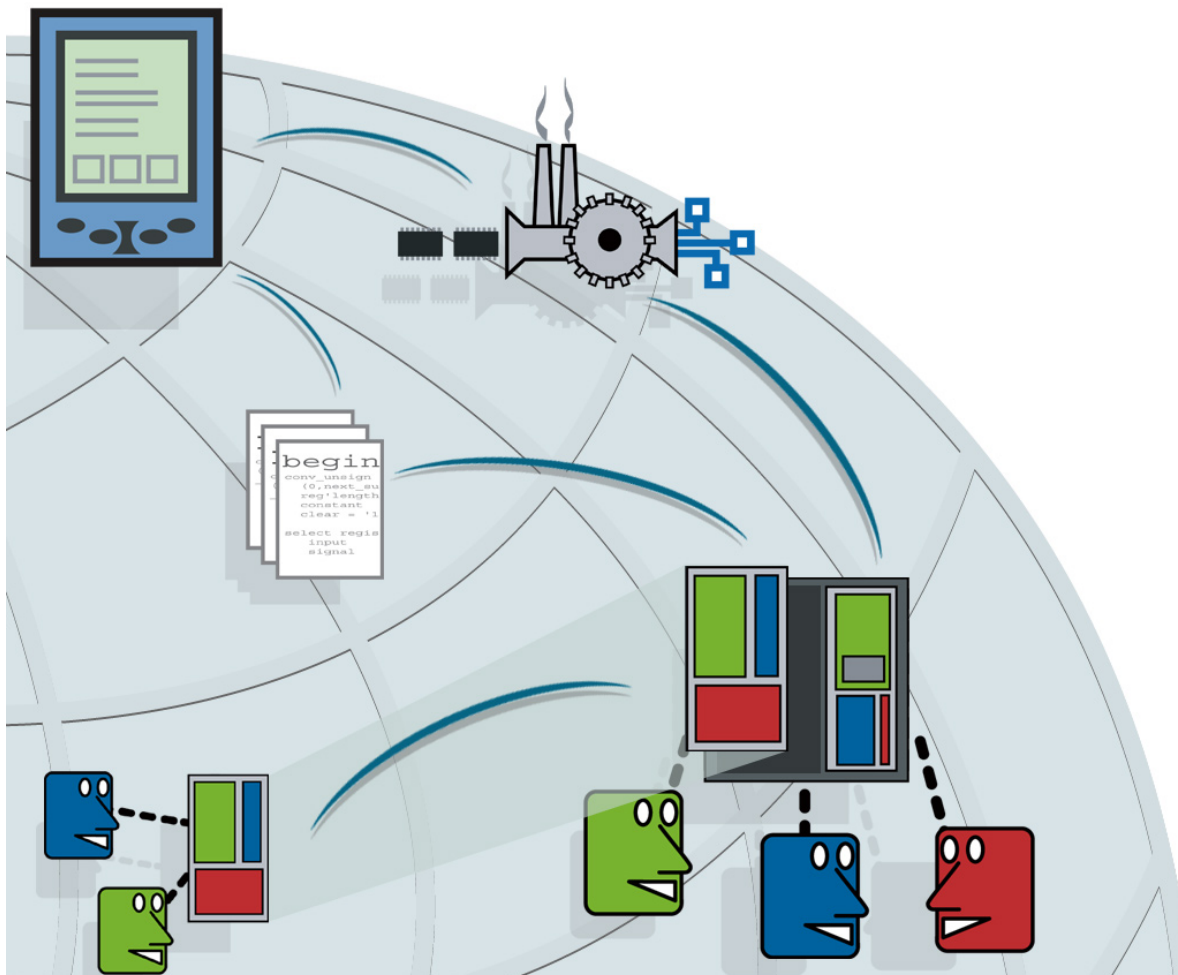


Synchronicity integration to the Milkyway database

17 October, 2003



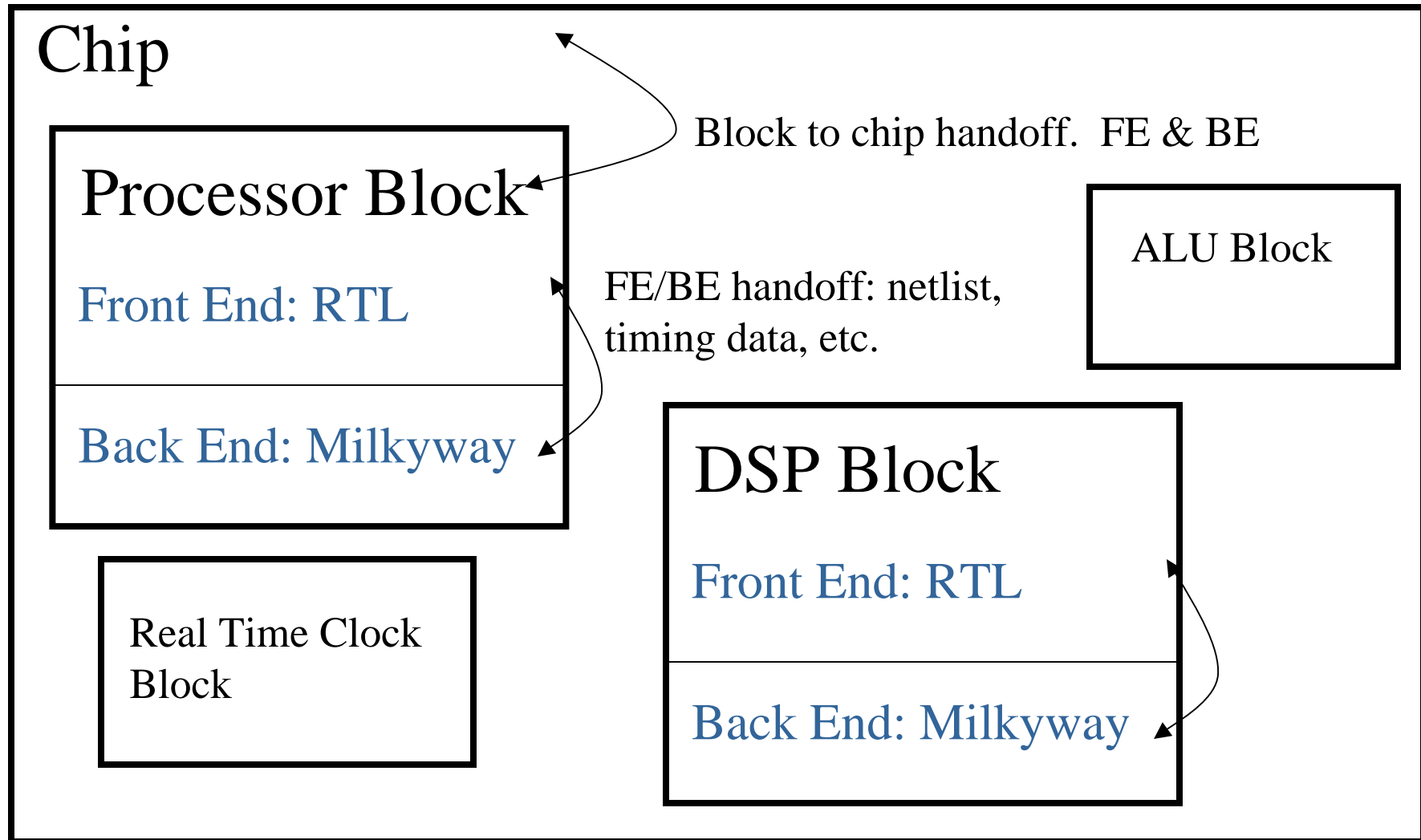
Agenda

- Key goals of our integration
- Technical issues
- How some are being addressed and others are unresolved
- Results so far
- What we hope to do going forward

