Making Design Reuse Work

Ranjit Adhikary
ClioSoft – a brief introduction

- Founded in 1997. Headquartered in Fremont, CA
- Over 150+ customers ...

- Provides software for collaborative design release and derivate management & IP Management
- Integrated with tools from Cadence, Synopsys, Mentor Graphics & Agilent technologies

Mission: Improve productivity of design teams
Challenges faced by SoC designers

- Shrinking time-to-market window
  - Changing consumer demands
  - Increased competition

- Increasing SoC Complexity
  - Digital convergence; more and more IPs being integrated on a single chip.
  - Increased use of analog designs
  - Shrinking process technology

- Increase designer productivity to keep pace with Moores law
  - Integrating more and more functionality on a chip has always existed as a trend
- Hire more designers across geographical boundaries
- Move from ad hoc block reuse to reusing aggregates of IP blocks and a integration platform
  - Helps reuse best architectures and design approaches
  - Reduces design effort and risk
  - Improves time to market
- Improved design flow methodologies.
  - Work with EDA vendors
Remote design sites

- Designers in different sites must communicate & collaborate closely.
- Large amounts of data must be synchronized between the groups and individuals efficiently & accurately.
- Release and derivative management needs to be managed.
- Track changes & keep backup revisions
IP Reuse
- Ensuring functional correctness of the IP
- Performance - what if the final timing is not satisfied due to the IP
- Keeping track of the bug fixes and new updates to the IP’s being integrated.
- Keeping track of the IP history when IP is partly modified
- Version Control
- Licensing issues
A ‘data bus’ to streamline the design process and helps collaboration

- Makes data synchronization & team collaboration efficient and predictable whether team members are in the same building or on the other side of the globe

- Integrated with version control, issue tracking & provides release & derivative management

- Better control and visibility – Improved predictability
Traditional definition of IP
Need to move beyond traditional definition of IP

Must include scripts, methodologies
- Scripts for stitching IO Fabric
- Regression scripts
- Synthesis scripts
- Shareable documentation

Enables designers to leverage off existing work instead of reinventing the wheel
Motivating designers to share

- Need to incentivize the designers to share their work
  - Make designs reusable where possible
  - Share ideas, scripts, documentation, work-around for known flow issues

- Carrot or the stick?
  - Recognition (fame) is incentive to share knowledge/IP
  - Corporate mandate
Provide a forum for sharing the IP’s.

Enable designers to

- Follow IP’s
- Read/Review
- Reference without modification
- Download and modify

Publish document or IP and share with

- Selected groups
- Members of selected projects or IP
- All
Follow IP, Project, person or group
News feed with updates from all followed sources
Rating/like system to help grade quality
To increasing design reuse within a company

- Need to extend the definition of an IP
- Motivate users to collaborate
- Ability to leverage of databases
- Move from a IP centric to a user centric model