

# Effective Data Management for AMS Design Teams



DESIGN **AUTOMATION** CONFERENCE



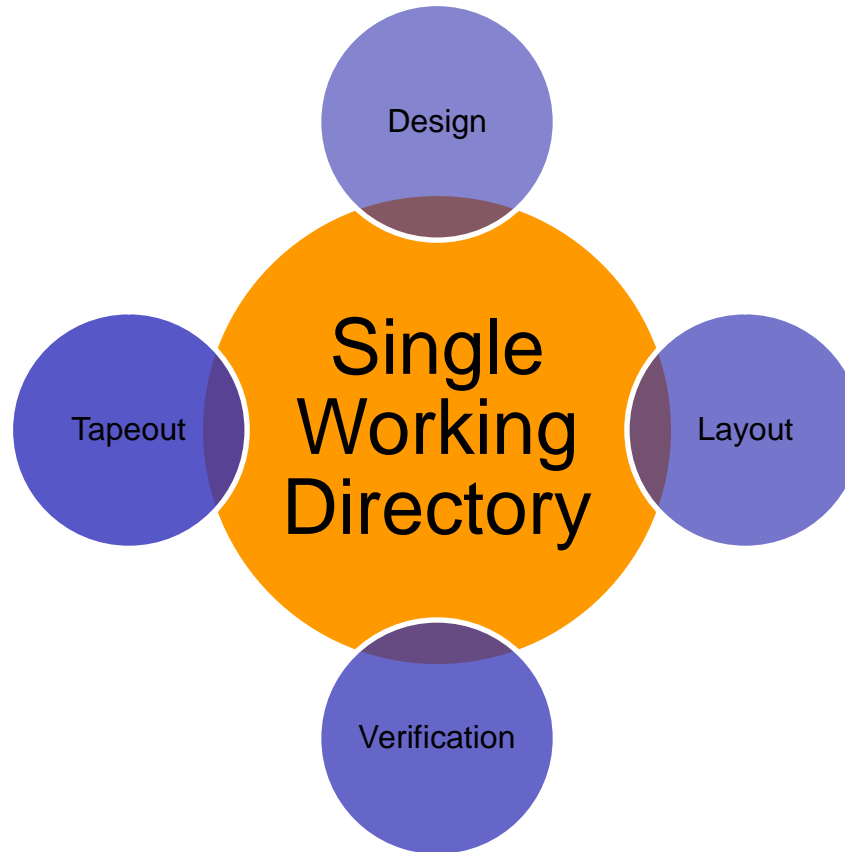
# Today's SoC Design Environments

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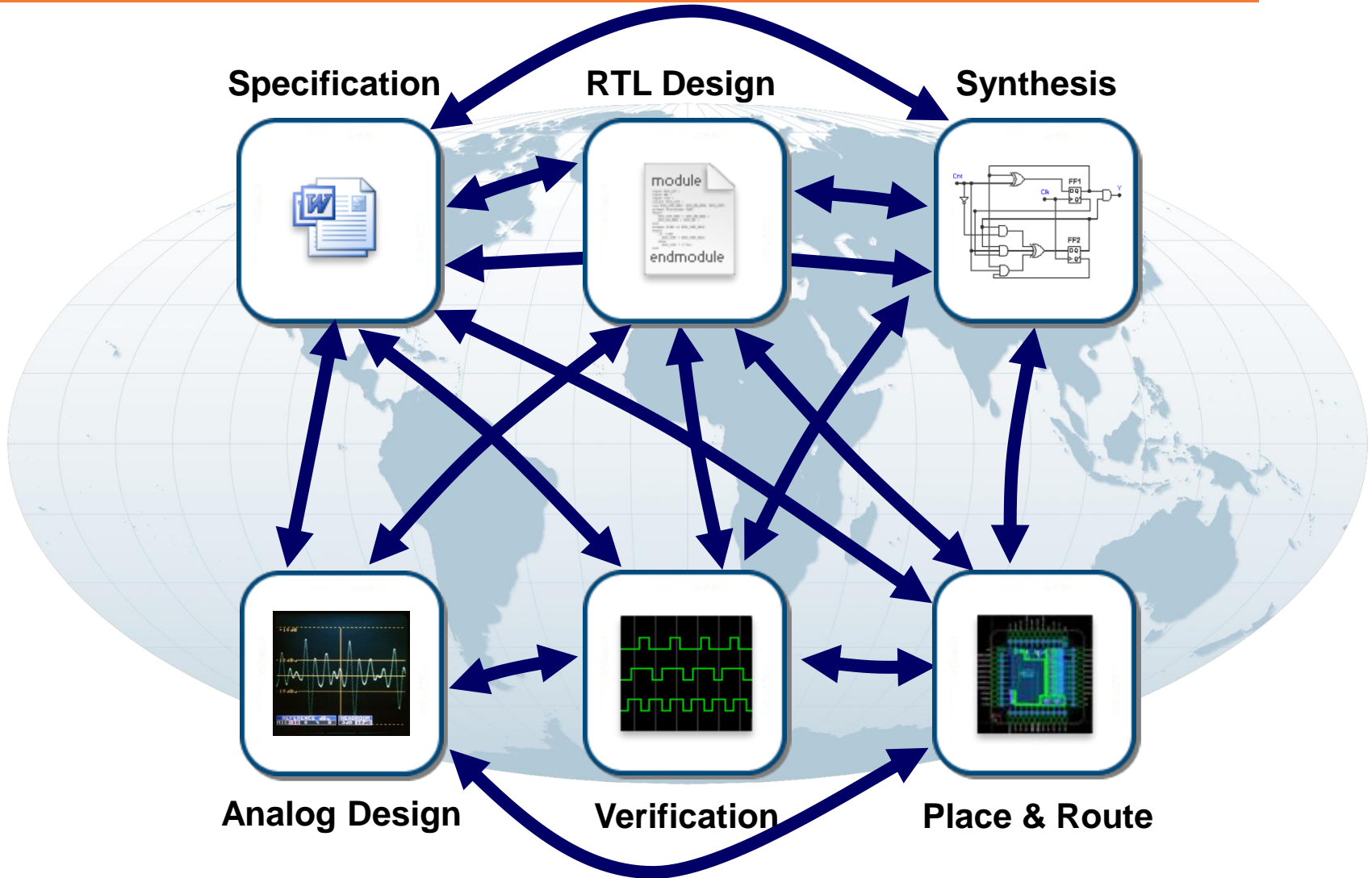
- Large teams
- Multiple sites
- Explosion of data
- Greater reuse of data
- Complex data from graphical editors
- Complex flows
- Simultaneous variations of design projects



