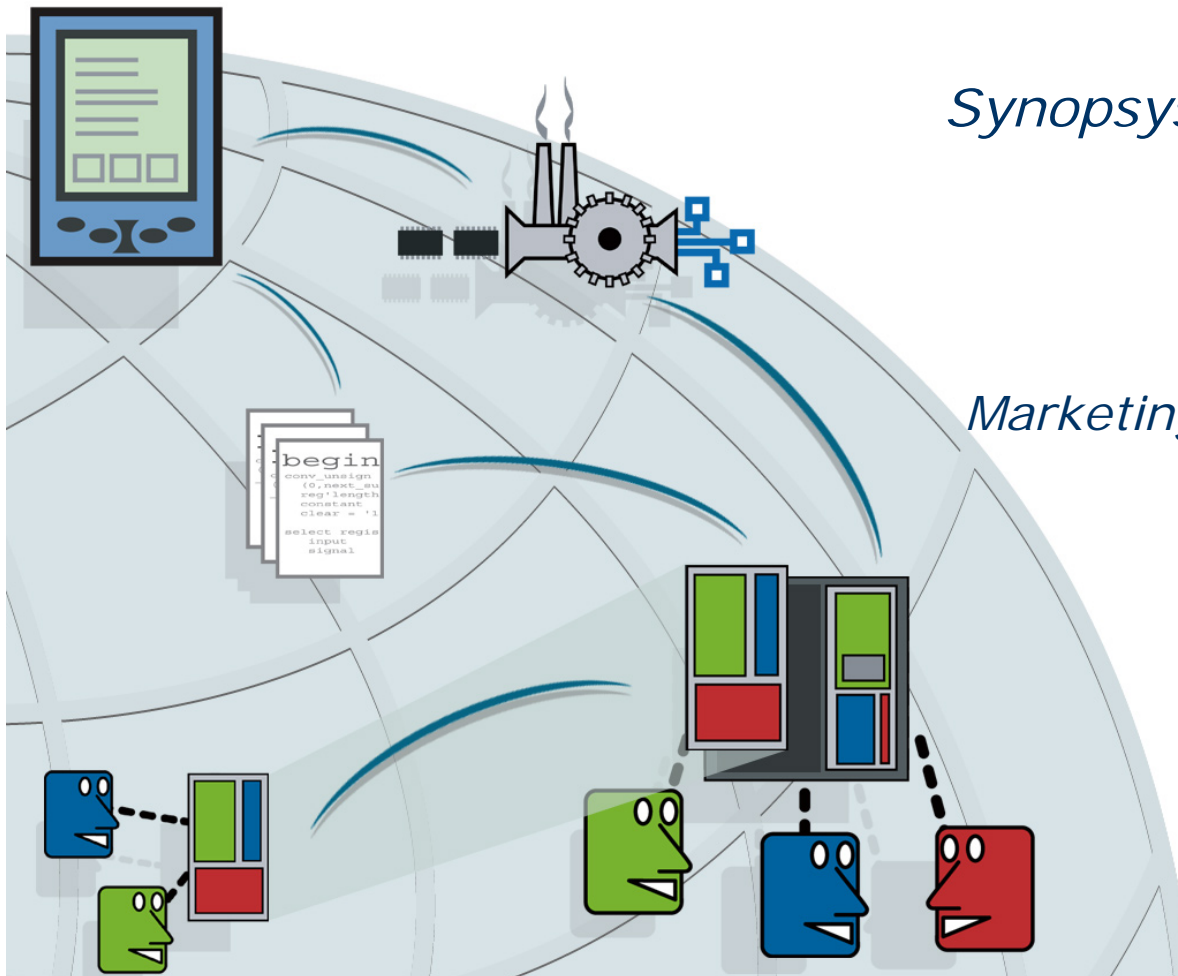




Synchronicity integration to the Milkyway database: A Vendor Perspective

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Marketing & Business Development
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Agenda

- Synchronicity introduction
- Design Management challenges
- Why is an integration with Milkyway important?
- Key goals of the integration
- What we have accomplished through Map-in
- Benefits to our mutual customers

