

The Future of HDL Design

(Will Cadence Miss The Boat?)

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Who Am I?

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- I'm Stuart Sutherland
 - A Verilog designer
 - A Verilog consultant
 - An early Gateway applications engineer
 - A member of the IEEE-1364 standards committee
 - Editor of the IEEE Language Reference Manual

I'm A Verilog Bigot !

The "Consumer" Market

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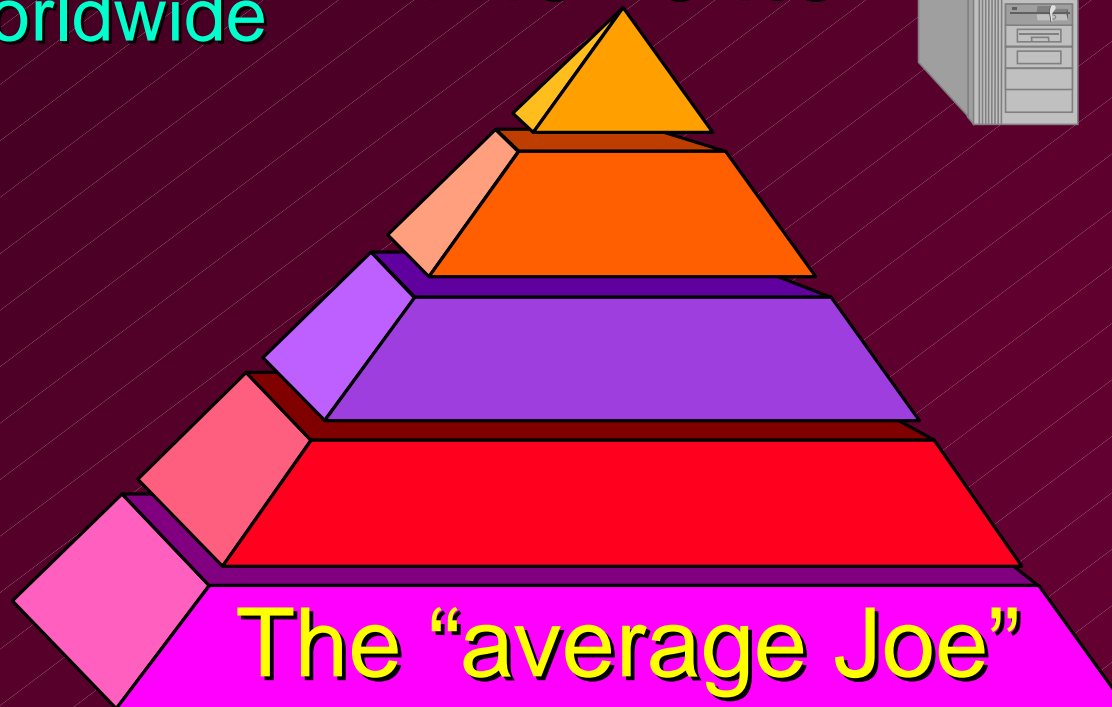
- Joe Costello's ICU-97 keynote address said:
 - Electronic design is going to become a consumer business
 - Right Functionality
 - Right Market Timing
 - Right Price

The "Engineering" Market

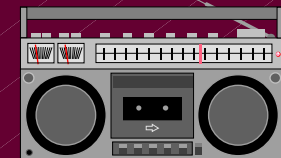
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- The hardware engineering is a pyramid
- Over 400,000 hardware engineers just in the US
- 22,000 Verilog-XL users worldwide

The "elite"

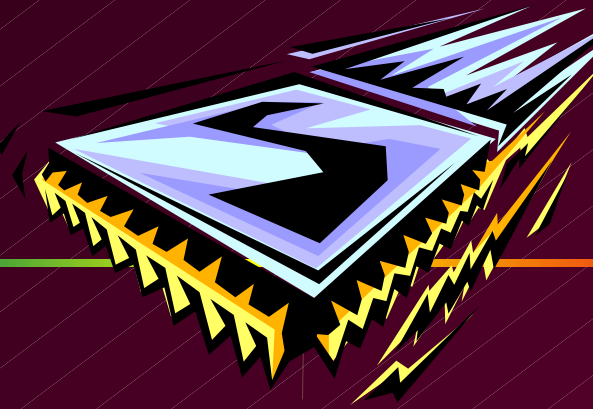


The "average Joe"



You Are The Elite

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➤ You:

- Push technology to the limits
- Need the newest deep-submicron processes
- Need the fastest circuits

➤ When it comes to engineering software, you:

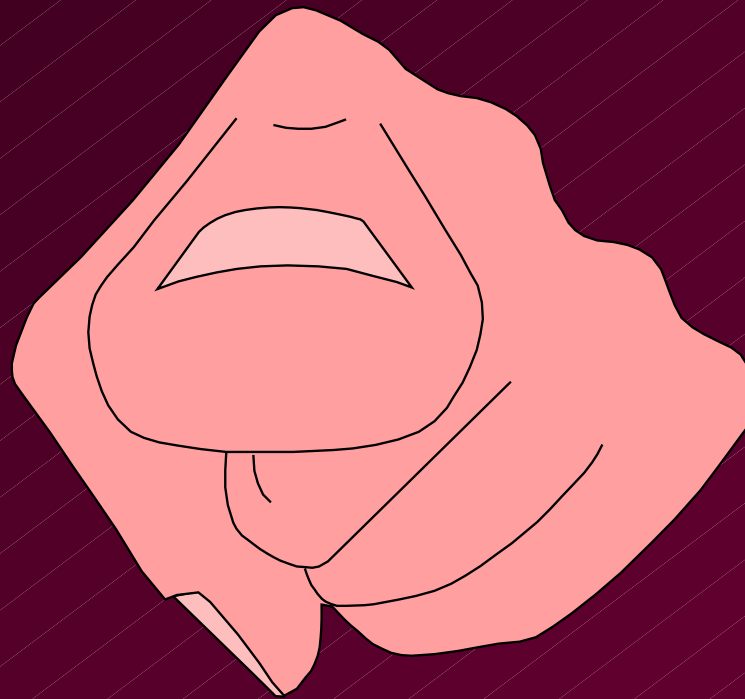
- Need tools that can push design limits
- ~~Arc willing to pay for the best~~

Have no choice: you have to pay for the best

Cadence Tools Today

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- Cadence makes HDL design tools for the **elite** (you) !