# Sharing Without A DM System



# Sharing Without A DM System



# Challenges With Current Design Env

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- Users overwriting each other's work
- Incorrect data sharing
- Rapid build up of disk space
- Tracking bugs and issues
- Backup & recovery
- Monitoring & management



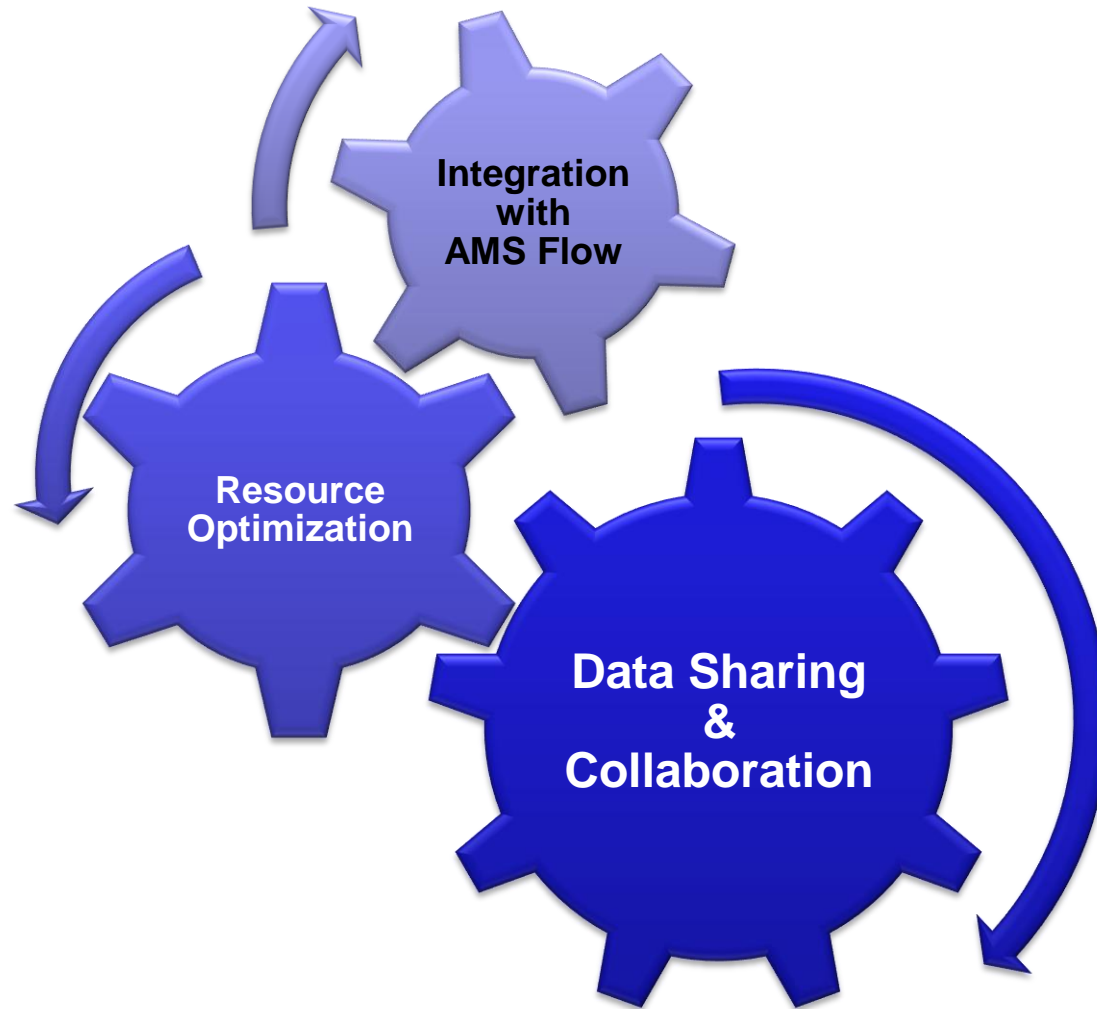
# End Results Without DM

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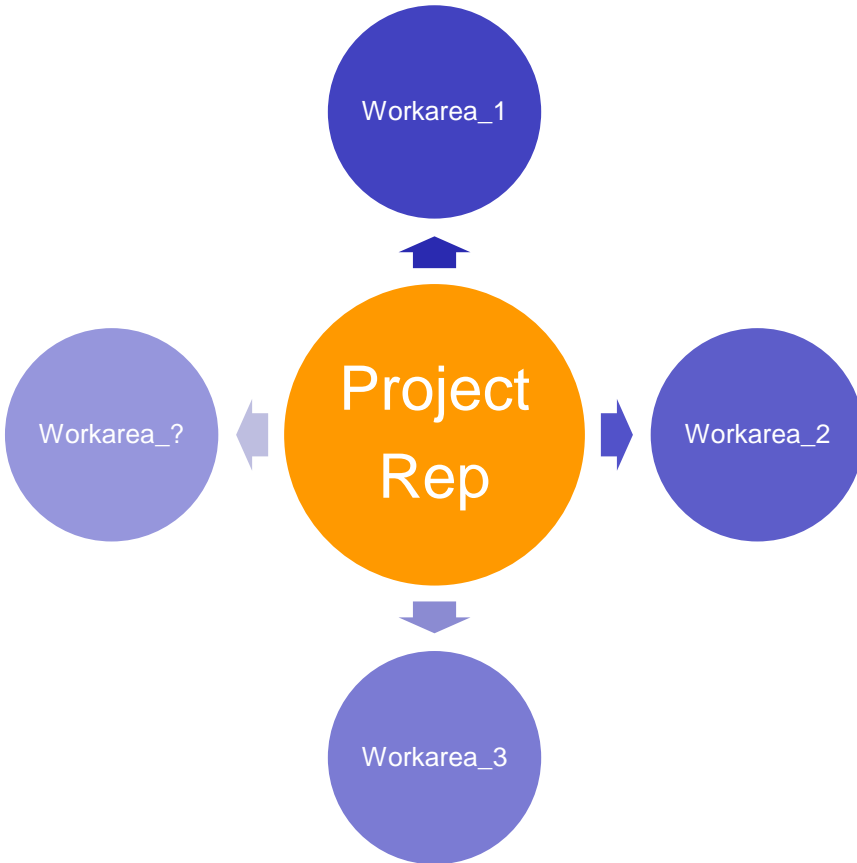
- Project delays
  - Time to market window shrinks
- Design errors
  - Users don't have right data at their sites
  - Potential for expensive re-spin
- Management & support resources
  - No visibility into the project
  - CAD support nightmare



