

GlobalPress eSummit 2005

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This is the 3rd annual conference by GlobalPress, a PR company for international electronics industry, which was held at Monterey Plaza Hotel, CA during 2/28-3/3. Due to a conflict schedule with IDF and US FPD, I only attended on Monday, Tuesday-2 days. With 58 editors from Asia, EU, USA, the below is the summary:

1. 2/28 Keynote: Michel Mayer, CEO-Freescale

- 2004 Revenue= \$5.7b; Transportation/Standard Products= 50%, Computing/NW= 25%, Wireless/Consumer= 25%.
 Claim market share: NPU= 70% with PowerCube, Handset= 15%, Hi-power RF= 65%, Hi-end DSP= 50%.
- Convergence= Standardize common sub-systems (Re-use+ Platform: PM, A/V, Memory, Security)+ Multi-Functionality.
- No specific strategy explanation on convergence trend.

2. Design for Success: R Blake, VP-Altera

- Revenue Growth:

	2002	2003	2004
	\$712m	\$827m= +16%	\$1,016m= +23%
- Market Share Trend:

	2002	2003	2004
Xilinx=	60%	60%	80%
Altera=	40%	40%	20%
- 2004Q4: Gross Margin= 70% with +4% market share in FPGA.
 Cyclone II= \$0.35 with 7.5m unit shipment, Claim= +60% Vs Spartan3
 Stratix II= 200 DMips, Claim= +39% performance Vs Virtex4
 Learning curve of FPGA: CAGR of \$/LE (Logic Element)= -25% in 1993-2004
- FPGA Market:

	2003	2007	CAGR	PLD-SAM @SIA
MOS-DSP=	\$6.2b	\$11.6b	+17%	\$6b
MOS-Logic=	\$36.9b	\$53.1b	+9.5%	\$15b
MOS-MPU=	\$27.4b	\$37.0b	+7.8%	\$3b
MOS-MCU=	\$10.0b	\$13.5b	+7.8%	\$3b

3. 65nm Node: IBM/Chartered

- 65nm at Fab7: MPW in 2005Q4 → Pilot in 2006H1 → Process Qualified in 2006Q2 for LP (Low-Power)/2006Q3 for G (Generic) → Product Qualified in 2006Q3 for LP/2006Q4 for G.
 SRAM Cell= 0.625um²/0.52um² for G, 0.682um²/0.54um² for LP.
 Design Rule+ Spice Models are ready.
 STi+ Twin-well+ Tri-gate (18/28/52A)+ Ni-Salicided N+/P++ Low-K;
 Will use Strained-Si but no details can be released.

90nm: Ramp Production in 2005H2.

- Chartered sent 50 engineers to IBM: 30 for 65nm, 20 for 90nm-12" conversion.
Use Process-Exact strategy+ AMD's APM (Automatic Precision Mfg)

4. Wireless Panel:

- Airgo NW: MIMO will be Everywhere due to valuable/limited Spectrum.
Current WALN Market: MIMO has 2% in unit, 8% in revenue
Standard will be completed in 2006.Q3.
Ultra low-power 802.11 (Compatible w/Bluetooth) is in development now,
MIMO+ Ultra-low-power will impact the UWB market, especially the issue
of delayed UWB standard.

- Xilinx: demo RocketIO, a NRZ-based serial IF to 10G bps with equalization+
pre-emphasis.

WW WiAX Market:	2003	2009	@iSuppli
(CPE+ Base-Station)	\$0.5b	\$2.6b	
WW Wireless BS Market:	2003	2008	
Semi=	\$2.7b	\$5.6b	
FPGA=	\$222m	\$382m	

3G Baseband: HSDPA (Hi-Speed Downlink Packet Access)+ 3GPP-
Turbo Convolution Code (TCC) for CDMA2000+ Random Access
Channel (RACH) for WCDMA+ Searcher.

Wireless Deployment Cost:

CAPEx: RNC= 10%+ BS= 22%+ Sites= 43%+ Core-NW= 25%.

OPex: Marketing= 28%+ Billing= 12%+ Adm= 15%+ Interconnect= 9%+
NW-maintenance= 14%+ Annualized Capital= 16%+ Annualized
Equipment= 6%.

- All Transaction-based will be used Wireless.
- Marvell claims to have 65% market share of HDD Read-channel IC.

