

SMC/ITAC

# 14<sup>th</sup> Executive Forum on Microelectronics

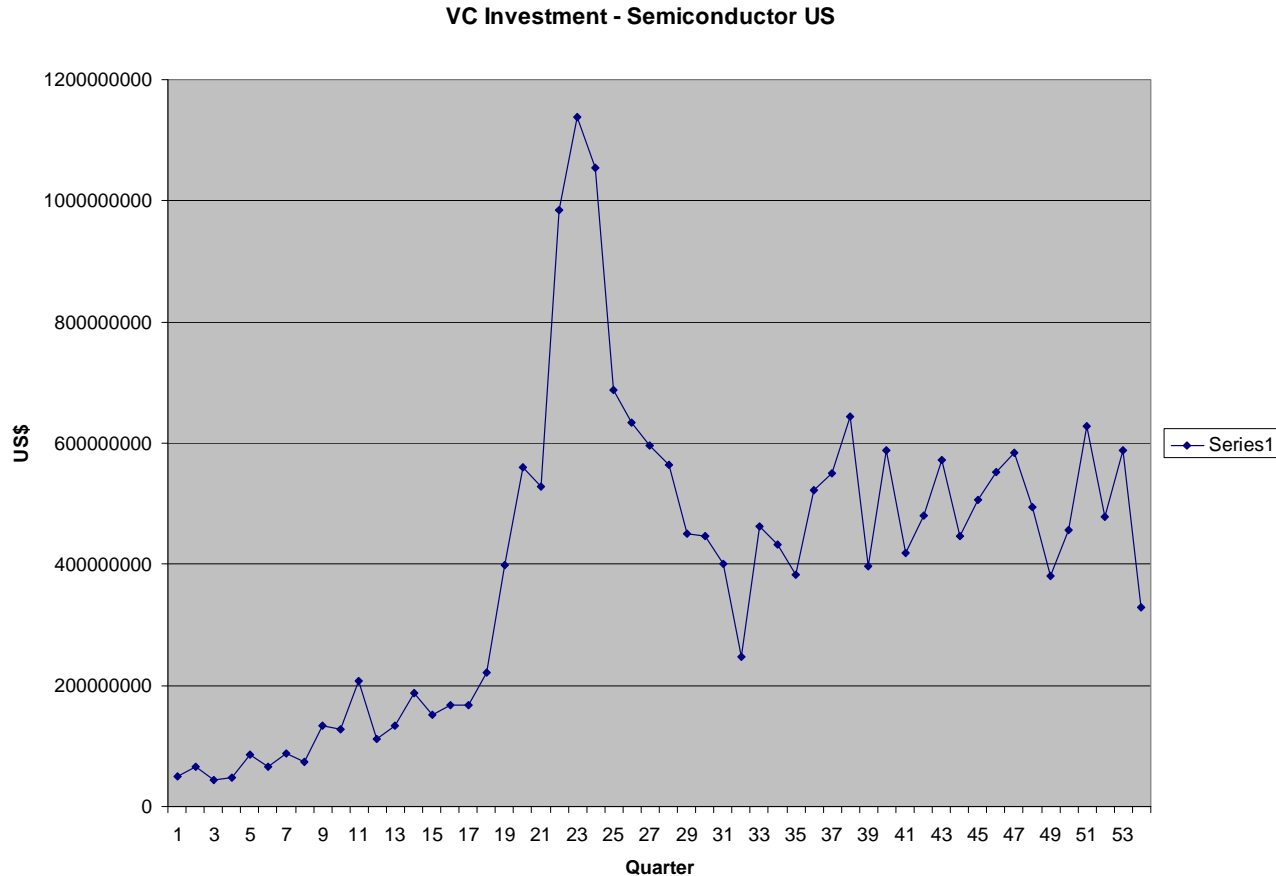
## Panel

*Nanoscale CMOS: Opportunity for  
a new business model?*

# Panel

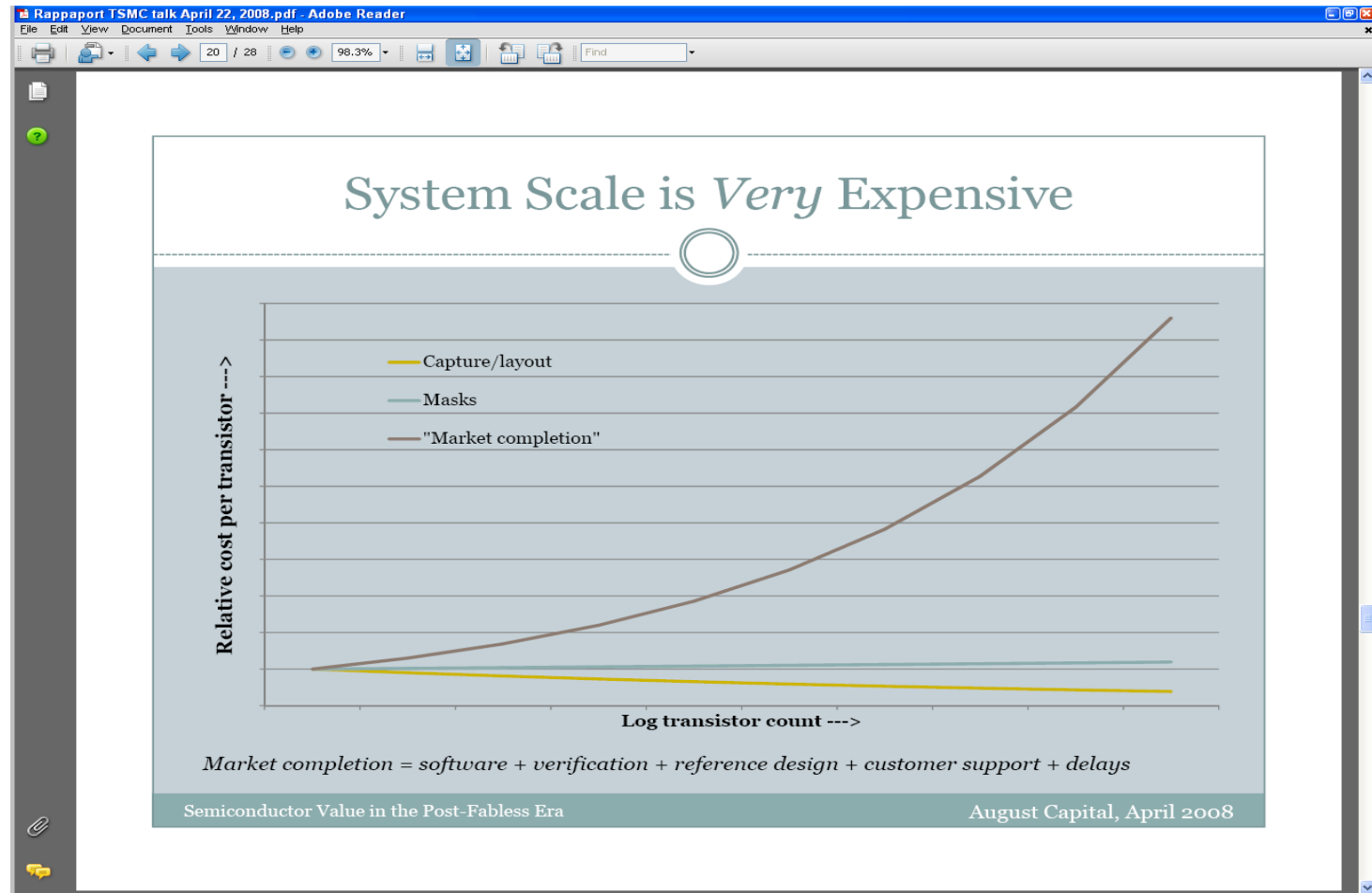
- With advanced CMOS processes like 40nm, increasing gate densities provide plenty of gates to designers & are inexpensive to manufacture in high volume using 300mm wafers (although not cheap to verify).
- Can fabless companies with SoC applications leverage new business models using structured ASICs (multi-mask standard cells), FPGAs or the new generation of ASICs which only customize some interconnect layers?
- Can CAD tool suppliers impact the ever-growing cost of development (EDA tools and resources required)?
- Can semiconductor manufacturing tool suppliers create new more attractive cost models?