# DM System To The Rescue



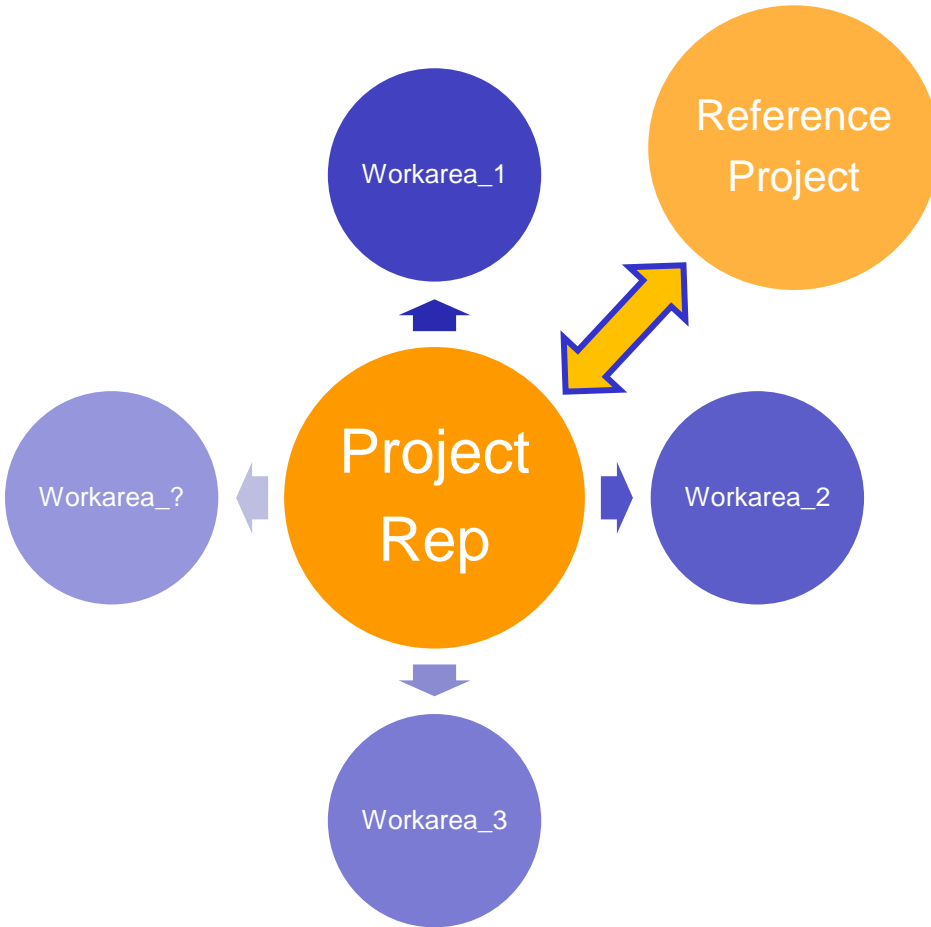
# Single Site DM



## ■ Benefits

- Each user has their own working directories
- Workareas can easily refer to older revisions
- Propagate changes

# Reuse Data Between Projects



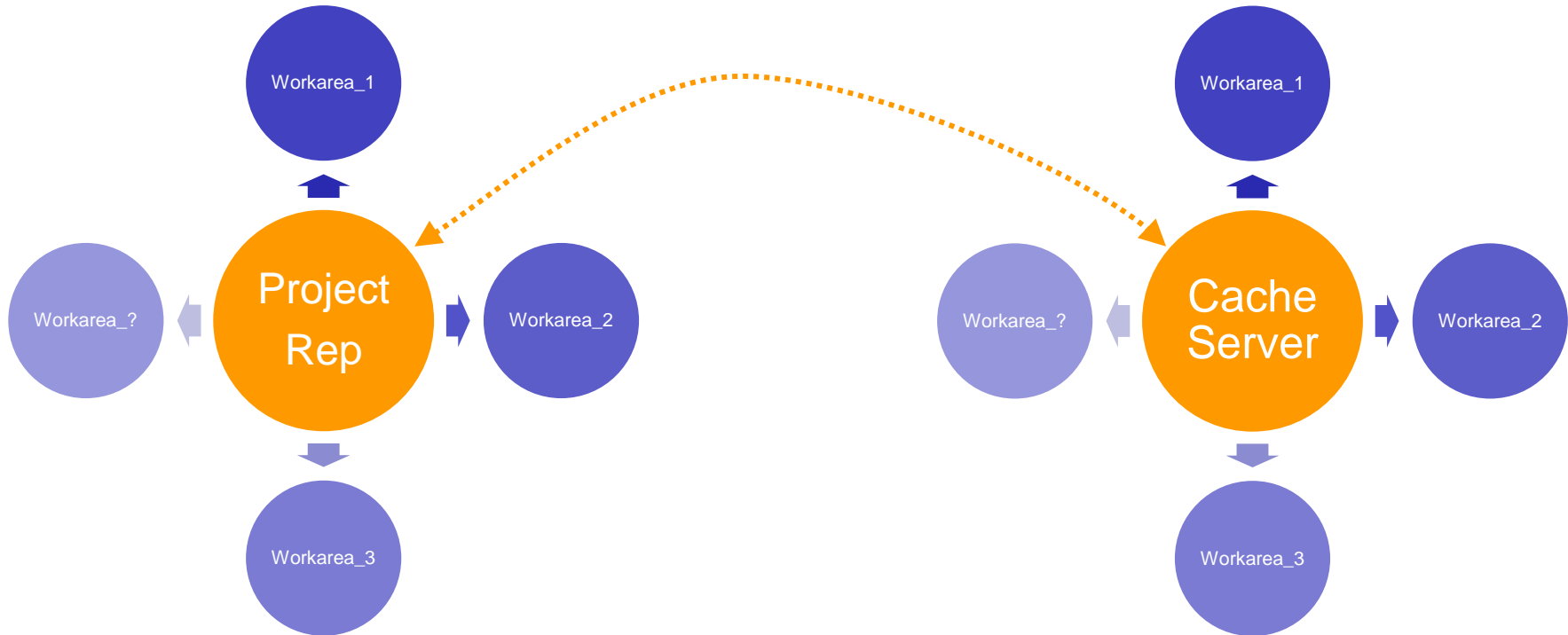
## ■ Benefits

- Eliminates the need to copy data
- Reference data is part of the user's workarea
- Partition larger projects into smaller projects