Synchronicity introduction

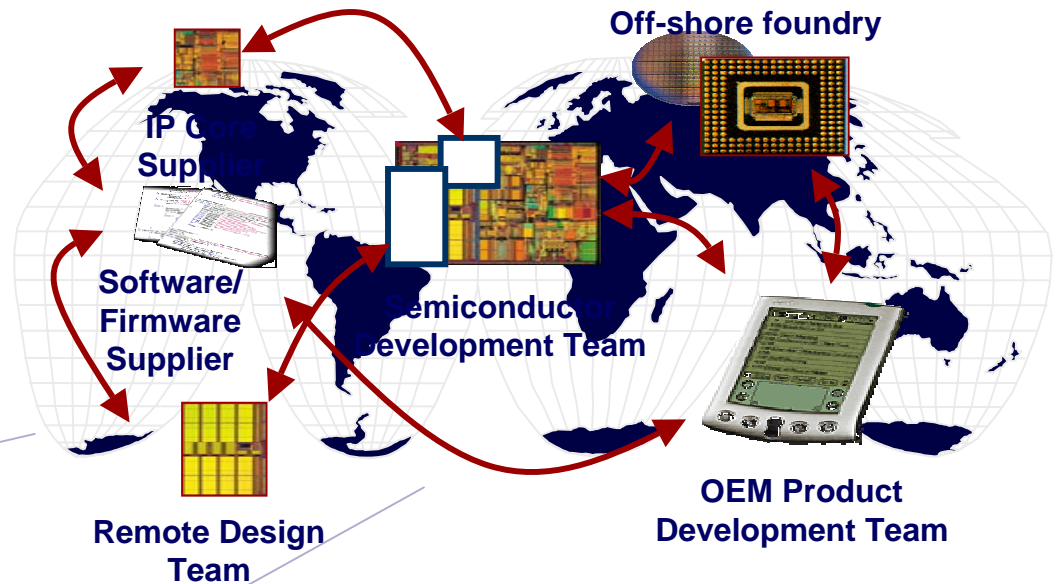
- Leading commercial supplier of solutions for design management, project collaboration, IP reuse and distribution
- 120+ customers of top semiconductor and electronics firms
- 25,000+ end-user licenses worldwide
- Investors include Intel, Cadence and Synopsys
- Vision to be the world class Design and IP Lifecycle Management infrastructure provider for the electronics design chain



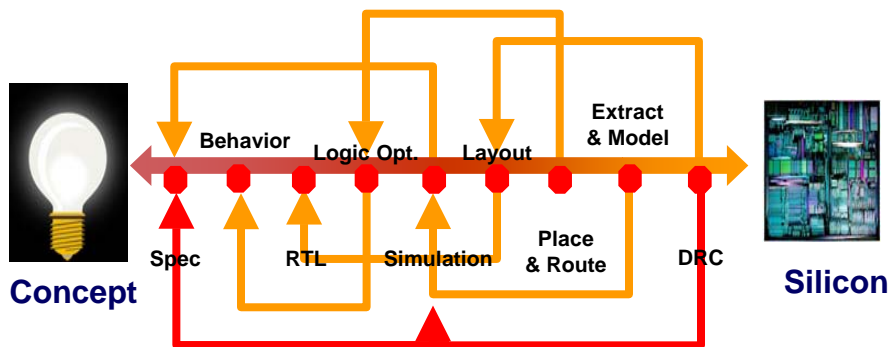
Complex Electronic Development Process

- Large, global, inter-company design teams
- Outsourcing to off-shore foundries
- Third party IP providers used by fabless design teams
- Constant time-to-market pressures with shortened product lifecycles
- Global economic conditions continuing to erode margins

Fragmented Electronics Design Chain



Iterative IC Development Process



- Multiple EDA tools in iterative design flow
- Ever changing EDA authoring tools with each new geometry node
- Huge amounts of data, moving constantly among design team members
- Convergence of software, hardware and systems design environments
- Skyrocketing mask prep and foundry costs

Requires a robust, secure and collaborative design management infrastructure throughout the lifecycle

