A Project Environment for ASIC Design Teams

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ASIC Designers Embarking on a New Team Project ... 
... Does This Sound Familiar to You?

Which Cadence version are we using for our new team project?

Er ... I don’t know.

Same as usual, I guess: 5.1.41. Not sure about the USR, though. Let me check my init script ...

6.1.3 or 6.1.4? Can I have a copy of your .cshrc and .cdsinit?

Hey guys, didn’t you read yesterday’s e-mail from our team leader? We will be using IC6.1 from now on.
What? Two days before tape-out and without prior notice? All my layouts are broken! I’m going to kill this guy ...

From: edaadmin@company.org
To: icdesigners@company.org
Subject: Design kit update

Hi everybody:
Please note that the CoolFoundry Process Design Kit has been updated to Version 2.2 this morning. V2.2 provides improved device models and bugfixes for Pcells and DRC/LVS runsets ...
IC Project Configuration Management with IMMS eda_tools

Project home directory
/home/projects/team1/ic2011a

Unified workspace structure
./cds ./doc ./env ./users ...

Access control
jdoe msmith obrown tbone

Simple login procedure
eda_start -d ic2011a

Tool packages and versions
Cadence IC 6.1.4.500.10,
MMSIM 7.2.0 ISR15, Assura 4.1.0 USR2,
Synopsys C-2009.06-SP1, ...

Vendor/company/project/user-specific
.cshrc .cdsinit
cds.lib cf130.conf...

Interactive project setup
eda_setup

Design kit version

IP libraries

Project-specific, frozen kit version
/home/.zfs/snapshot/2011-05-01/coolfoundry/cf130

Library packages and versions
/home/iplibs/adclib/v1/cds.lib
IMMS eda_tools: Main Features

- Simple setup and consistency management of analog/mixed-signal IC design project environments
  - EDA tool sets, design kits, libraries, workspaces
  - Hierarchical tool-kit/library configuration on vendor/corporate/project/user level
  - Local projects (single user) and team projects
- Fast and user-friendly project login for team members
  - Design environment ready to use with a single login command
- Supports concurrent design projects
  - Local HOME directories for project users → no potentially conflicting tool configuration files in user’s HOME directory (.cdsinit, cds.lib, ...)
- Supports multiple EDA vendors and foundries
- OS and user-shell independent (tested on Linux and Solaris)
Implementation

- Shell scripts (ksh) for project setup and user login
  - eda_setup
  - eda_start –d <project>
- Tool set management based on “Environment Modules”
  - Source: http://modules.sourceforge.net
- Basic access control via Unix groups
- Design-kit freeze using ZFS file system snapshots
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Run `eda_start` to view project list

Select your design
That’s all. The project environment has been set up automatically for you. You are now ready to start **virtuoso**
Project Setup with **eda_setup** (1)

1. Run **eda_setup**
2. Choose „new project“ or „edit project“
Choose project type: private (in your HOME directory) or team project
Give your project a unique name
Project Setup with `eda_setup (4)`

Add a description for your project
Project Setup with eda_setup (5)

Select Cadence generation
Project Setup with `eda_setup` (6)

Select foundry process design kit
Optional (foundry-dependent): select process details
Project Setup with **eda_setup** (8)

Choose EDA tool sets (modules)
Project Setup with **eda_setup** (9)

Check configuration and create design workspace
Project Setup with `eda_setup` (10)

You are done! Team members may now log in with `eda_start`.
Conclusions

- We presented a simple solution for managing EDA environments for analog/mixed-signal IC design projects.
- The IMMS eda_tools make life simpler for
  - Project managers, training course instructors → easy setup and consistent environment for entire team
  - Experienced designers → quick and safe access to concurrent projects
  - Novice designers, students, training course participants, ... → no need to worry about EDA setup
- The IMMS eda_tools are available at no cost for universities and non-profit research organizations → contact us!
Thank you for your attention.

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