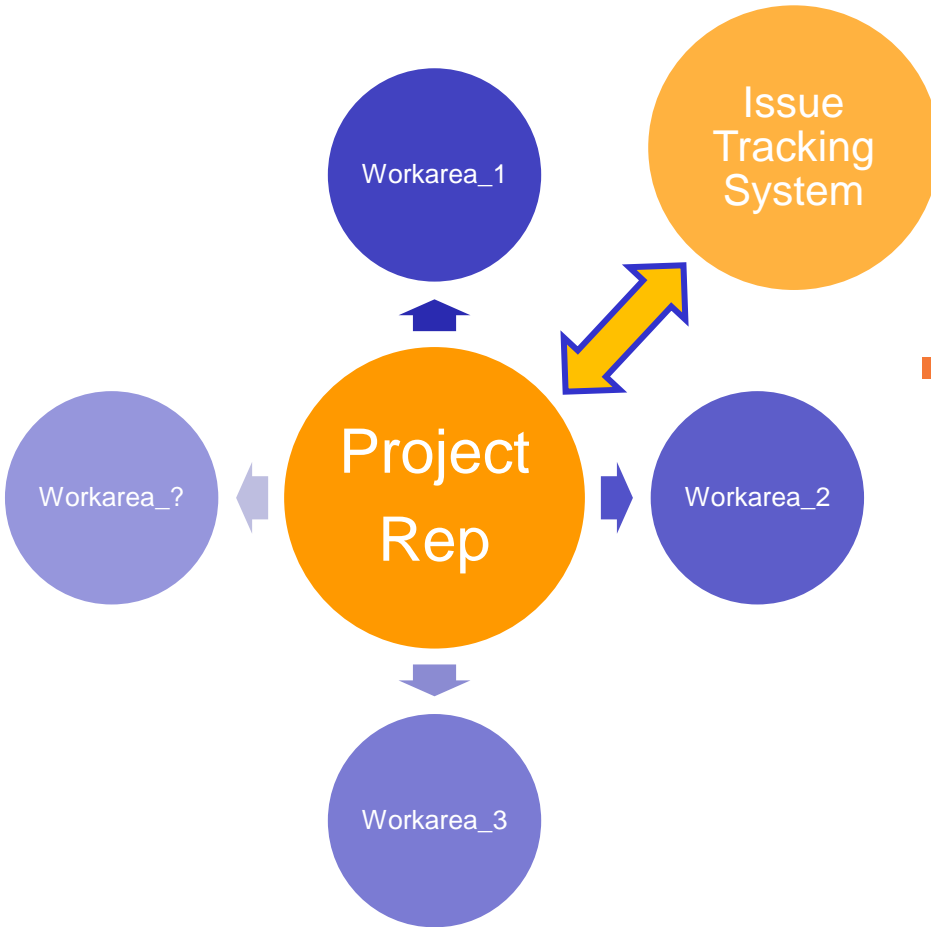
# Multisite DM

Site in California

Site in Japan



# Issue Management

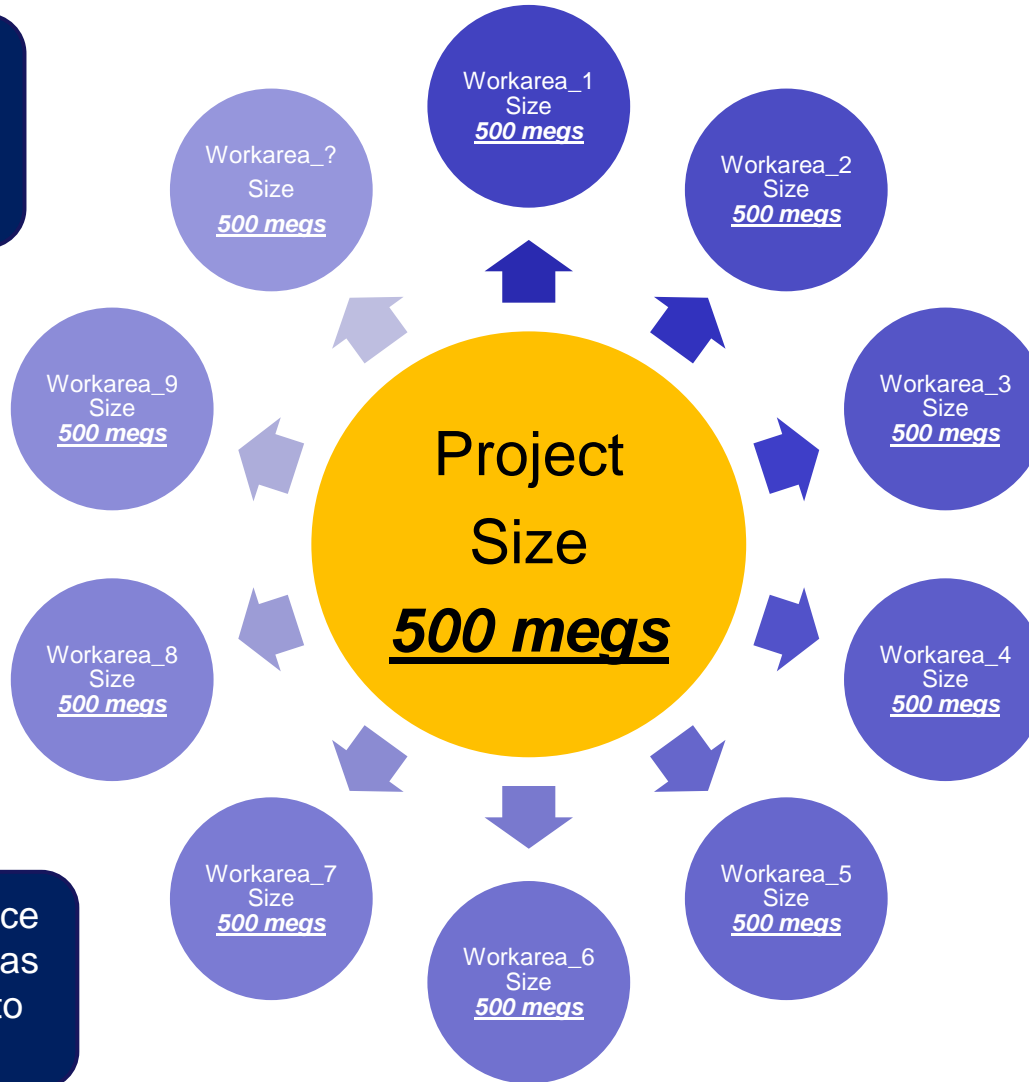


## ■ Benefits

- Manage any new feature request and bugs
- Connect your DM operations with an issue ID
- Record the stage of the project for new issues