The need for Data Management increasing

**Increasing
Design
Sizes**

**Complex
Design
Flows**

**Distributed
Design
Disciplines**

**Design
Reuse
Imperative**

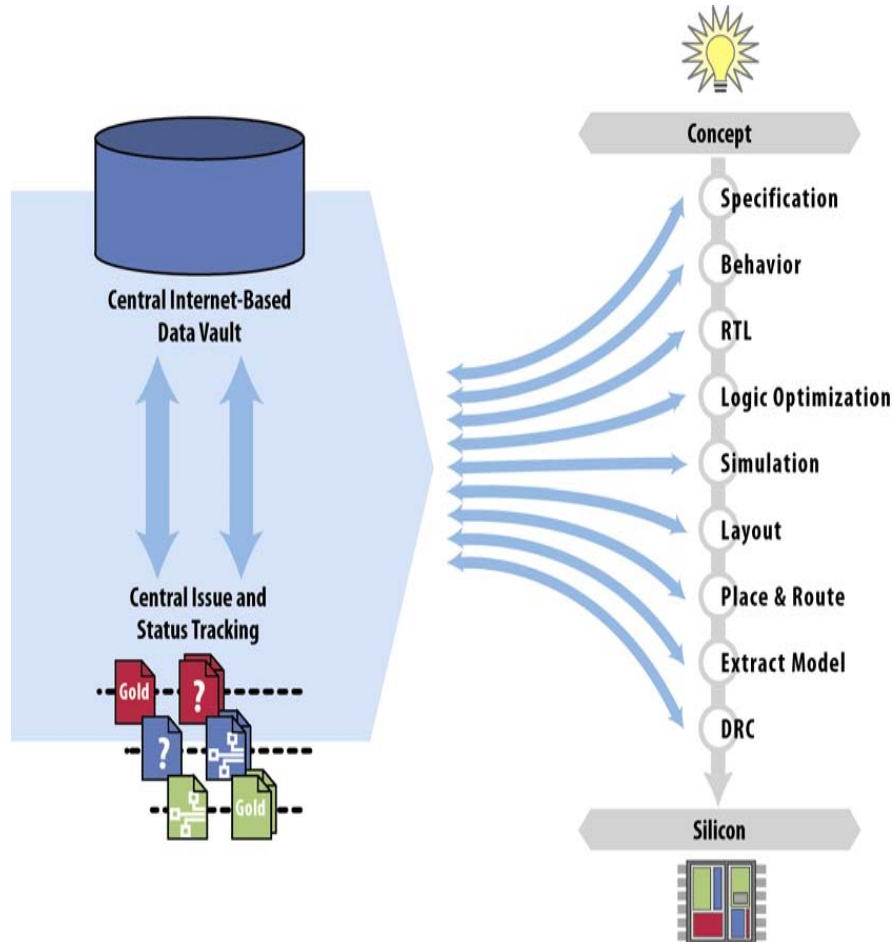
**More
Complicated
Designs**

**Distributed
Design
Teams**

**Parallel
Development
Processes**

Managing the iterative IC design data flow

The existing Synchronicity Developer Suite is tool agnostic across the flow with a deep integration with Cadence



- Standard Developers Suite
 - DesignSync®
 - Internet-based infrastructure for version control and configuration management
 - Multi-site collaboration with data caching and mirroring
 - ProjectSync®
 - Manage development process complexity with lifecycle and issue tracking
 - Stay on schedule with rich management reporting
- SOC Developer Suite with HCM
 - Hierarchical Configuration Management for complex SoC designs
- Physical Developer Suite with DesignSync DFII®
 - Integration with Cadence DFII tools

