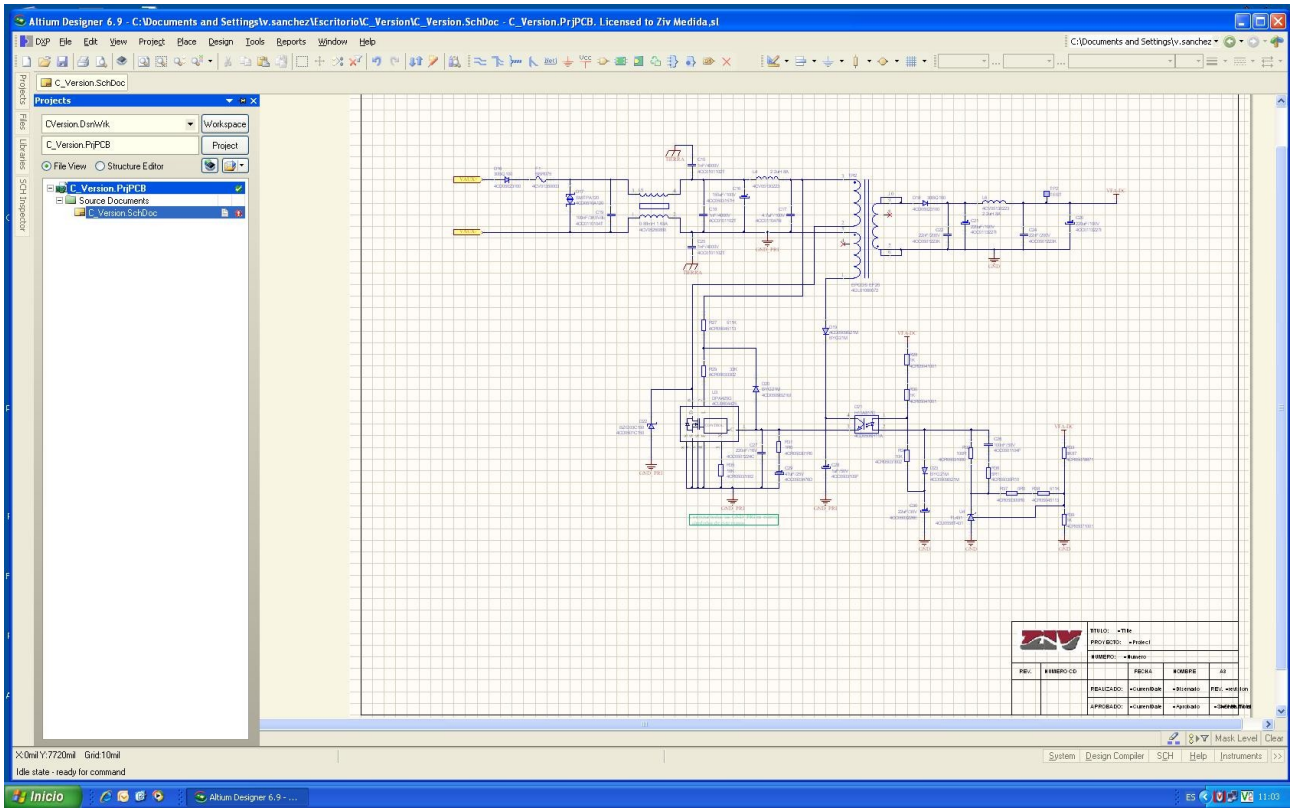
Once installed the subversion command client offered by Tigris, Altium was configured to use it. Using this client, we were capable of creating a subversion repository using the method "file://" (svnadmin is also added to Altium), and manage this repository.

The main problem was that the software svn repositories are not stored in a Samba capable machine so that could not be accessed by Altium (when trying to use http:// or svn+ssh methods, a problem with the passwords were reported, but there was no way to select the user/password).