# Explosion Of Disk Space

Each user has their own workarea containing actual design files



Consuming disk space which grows rapidly as new data is added to the project

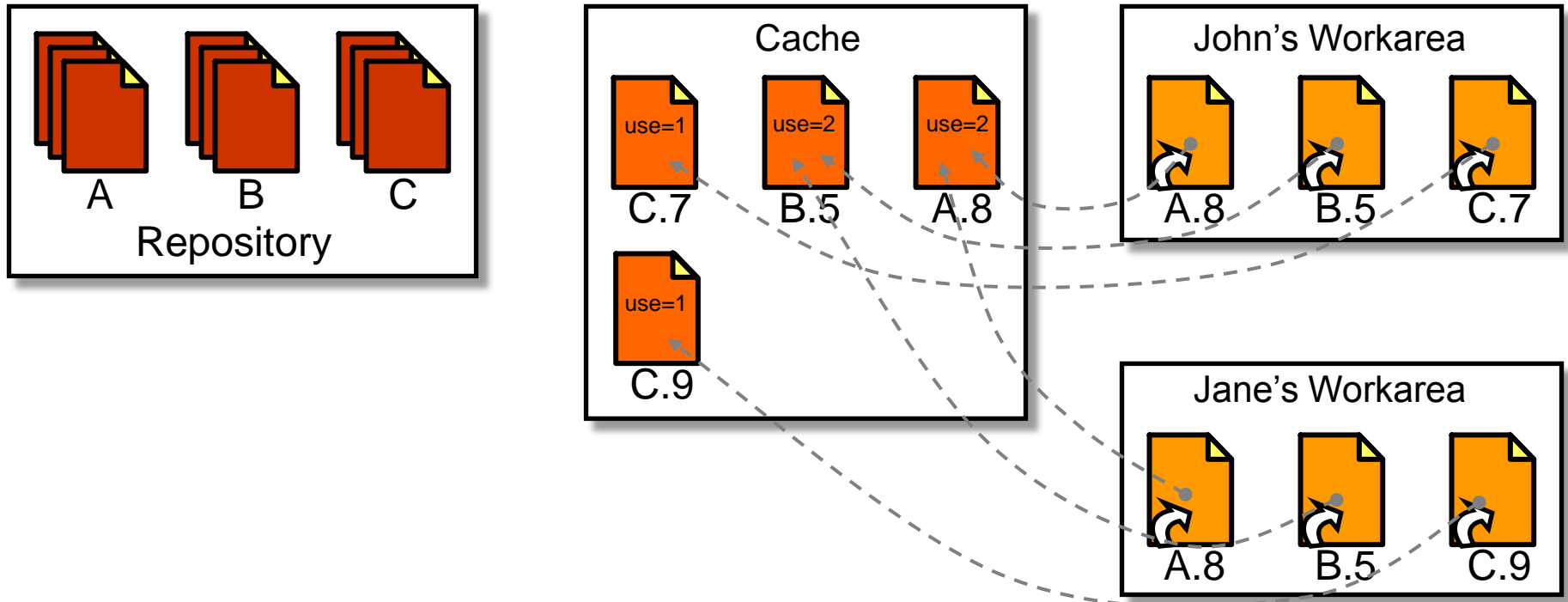
Cost

IT overhead

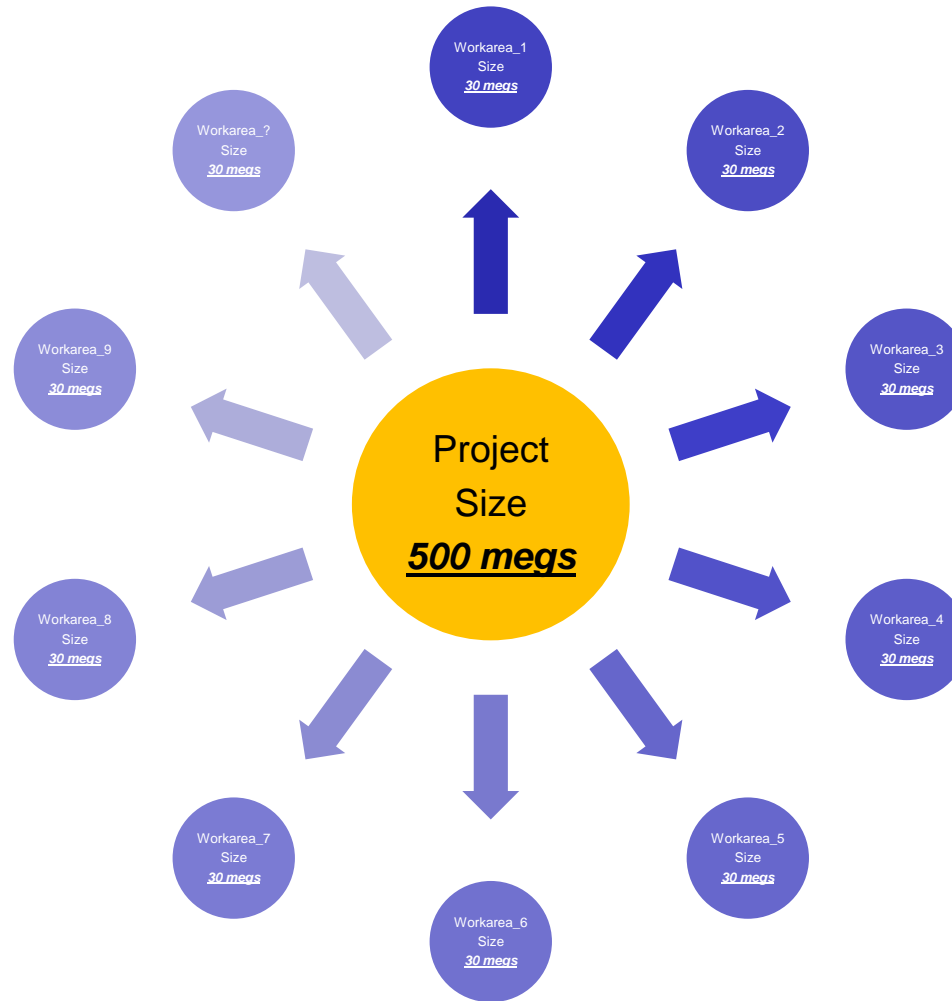
Performance



# Workareas with Sym Links to Cache

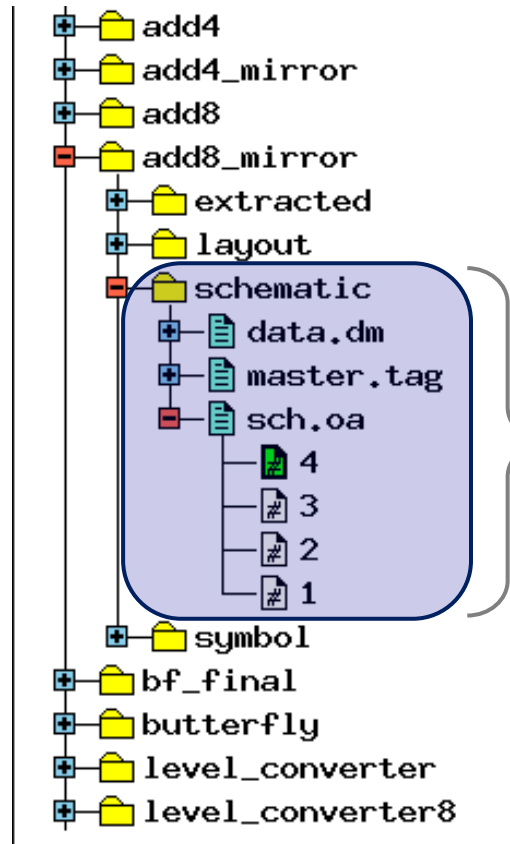


# Reduces Your Disk Space Consumption



# Managing Composite AMS Design Objects

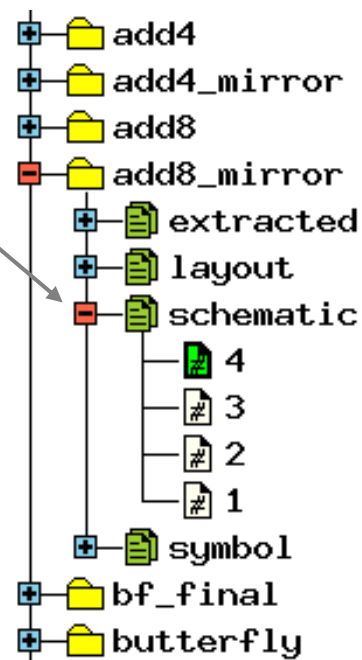
Cell-view managed as files



Co-managed files automatically packaged into a single composite object using rules