Challenges managing Milkyway data

- 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

The problem grows with an open database

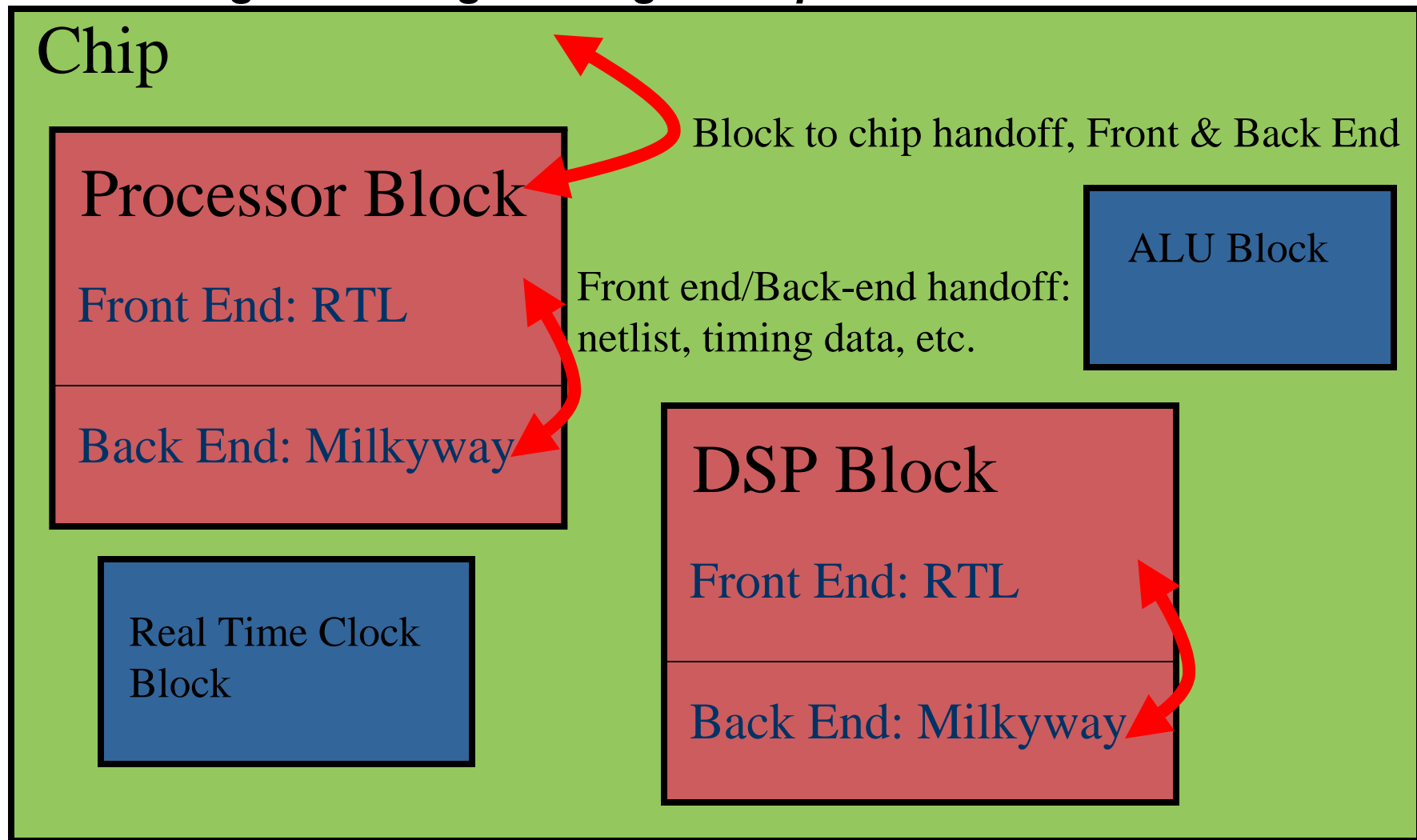
- More engineers in the same database contributing to the design
- Multiple tools from various vendors accessing the same database
- Unproven interactions between tools
- Larger pool of IP developed needing to be shared and leveraged across global design teams
- Further complicated design flows and design management issues

Goal: a solution for managing Milkyway data

- Develop “DesignSyncMW” as the Digital Developer Suite:
 - 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
 - Limited support for inter-view dependency management
 - Environment that melts into Milkyway forms and menus
- Tie Milkyway data into our other tools for project tracking and IP Reuse
- Address the market and needs of the Digital, Front-end and Synopsys users we have not historically met

Addressing hand off points across the flow

With the Synopsys front-to-back flow, there is even greater benefit of an integrated design management platform