5. Broadcom: Henry Samueli, Chairman

- uP in everything → Communications in everything.

- WW Market:	BB-DSL	CM	Others	DTV-DBS	Cable	Terrestrial
2005:	125m	50m	25m	80m	50m	15m
2009:	200m	75m	50m	2008= 100m	90m	30m

WW Home NW Market:	2004	2005	2006	2007	2008
	34.5m	48.7m	63.6m	80.8m	97.4m

WLAN Market:	--	120m	175m	250m	??
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- DVD will be replaced by Media-server or VoD with DRM.
RFID uses for Car-key
- Convergence of Design Methodology (RF+ Analog+ Digital)
Features+ Functions; Devices+ Platform; End-markets.
- Broadcom believes UMTS-based+ 802.11g 4G vs WiMAX, the only company
is not interested in WiMAX+ VoIP can impact 4G market for current
WLAN vendors.

Broadcom also believes that 10Gbps lifecycle be longer >= 10-20 years.

6. Enabling NG Infrastructure: Bob Bailey, CEO-PMC Sierra

- 1979-1989: TI; 1989-1993: ATTu; 1993 joined PMC.
- Services Evolution with more BW demand:
 - 1995= eMail+ Web-browsing → 2000= VoIP+ Music Download+ JPEG
 - 2005= Video Download+ DTV+ Peer-Peer-Gaming
- Trend: 2nd wave of infrastructure “Capital Upgrade” cycle just beginning.
NW Packetization+ Voice/Data/Video ISP+ On-line SAN+ SoC+ Digital Consumer+ Wireless+ SW-Content.
- WW Communication Market:

	2002	2003	2004	2005E
Equipment=	\$124.5b	\$116.6b	\$129.4b	\$138.6b
ISP=	\$93.4b	\$85.5b	\$95.1b	\$100.8b
Enterprise=	\$31.0b	\$31.1b	\$34.3b	\$37.8b

WW DSL Subscribers:	35.8m	61.2m	95.7m	130.9m
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(FTTH will limited in Hi-density cities due to higher cost)

WW BB Subscribers:	2004	2005	2006	2007	2008	2009
	130m	170m	210m	250m	290m	330m

VoIP Penetration=	5%	12%	20%	29%	36%	45%
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- New IC:
MSP4000: 4-port VoIP GW= 4x SLIC IF+ 3x MAC+ MIPS32-4km+ 4-way Data Switch+ Voice-engine.

7. Hypertransport: (HT)

- HT is simple than SCI, no coherence but can add SCI.
New HT AP: Infinipath HTX Card: Pathscale- AP Logic ASIC+ 8 CPU+ MPI Latency <1.5us+ 1.8GB/s bi-directional.
Cray: 12-576 Supercomputer with 1.8us MPI latency+ 8GB/s+ Rapid-Array Interconnect to 24 port
- HT 2.0 Spec:

	Current Use	Spec Max
BW=	8GB/s	22.4GB/s
Line-Width=	16b	32b
Clock=	1Ghz	1.4Ghz

8. Airgo NW: (Palo Alto, CA) Greg, CEO

- Founded in 2001.1, raised \$97m with 140 employees for MIMO WALN IC.
Shipped 3m MIMO IC with 108Mbps @20Mhz BW, proposed to 802.11n standard. (Wwise Vs TgN-Sync= Beam Forming w/1 DSP + 2x Tx to 1 Rx+ 1 DSP at receiver site)
- Use 2x DSP+ 2x Tx to 3x Rx+ 3x DSP at receiver site, claim has better coverage with Multi-path:

	Data-Rate @	30-Ft	200-Ft
Airgo= (2X)		40Mbps	20Mbps
Standard 802.11a/g=		20Mbps	5Mbps
- MIMO ASP Price= \$172 Vs Standard 802.11a/g= \$72 → 2.5X price
- MIMO Roadmap:

	2004	2005	2006
	2X	→ 4X	→ 6X
- Wait and see attitude for WiMAX market (the 3rd trial for Fixed Wireless)

9. 65/45nm: M Kakuma, Toshiba

- 1981: Waseda-MS, joined Toshiba; 1981-9: SRAM; 1989-90: HP visiting; 1991-6: CMOS; 1992: Waseda-PhD; 1996-2002: RISC; 2002-: SoC
- Scaling cost ratio= $e^{-0.16x}$; B-E= 1.5 years @1-1.5 defects/cm²

= 2.5 years @2.5 defects/cm²

Scaling can be maintained as: 45nm 32nm 22nm 15nm
 Operating Temp= 400K 350K 280K 230K
 → Need new Material, Structure, Circuit-design.