Cell-views such as schematics and layout consist of multiple co-managed files

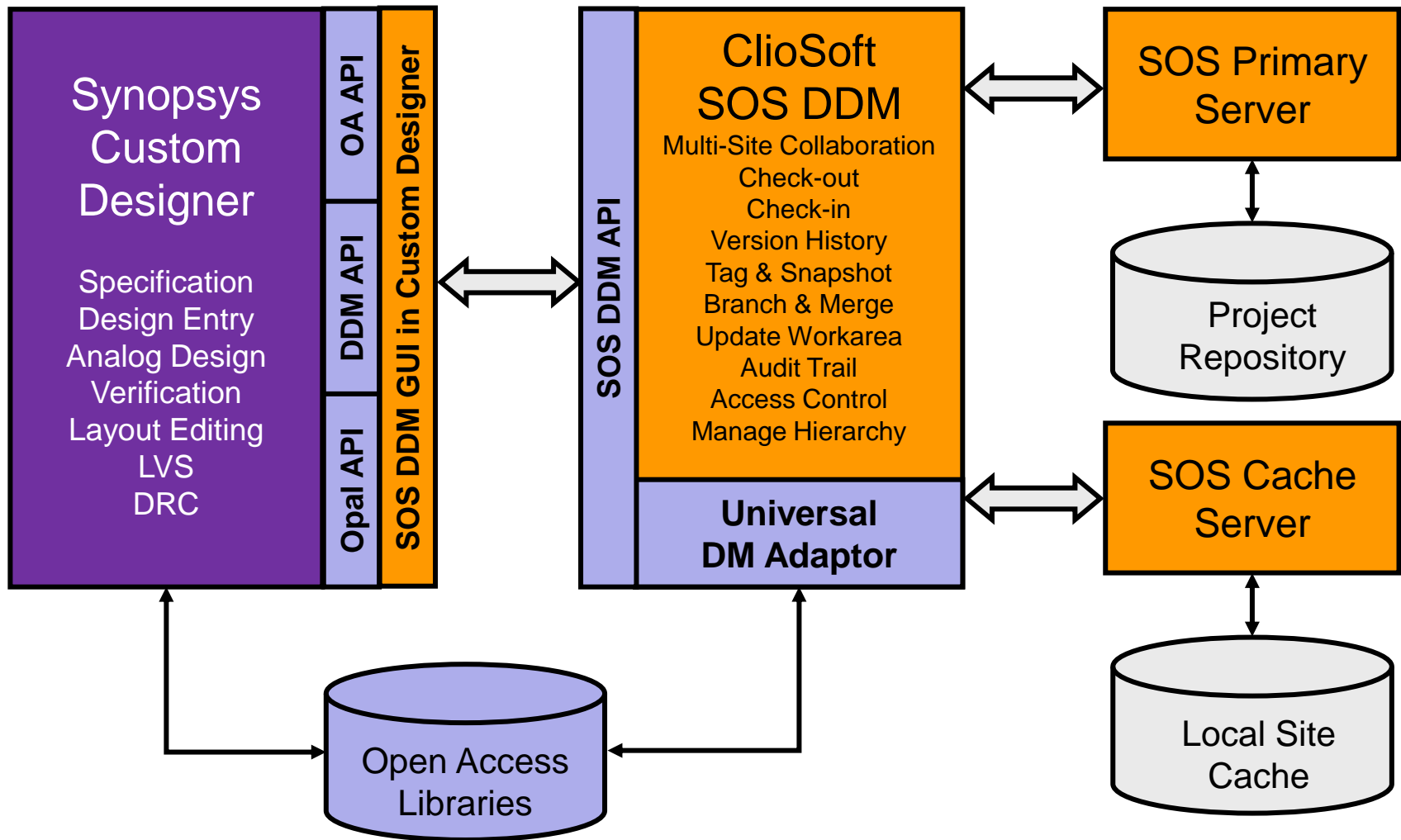
Cell-view as a Composite Object



- # Objects in project reduced 3-4x
- Improved performance
- Data integrity of the cell-view
- Manage composite objects from any tool



# Open Standards – Easy Integration



# Synopsys Custom Designer

The image displays the Synopsys Custom Designer software interface, which is used for creating and verifying custom ICs. The main window shows a schematic editor with a complex circuit diagram, including components like capacitors (c=8.99997), resistors (r=27.75), and various logic blocks. A 'WaveView Analyzer' window is overlaid on the schematic, showing two waveforms: a green signal labeled 'i(v13) net' and a yellow signal labeled 'v(net70)'. The waveforms show a transient response over time, with the x-axis labeled 'sec (1n)' and the y-axis showing current and voltage levels. A 'Custom Designer Library Manager' window is also visible, showing a list of libraries and a 'Design Manager' menu with options like 'CheckIn', 'CheckOut', and 'Update'. A legend on the right side of the interface lists various design elements and their corresponding colors and patterns, such as 'nwell', 'diff', 'poly', and 'm1'.