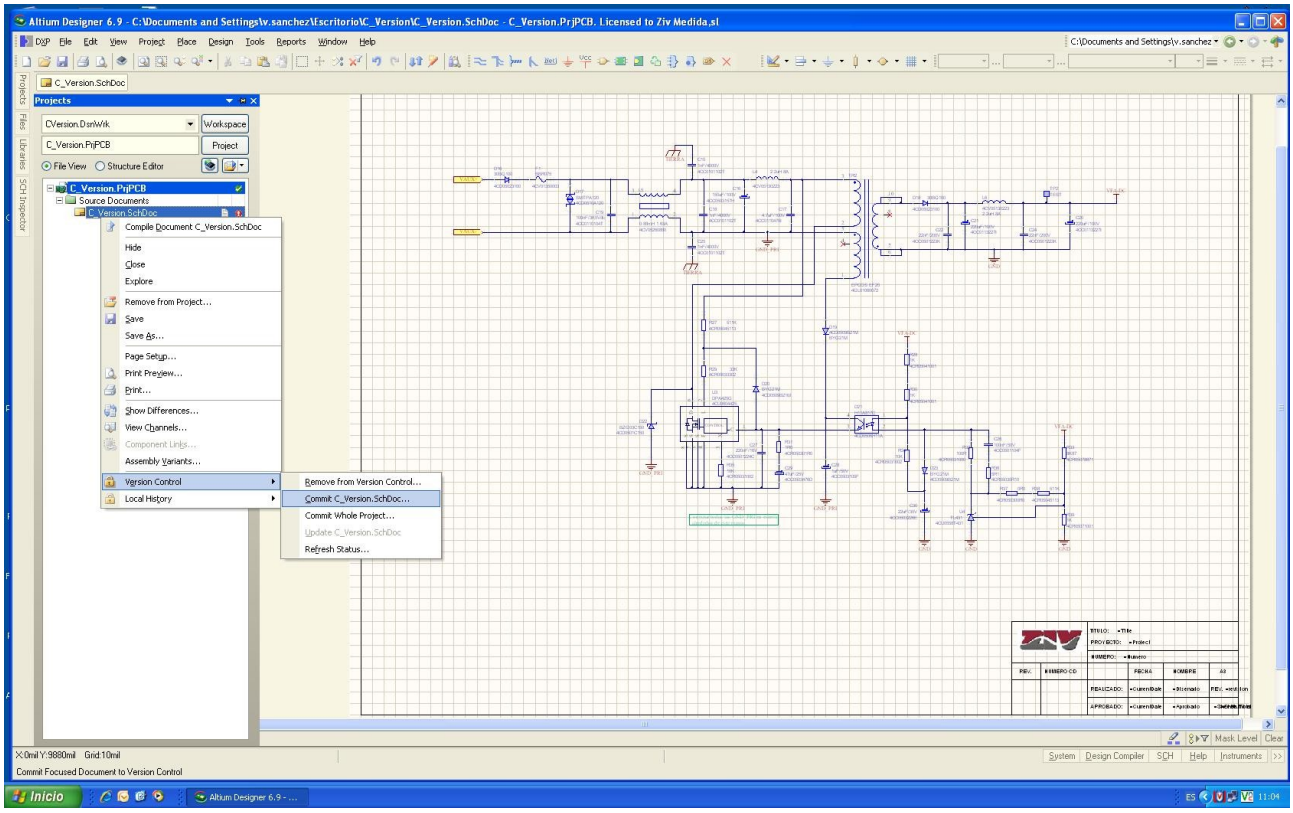
Checking this problem, we finally found that Altium could aso be joined with another subversion client (CollabNetSubversion). Using this client (it is not authomatically detected by Altium so it has to be manually selected), the hardware designers are capable of accessing the same repositories as the software designers (they cannot create the repositories, but we consider it a minor problem at the moment).

So Altium+CollabNetSuversion allows to:

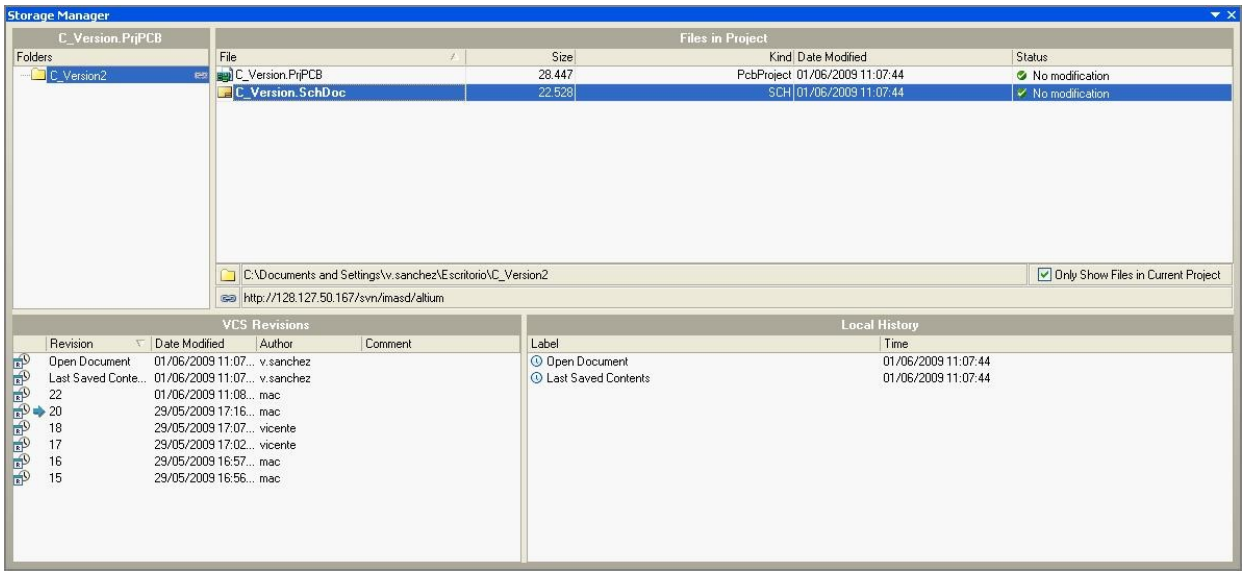
- detect local modifications:



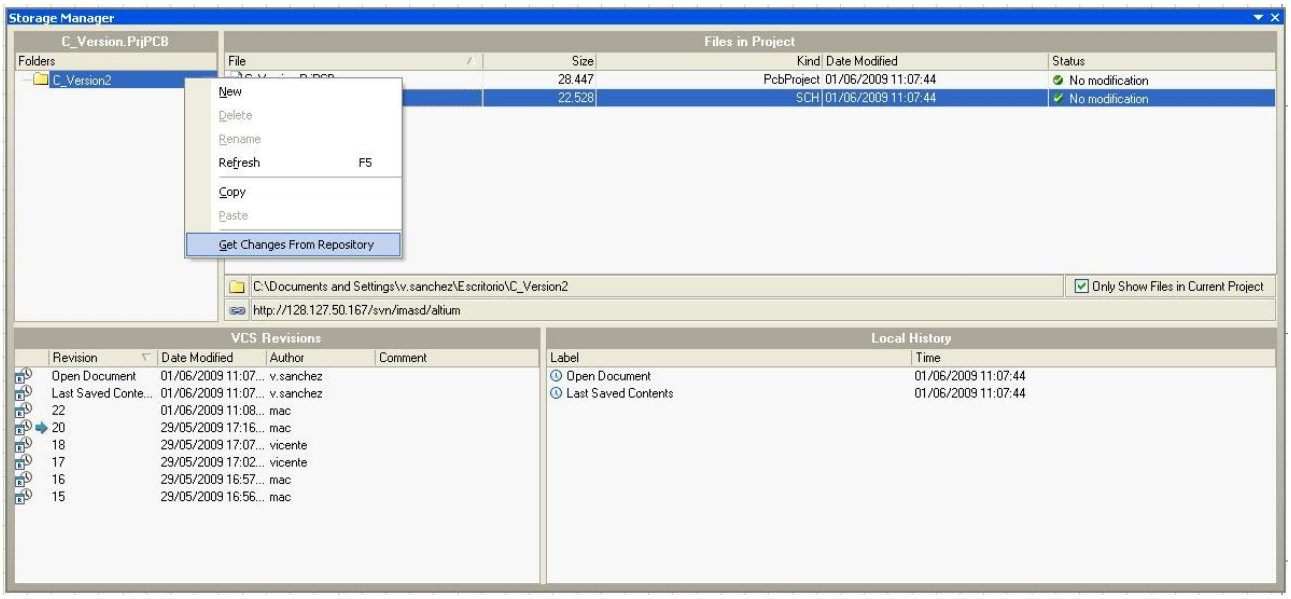
- commit individual files or the whole project:



- detect that the files are no updated with the ones in the repository:



- or update the files to the current state in the repository:



3. Connection of HW and SW

Once we were able to subvesioning hardware designs, we faced the problem of integrating hardware and software revisioning.

The simple approach is to create a single project for all designers and mix hardware and software files. However, some hardware cards are reused for different software designs, or different softwares can be loaded in the same cards. The single project approach was not the correct one.

Subversion came again to our rescue. SVN allows to modify the property svn:externals of a directory so that a path to another repository (setting also the number of the revision) is included. Using this method, we can add a hardware repository as part of the simple software repository. The way of joining revisions is to control which revision of the hardware project is considered as current (closed) in a revision of the software code.

4. Revision register

Revision	Modification	Author	Rev.	Aprov.
V1.0	Original version	MAC	MAC	