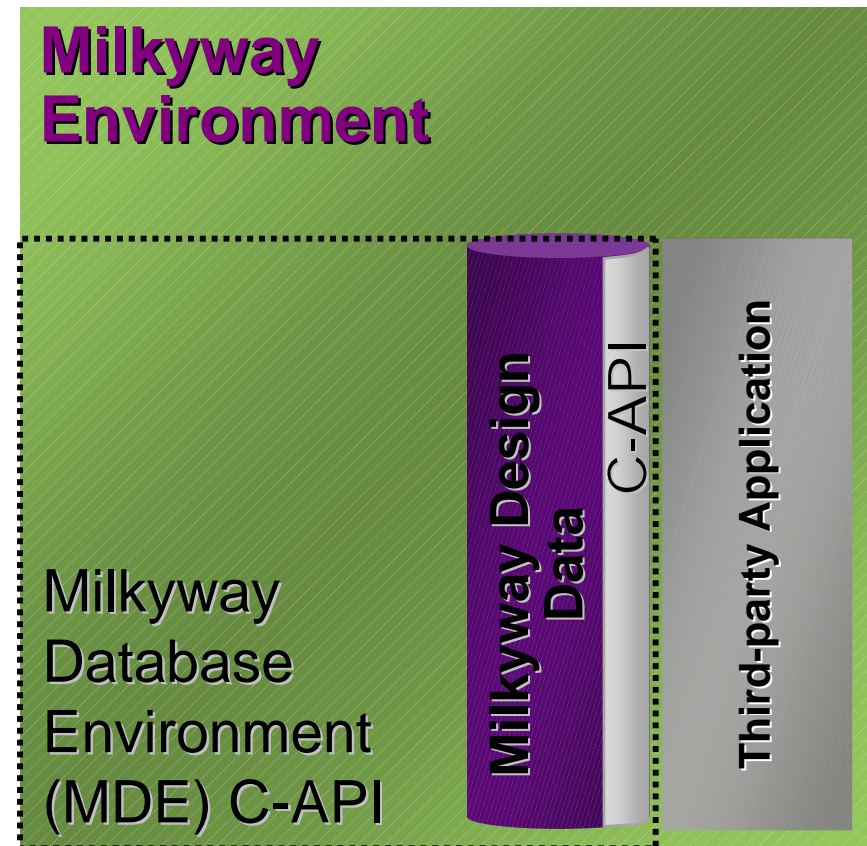


Working collaboratively with Synopsys

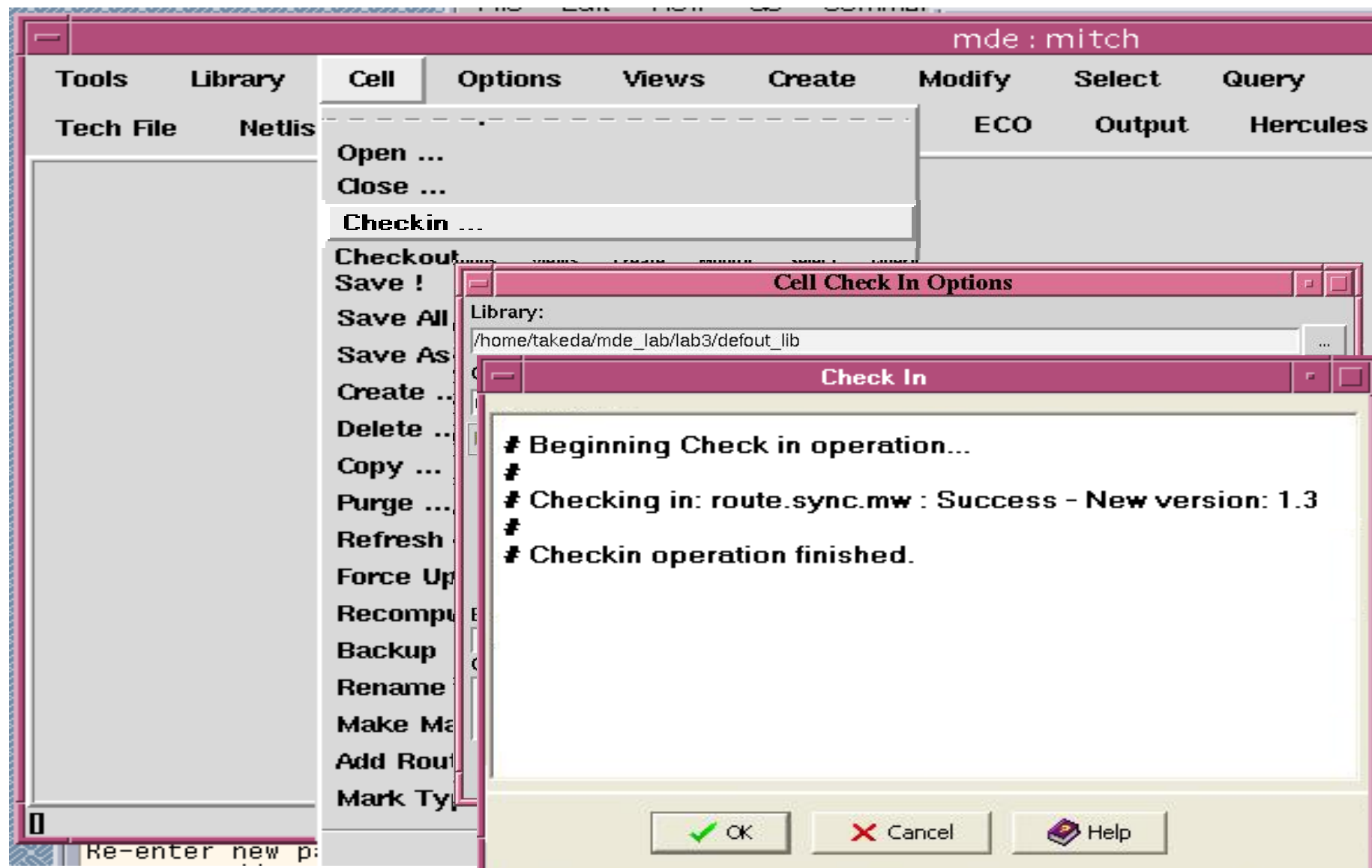
- Charter member of MAP-in Program
 - Documentation on how to create forms/menus
 - C API as a platform for the interface
 - Forum for asking technical questions
- Working closely with Synopsys to extend Milkyway Database Environment (MDE) API
 - C API extended to address specific DM issues
 - Synopsys provided some data sets, access to a SURF lab and expertise to us to ensure our system is working
 - Resolved issues related to our end user licensing model
- Developing Synchronicity Milkyway-based design management solution (“DesignSyncMW”) with a launch in Q4
- Structuring the business and licensing agreements

Using the Milkyway Database(MDE) C-API

- ✓ Designed for Third-party application development
- ! Requires a Milkyway C-API runtime license feature
- ✓ Static-linked to third-party application
- ✓ Standard C development environment
- ✓ Part of MDE product



New forms in the Milkyway menus



Milkyway objects appear in DesignSync

DesignSync

File Edit View Go Bookmarks Revision Control Tools Help

Location: file:///d:/Libraries/cmos/CEL