Goals

- Provide the industry with a solution for managing Milkyway data
- This includes:
 - Revision control at the cell-view or library level
 - Unified configuration management across RTL and Milkyway data (front to back CM)
 - Multi-site contribution to design of Milkyway libraries
 - Multi-site distribution of teams, i.e.
 - Contributors to a library on different sites
 - FE on different site than BE
 - Each block on a different site than chip integration, etc.
 - Limited support for inter-view dependency management
 - Environment that melts into Milkyway forms and menus
 - Tie MW data into our other tools for project tracking and IP Reuse

Digital chip design hand off points



Technical issues

- Milkyway's own versioning system...
 - Exists but not designed for multi-user or multi-site collaboration
 - Version numbers can change as files move between sites
- Milkyway database's file structure...
 - Reveals some but not all of the design data structure
 - A set of multiple files is used to implement any one Cell
 - Looking only at the file system, the exact file set is not always obvious.*
 - The “catalog” file ('lib') for library is a binary file that needs to track which cells are currently in the library *especially after file system manipulations.*
 - Therefore it is tricky to copy selected cells / versions to or from a library
- Dealing with the catalog ('lib') file
 - We can manipulate the cell and attachment files...
 - But... then we need to let 'lib' know about the changes
 - Original rebuild 'lib' solution is time consuming and does not *currently* work with cells where the files are read-only
- Need to put forms/menus into Milkyway tools

Resolution to technical issues

- Initial MAP-in membership provided us:
 - Some minimal docs on how to create forms/menus
 - C API to enable us to overcome some of the issues
 - Forum for asking technical questions
- Synopsys C API extended to support
 - Enabled us to overcome more of the issues
- Synopsys provided some data sets to us
 - Very helpful to ensure our system is working
- Synopsys provided access to a lab
 - Access to real tools and tool expert VERY helpful
- Lots and lots of coding/testing/debugging/coding
 - To compensate for intermingled libraries and cells

Results so far

- A set of extensions to the Library and Cell menus
 - Check in/out of library or cell by view type
 - Cancel check out of library or cell by view type
 - View revision control history of a cell
- New text interface to DesignSync commands through scheme in Milkyway-based tools
- Extensions to the DesignSync kernel to handle Milkyway data up through fetching of writable copies.
- Tested with an netlist through APR flow (Astro)

Example form: Cell Check In

Cell Check In Options

Library:
/home/takeda/mde_lab/lab3/defout_lib

Cell:
route

All views CEL NETL

Unlocked data
 Locked data

Allow check in of new items
 Force check in
 Perform dry run only
 Check dependences

Exclude (comma separated list):

Comment:

OK Cancel

Remaining issues

- Current lack of ability to make a library aware of READ-ONLY cells precludes some very popular use models
 - Synopsys has committed to address this issue
- Updates to the C-API linkable library (libMDA.a)
 - Some fixes required to new C-API calls, discovered in SURF lab testing
 - Maybe some additional new functions
 - Release on all platforms (only have SUN.32 currently)
 - When will this be available? When will it be shippable?
- Additional Testing with Real Milkyway Flows
 - Need a good script to test the Jupiter flow
 - Need a good way to validate Astro P&R done w/ & w/o us in the middle are equivalent – i.e. ensure did we do not "break" anything
- Scheme / GUI Integration
 - Ability from Scheme to ask what cells are opened.
 - Our menu extensions disappear when user changes Tools option
 - Our menu extensions move menus to the last row
 - Access to Synopsys' Open Library widget
 - visually indicates Unix directories that are Milkyway libraries

What we hope to do going forward

- Extensively test the integration for corner cases
 - Fix bugs and rework integration as necessary
- Add support for read only fetching
 - Enable the DesignSync caching and mirroring technology to enable customers to minimize disk utilization
- Integrate fixes to the new API calls
- Alpha/beta test with customers in coming months
- Commercial release of 1.0
- Push the integration deeper into the DS kernel for more seamless use of MW data in another release next year