# Semiconductor VC Investment - Not like the “good old days” ...

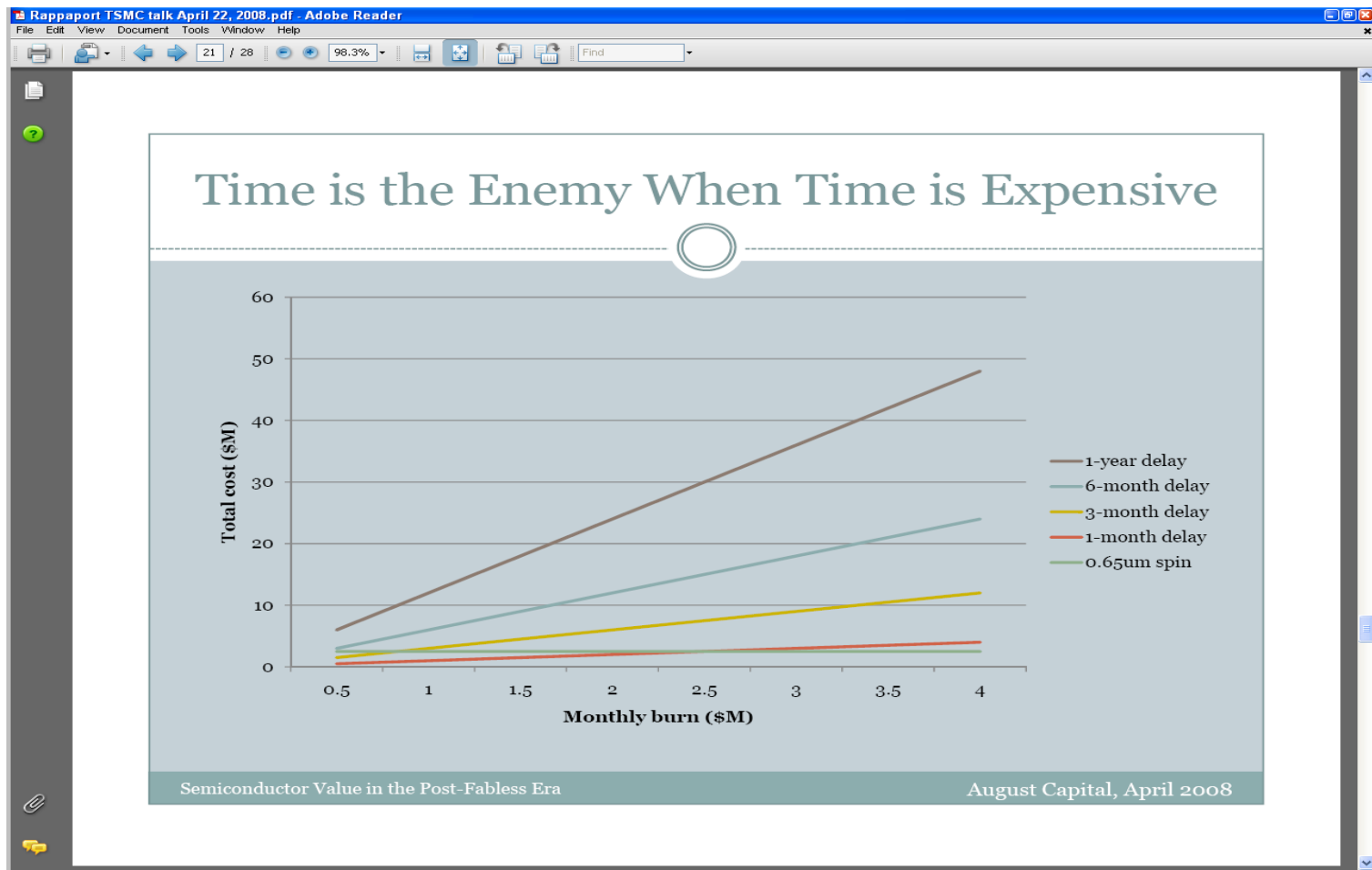


Source: PWC Moneytree (Q1'95-Q2'2008)

# The larger the heterogeneous device (SOC or not) the costlier to get to production



# Total Cost increases as burn rate as schedule slips ...



.. increasing burn rate

# BUSINESS MODELS

- IS THERE HOPE FOR DISRUPTIVE TECHNOLOGIES / BUSINESS MODELS THAT CAN ONCE AGAIN MAKE VDSDM DESIGN AFFORDABLE?

# EE Times – Foundry model (week of Oct 6, 2008)

- Silicon foundries play a pivotal role in the industry, but there are signs that the chip outsourcing model is cracking & may even be broken. Leading-edge foundries are falling behind Moore's Law & finding themselves stretched too thin. Many IDMs are moving toward a fab-lite model & relying more on foundries. This puts more stress on the foundries to handle both fabless and IDM production requirements.
- The fabless approach is also under pressure. "As TSMC ramps new technology nodes, it builds out less and less capacity," said analyst Doug Freedman of American Technology Research. "Too much risk. And when it moves to 40 nm, the problem will become worse. The fabless business model seems to be getting stressed out."
- Word on the street is that TSMC customers have delayed their 45-/40-nm devices. Rivals Chartered, UMC and SMIC are behind the process curve. Most smaller foundries are losing money. And consolidation is accelerating. Can the foundries stay above water? If not, the IDMs may have to re-think their fab-lite strategies, jettison their foundry plans and build new fabs again.
- Bottom line: Foundries won't go away, but the IDM model could slowly make a comeback.