After yield >50%, 0.8x Shrink or Scaling is effective.

- 65nm- DRAM IO Logic Lg; 45nm- Tox Lg
 Tox= 6nm 3.5/6nm 1/1.4nm 40nm 0.9nm 28nm
 SRAM= 0.495um² ??
 DRAM= 0.11um² 0.069um²

(Toshiba claims 32Mb DRAM yield= 95% @65nm.)

- Manufacturing Strategy: Y0 Y1 Y1.5 Y2 Y3 Y4
 R/D IC-design Std-IC ASIC-pilot ASSP --
 COT -- IP NG-R/D
 Cost= 2X 1.2X -- 0.7X 0.4X 0.25X

10. US CE Market: Jeff Josef, VP-CEA

- US CE Market: 2002 2003 2004 2005E
 -- -- \$113.5b \$125.7b
 Digital Ratio= -- -- 55% 58%
 DVD-R= 0.15m 0.5m 2.4m 3.4m
 DVR= 0.17m 0.5m 0.9m 1.8m
 DTV= 2.5m 4.1m 7.3m 22.25m
 LCD-TV= -- 2.5m 3.8m --
 PDP= -- 0.5m 1.4m --
 (1999-2004 total DTV sold= 16.1m)
 Satellite Radio= -- 1.2m 3.3m 4.8m

- Optimize about WiMAX market.

11. Xilinx:

- News: 2004.6 Virtex4 with 90nm; 2004.9: new Embedded, DSP Div; 2004.10: introduced EasyPath+ XA FPGA for auto; 204.12: shipped 100m Spartan, #2 market share in cPLD;
- Claim PLD Share: 2003 2004
 Xilinx= 50% 51%
 Altera= 32% 33% (Very contradictory with Altera data)
 Clock= 200Mhz Vs 120Mhz of Altera @90nm-6W Power;
 In-rush Power= -95% average; Chip-size= -28% Vs Altera.
- New ISE7.1 Design SW: Linux-based
 Power Analysis+ Hierarchical Design+ Simulation+ In-Si Debug
 Claim +25% faster than ISE6.3
 FPGA Synthesis ,market= +75% by 2008

- 65nm FPGA will be taped out in 2005, plan be 1st one.
1.5m System-gates-Spartan= \$12.95 (Vs ASIC= <\$5.)

12. Open-Si: An ASIC design services start-up in 2003.

- Design Center in Bangalore, India, claim Design-labor= 1/3; O/H= 1/2 and EDA-Tool efficiency= 3X (??) → Chip-cost= 1.3X+ Schedule= 90% prediction (Vs 20%)+ 1st-pass= 72% (Target 90% Vs 31%)
- Focus on 0.18u, 0.13u ASIC design services with OpenModel.

Xilinx News Release: 3/1/2005

- Announce new Spartan3e family with 90nm at UMC for Logic-centric CE market (Spartan3 is for IO-centric CE market) by:
 - . Optimize 90nm transistor design with smaller size.
 - . Reduce to 1-ring pads Vs Stagger-pads IO design.
 - Chip size= -30% with 250k gates (Vs 200k gates of Spartan3)
- Spartan3e Price= <\$2 @ 100k gates= \$0.46/1k logic elements (Vs \$14.5 in 98)
- New AP: LCD-TV: Sharp 20"= ESS-ES6420 Media Processor+ IChips-IP00C720 Scaler+ Mitsubishi-M52347 Sync SP+ ADI-AD9883 Analog IF+ BurrBrown-ADS831 8b ADC+ Rohm-BA7657 Video Switch+ SI9993 HDMI Rx+ NS-DS90385 LVDS Tx+ 2x Xilinx-Spartan 2S50+ Panasonic 2x 8b+ 16b uC.
LCD Monitor: Spartan3e 3S250 can replace TCon+ uC+ LVDS Tx.
- WW Car Telematics Market:

	2003	2010	@ABI
	\$5.6b	\$12.8b	
FPGA IC=	\$240m	\$449m	
- UMC= 99% Xilinx foundry supplier in 2005Q1.

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