



Driving the Communications Revolution™

IP Re-use - A Technology in Waiting?

What are the assumptions?

Assumption 1. There is a problem

“It’s a Moonshot, Not Rocket Science”

Overall Program Goals

- > 1 Billion transistor chip
- In a technology ~~< 0.1 micron~~ **50nm**
- Using IP from several sources (mixed-signal)
- Running at ~~> 2 GHz~~ on-chip **10GHz**
- With a team of < 30 designers
- In < 6 months
- With competitive cost and power-delay-area product

Proposed GSRC 10-Year Goal, November 1997



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Assumption 2. IP re-use is a (part) solution -

to the productivity gap between Design Complexity and Designer Productivity.

Assumption 3. IP re-use really is in waiting -

Are some companies already doing good IP sales business?

Are some companies already buying IP?

IP Uptake problem = dft uptake problem.



Assumption 4. IP re-use is possible today -
the design tools and methods exist.
the standards are in place? (VSIA, AMBA, ...)
the ROI is positive?

Assumption 5. IP re-use is more feasible
going forwards -
the fundamentals are in place e.g. synthesis
NOT analysis, formal methods, design for
change, freedom from choice, rules and
constraints?
the ROI will increase?



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STATEMENTS & CHALLENGES

- 1) WE ARE IN THE MIDDLE OF A HUGE TRANSFORMATION.
- 2) IP IS IDEAS, METHODS, ALGORITHMS NOT BLOCKS, CIRCUITS, LIBRARIES.
- 3) CORRECT FUNDAMENTAL PHILOSOPHY IS NOT IN PLACE - NEED FORMAL DESIGN METHODS.
- 4) WE MUST:
CHANGE CORPORATE CULTURE TO VALUE IP GENERATION
 \geq PRODUCT GENERATION
CHANGE DESIGN CULTURE FROM "NIH" TO "CAN WE BUY IT?"