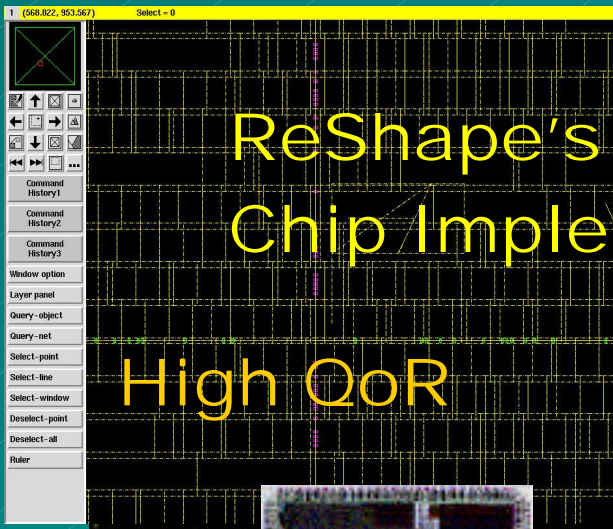

EDA Interoperability Developers Forum, 2003

Paul Rodman
CTO
ReShape, Inc.
April 2003

ReShape

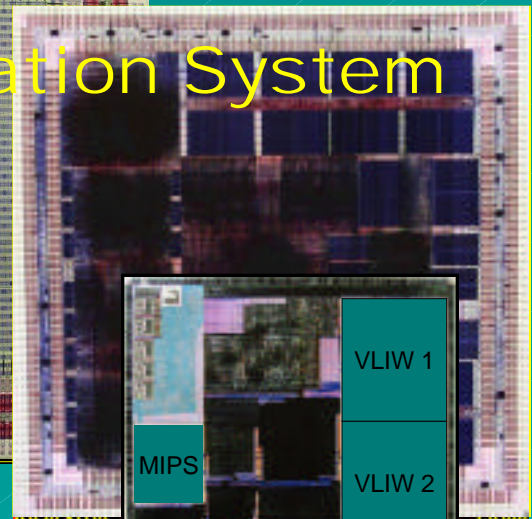
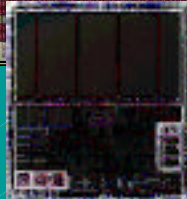
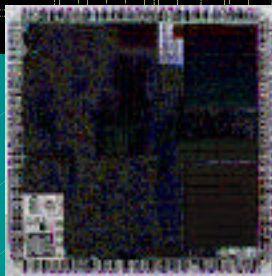
GDS Builder

24-hour builds



ReShape's
Chip Implementation System

High QoR



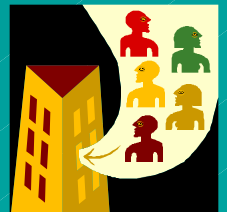
Predictable tapeouts

The View From The Middle

- It's getting worse every year:
 - Complexity of design in all spaces: (timing, power, area, correctness, schedule)
 - Profusion of tools. Big \$\$\$.
- And yet, the chips do get taped out.
 - A few teams fail
 - Most teams struggle and eventually succeed
 - A very very few have made the process anything you would call industrial

Five Short Scenes About Interoperability

- Scene 1: The “EDA Salescritter”
- Scene 2: The “Luminary”
- Scene 3: The “Frustrated Academic”
- Scene 4: The “Big Company EDA User”
- Scene 5: That ReShape Guy.



ReShape

Scene #1: The “EDA Salescritter”



- Busy selling what sells
- Promise of “free beer tomorrow” to placate the masses
- Whatever the nail, new tools (from his company) are the hammer
- Team success not always a function of tools

Scene #2: The “Luminary”

- Doesn't get his/her own hands dirty anymore, hears only indirectly about muddy places from others
- Unified data models are a good thing. Making them open and shared seems difficult to say the least.
- Open source database a small time saver but not that big a deal. That's just the beginning.



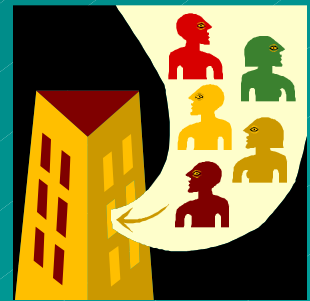
Scene #3: The “Frustrated Academic”



- Is smart and has lots of energy in the form of grad students
- Has only a fuzzy idea what it's like to build a "boomer"-class SoC
- Can't afford the resources required to do such chips
- Therefore best ideas are probably only piecewise-useful

Scene #4: The “Big Company User”

- Trying to get the work done, but sometimes burned by overestimating tool capabilities
- Only buys aspirin, not vitamins. It’s QOR and direct time-to-market tools that get bought.
- Always has and always will mix and match tools in quest for best QOR/TTM



It's Really About QOR and TTM

- Interoperability does help with both:
 - “Service the cruise ship while under way.”
 - Add new best-of-breed tools to solve new problems without discarding entire flow
 - “Every netlist is different.”
 - And so is every EDA placer/router/gcts, etc. Use the best one for each netlist?

What's the best way to foster QOR and TTM with tool interoperability?

Start Small ...

- Open source parsers and dumpers for every format used by the tools.
 - Actual *source*, not an "independent" design, please
 - Up to date by revision of incorporating tool
 - Pre-releases freely shown for upcoming enhancements

... and then keep going ...

■ EDA tool interoperability with other non-EDA tools

- Batch mode issues with X, licenses, sub-processes.
- Issues with users flow and tools:
 - Exit codes. Did it work or not?
 - Log formats. Data explosion of logs
 - Error messages. Warnings, Info, etc.
 - Control of tool knobs, intelligent defaults
- Need ability to trade "search for QOR" with "get the same result as before"

Interoperability is just the tip of the iceberg...



And what we think really matters

...

■ *3rd party IP* interoperability

- IP often a limiter, 3rd party stuff often a mess.
How about some standards and tools to check up on it and/or repair it?

■ *Design* interoperability

- Why is it that making hard macros is the only way large companies seem to leverage previous ASIC IP?

■ *Designer* interoperability

- Large SoC teams have a large percentage of "critically essential people." What do these people do and how can we leverage it?

... in the end.

- Customers don't want to pay for interoperability
- Big Bang models of interoperability don't seem to work so,
- Let's start small and clean things up
- Interoperability really isn't that hard compared to all the other problems