- Very good tools (maybe even the best)
- (and very expensive tools!)

Cadence's Vision for HDL Design

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(what Stu Sutherland heard this week)

- Cadence thinks you need to change your design methods
 - Design for a mass consumer market
 - Right functionality, right time, right price
- Cadence's growth will be in design services, not tool sales
 - Cadence will become the largest user of its tools
- Joe Costello thinks there is not a mass consumer market for HDL design tools

Stu Sutherland's Vision for HDL Design

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- HDL design is about change big time!
- The *masses* will begin to do HDL “top-down” design
 - Simple designs today match the speed/capacity of ASIC designs 10 years ago
- Verilog HDL is the design language of the future
 - ✓ Right Functionality
 - Powerful but not overly complex
 - ✓ Right Market Timing
 - It's here today
 - Right Price????**

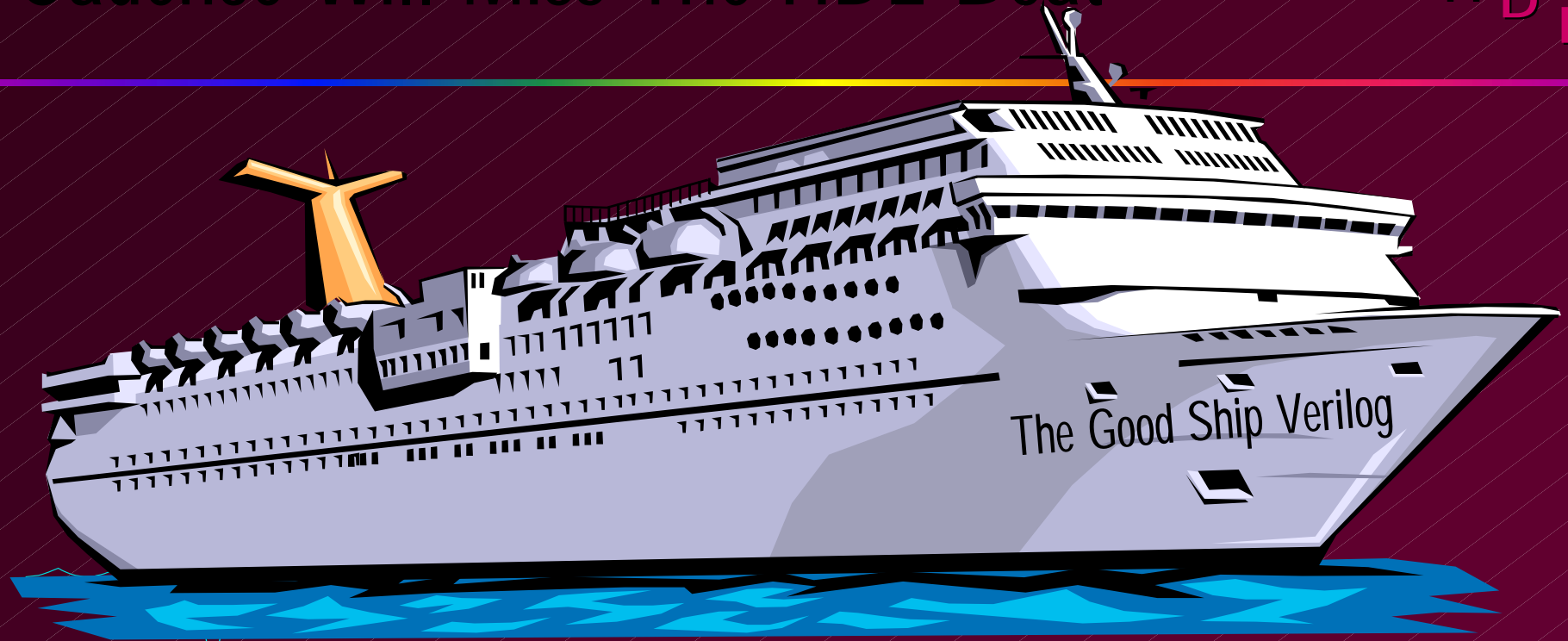
What is the Right Price?

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- The engineering mass market:
 - Is PC based
 - Extremely cost sensitive
 - Expects well integrated software tools
 - Needs basic (not complex) functionality
- I would pay:
 - **\$495** for Verilog-XL with SimVision
 - **\$1,995** for simulation, basic schematics, state editor, FPGA synthesis

Cadence Will Miss The HDL Boat

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- ✓ Right Functionality
- ✓ Right Market Timing
- ✗ Wrong Price !

Conclusion

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- More than 100,000 new Verilog users in next 3 years
- No new Cadence Verilog users

The King is Dead !
Long Live the King !



But Wait:

- Cadence **could** sell Verilog-XL to the masses:
 - It's 13+ year old software
 - NC-Verilog and Cobra are now the simulators for the elite