# Open Infrastructure for Customization

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- Key Bindings
- Window Framework customization
- Design Editor Tools
- Command Management
- Events and Callbacks
- Opal User Interface Design
- Shared Object Load
- Design Editor Plug-in Interface
- Custom APIs as needed (e.g. DDM)



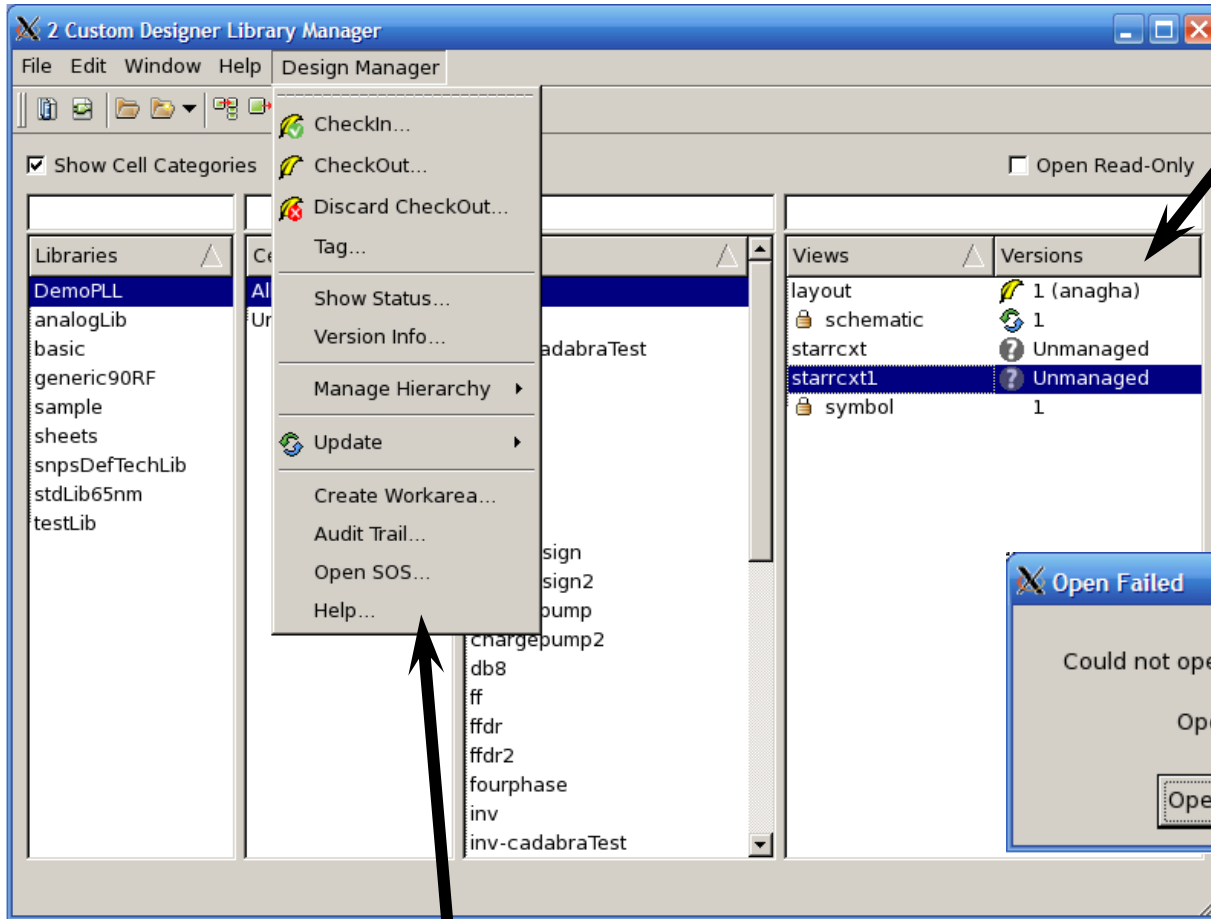
# Synopsys' Agnostic Approach to DDM

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- Synopsys does not produce a product for DDM
  - There are several excellent commercial products on the market
  - We turned to the experts
- These companies helped us define a universal API
  - The API is agnostic... no preference to any specific vendor
  - Recommendations for expansion have been welcomed from all

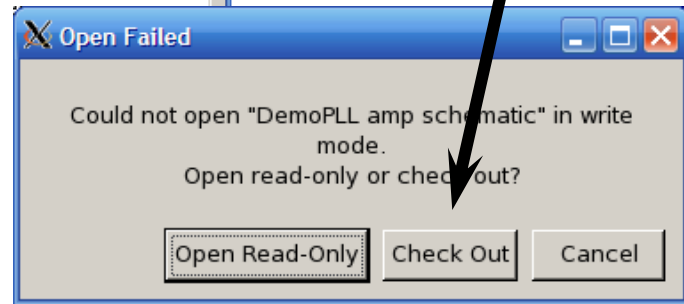


# Synopsys Custom Designer w/ ClioSoft SOS



Added Versions Column

Just in Time Auto Checkout



Added DDM Menu



# Checkout and Checkin Operations

The image shows two overlapping dialog boxes from the Opal software. The 'Check Out' dialog is in the background, and the 'Check In' dialog is in the foreground. A purple callout box labeled 'Custom Opal Dialogs' points to the 'Check In' dialog.

