

The LSI LOGIC logo is positioned in the upper right corner of the slide. It consists of the words "LSI LOGIC" in a white, sans-serif font, with a registered trademark symbol (®) to the right. The text is set against a dark blue rectangular background that has a subtle glow effect.

LSI LOGIC®

The title "Open MW Panel" is written in a large, bold, orange font. It is located in the lower right quadrant of the slide, overlapping the blue background and the text of the author's name.

Open MW Panel

Rajiv Kapur

Director, Physical Design &
Infrastructure

Design Technology Division



Agenda

- LSI's use of MilkyWay
- Scripting vs C-API
- Open MilkyWay Initiative – our thoughts
- What could improve in MilkyWay



LSI's use of MilkyWay – the early days

- LSI Logic first used MilkyWay C-API in 1998
 - ◆ First adopter of C-API outside Avant!
- MilkyWay C-API product created on LSI's request
 - ◆ Avant! packaged the existing APIs into a product
 - ◆ Provided documentation for usage
 - ◆ Custom training modules for LSI CAD engineers
- Early C-API use required close working relationship
 - ◆ Avant! Management was strongly committed
 - ◆ Excellent working relationship at all levels
- C-API extended for LSI needs
 - ◆ Several new APIs added for LSI applications
 - ◆ Software development tools for CAD development



LSI's FlexStream design kit

- FlexStream toolkit for ASIC design implementation
 - ◆ Various EDA tools, including Apollo / Astro P&R
 - ◆ Various LSI tools included
- Automation is critical to our success
 - ◆ ASIC Robustness needs to be guaranteed
 - ◆ Efficiency of implementation key to ASIC business
 - ◆ DSM complexities need to be handled
- Several C-API tools to supplement the P&R system
 - ◆ Reasonably heavy focus on in-house CAD tools
 - ◆ Model is to build when one cannot buy



Why do we write C-API tools

- Implement LSI's Leading FlexStream ASIC Methodology
- Cannot wait for EDA tools to catch up with needs
 - ◆ Need to maintain ASIC Robustness
 - Guarantee of working Silicon
 - DSM effects need to be addressed, not margined
 - Checks for possible user mistakes
 - ◆ DFM and DFY
 - Manufacturability and yield need to be addressed
 - ◆ Time to market
 - Automation for efficiency
 - Avoidance approach far superior to repair
 - ◆ System integration
 - Help communication across EDA tools



Scripting interfaces vs C-API

- Both need to co-exist
- Scripts are simpler
 - ◆ Faster to learn and develop scripts
 - ◆ Less headaches (memory management etc)
 - ◆ Excellent for simple, small needs
- C-API tools are powerful
 - ◆ More efficient access
 - ◆ Tools that need to access millions of objects
- LSI uses both scheme and C-API heavily
 - ◆ Several tools prototyped in scheme
 - ◆ Some re-written in C++ for design turn time goals



What can improve in MW?

- Support for a broader customer base
 - ◆ Training, documentation, ...
- CAD Database centric universe
 - ◆ Interoperability is critically important
 - ◆ EDA tools plug in seamlessly into MW based system
 - Inefficient file based transfers need to be obsoleted
 - Tools need to communicate with each other, share engines and results, drive each other's algorithms
- Additional focus on efficiency of data access
- Need to extend MW
 - ◆ Completeness of API is important
 - ◆ Views for complete design data representation & sharing



Open MW Initiative

- LSI strongly believes in standards
 - ◆ Driver across industry for various standards
 - ◆ Active participants in open database discussions
- Open databases are needed
 - ◆ LSI is committed to the success of Open databases
 - ◆ LSI applauds the Open MilkyWay initiative
 - ◆ Supporting GoldenGate WG a step in the right direction
 - ◆ Establishes a framework for EDA tool interoperability
- Various discussions with Synopsys on this subject
- Win-win for all
 - ◆ Synopsys, EDA tool providers, users



Thank You