Name	Type	Version	Status	Locker	Bi
and1.sync.mw	Milkyway Object	1.1	Needs Update		Tru
and2.sync.mw	Milkyway Object	1.3	Up-to-date		Tru
and3.sync.mw	Milkyway Object	1.1	Up-to-date		Tru
dff1.sync.mw	Milkyway Object	1.1 -> 1.2	Locally Modified	*adrian	Tru
dff2.s		1.2	Up-to-date		Tru
ff.sync		1.1	Up-to-date		Tru
and		1	Up-to-date		Tru

- Open (Ctrl-O)
- Check In... (F7)
- Check Out... (F8)
- Cancel Checkout... (Shift-F8)
- Delete... (Delete)
- Go to Vault (Ctrl+Shift-V)
- Data Sheet (F4)
- Refresh (F5)
- Properties... (Ctrl-Enter)

```
# Logging to d:\build\logs\dss_05222003_19224
# V4.0-0815
#
stdl>
```

Check in the selected objects.

Benefits for our mutual customers

- Reduces opportunities to the wrong chip with incorrect files
- Keeps all design data (front to back) under central management
- Ties Milkyway data into collaboration and project management tools
- Enables proper tracking of hand-off points to reduce working off of the wrong data
- Provides a safety net for users of Open Milkyway
 - Can roll back the design if custom changes corrupt Milkyway database
- Seamless interface into Synopsys tools improves ease of user and engineering productivity