**Check Out Dialog:**

Status	Lib	Cell
CheckedIn	DemoPLL	amp
CheckedIn	DemoPLL	amp
CheckedIn	DemoPLL	amp

Show :  Files  Views

Filters: [ ]

Description: [ ]

**Advanced**

Do NOT lock (Note: Others may modify)

Branch: [ ]  New Branch

**Check In Dialog:**

Status	Lib	Cell	View/File
Unmanaged	DemoPLL	bias	layout
Unmanaged	DemoPLL	bias	schematic
Unmanaged	DemoPLL	bias	symbol
Unmanaged	DemoPLL	bias	DMDData

Show :  Files  Views

Filters: [ ]

If no changes :  Skip  Discard  Check in anyway

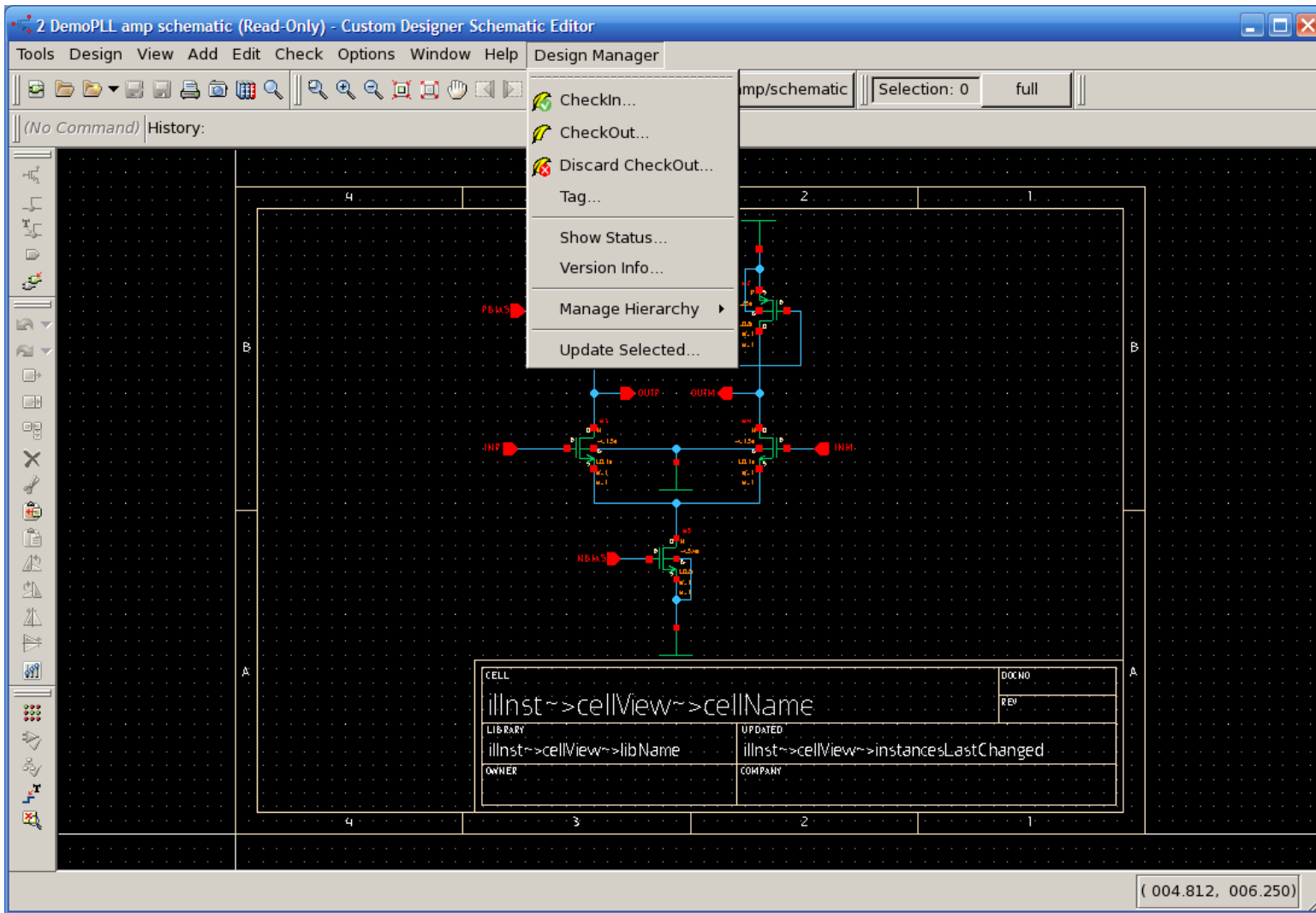
Description: [ Initial Checkin. ]

**Advanced**

Tag: [ gold ]  New Tag [ ]

OK Cancel

# DM Operations Integrated in CD Editors



# Features of DM Designed for AMS Flow

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- Collaborate effectively with team members
- Optimize disk space resource usage
- Access DM features directly from AMS design tools
  - Manage tools and data from the same unified cockpit
  - Convenient 'Just-in-time' checkout when a view is edited
- Work at the abstraction levels of Libraries, Cells, and Views
- Operate on design hierarchies/categories



# Q & A

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- For more information on ClioSoft's DM system:

- Visit DAC Booth: **3651**
- Website: <http://www.cliosoft.com>



- For more information on Synopsys' Custom Designer:

- Visit DAC Booth: **1120**
- Website: <http://www.synopsys.com>

