

From Non-Computing, no-demand to CommPuting, on-demand

Envisioning and Creating Tomorrow's World

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The Challenges in Emerging Markets

- Educating youth in schools and colleges
- Edutainment platform for growing middle class
- Creating real-time enterprises and supply chains
- Digitising government-to-citizen interactions
- Removing pain points at home and in enterprises

Many Challenges, One Solution: The Computer

The Connected Computer for students, families, employees and public access points

Emerging Market Realities

- 10-90 Chasm
- 1-9-90 Split
- Price(Intel+Microsoft) = Low Constant
- ADAM Challenges
- Leveraging Broadband
- Middle of the Pyramid Focus
- Think Ecosystem, not Silos

India Market Opportunity

- Schools: 1 million * 10 per = 10 million
- Colleges: 50,000 * 200 per = 10 million
- Homes: 45 million
- SMEs: 40 million
- Others: 15 million

India can absorb 120 million computers

- Current Base: 13 million; growth 4-5 million/year
- Opportunity: 100 million+ over 5 years

The Problem with Computing Today

- Affordability: too expensive; dollar-denominated
- Desirability: lack of applications and content
- Accessibility: low installed base of computers
- Manageability: high complexity; lack of “simplicity”

- PC Paradigm 25 years old; created in a time and era where networks did not exist
- Intel, Microsoft monopoly hobbles alternatives
- Cellphones, TV+STBs are not real options
- Users in developing countries caught between non-consumption and piracy

The significant problems we face
cannot be solved at the same level of
thinking we were at when we created them.

- *Albert Einstein*

Our Change Function = f (user crisis vs
user's total perceived pain of adoption)

- *Pip Coburn (UBS Warburg)*

Reinvent Computing for Next Billion

simplify cost and complexity
focus on emerging markets

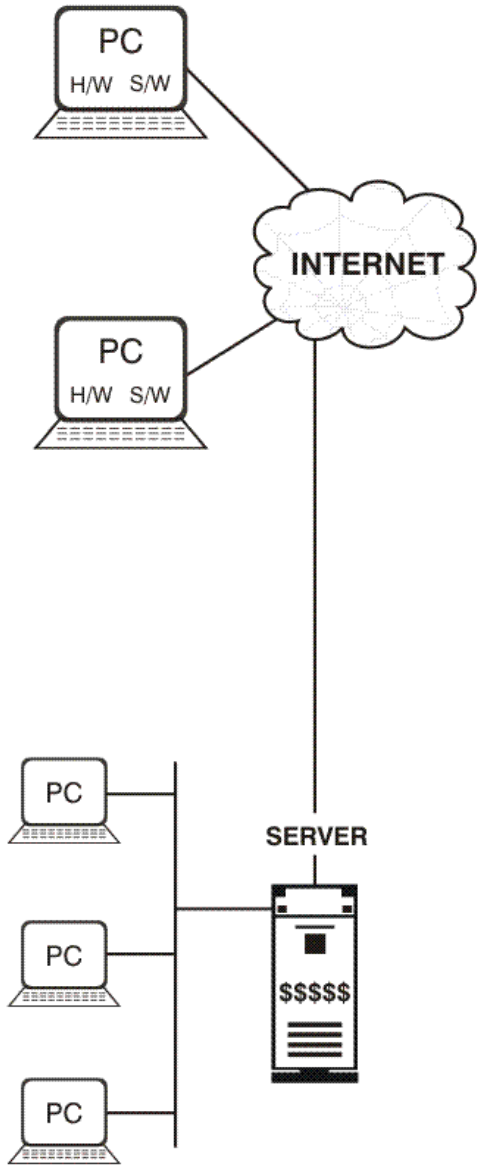
CommPuting: Five Dimensions

- Zero-Management Access Devices
 - Network CommPuters
- High-Speed, Ubiquitous Networks
 - Broadband and Wireless
- Digital Infrastructure
 - Server-based Computing, Storage Grid
- Centrally Accessible Services
 - Hosted Software and Content
- Utility-like Payments Model
 - Subscription

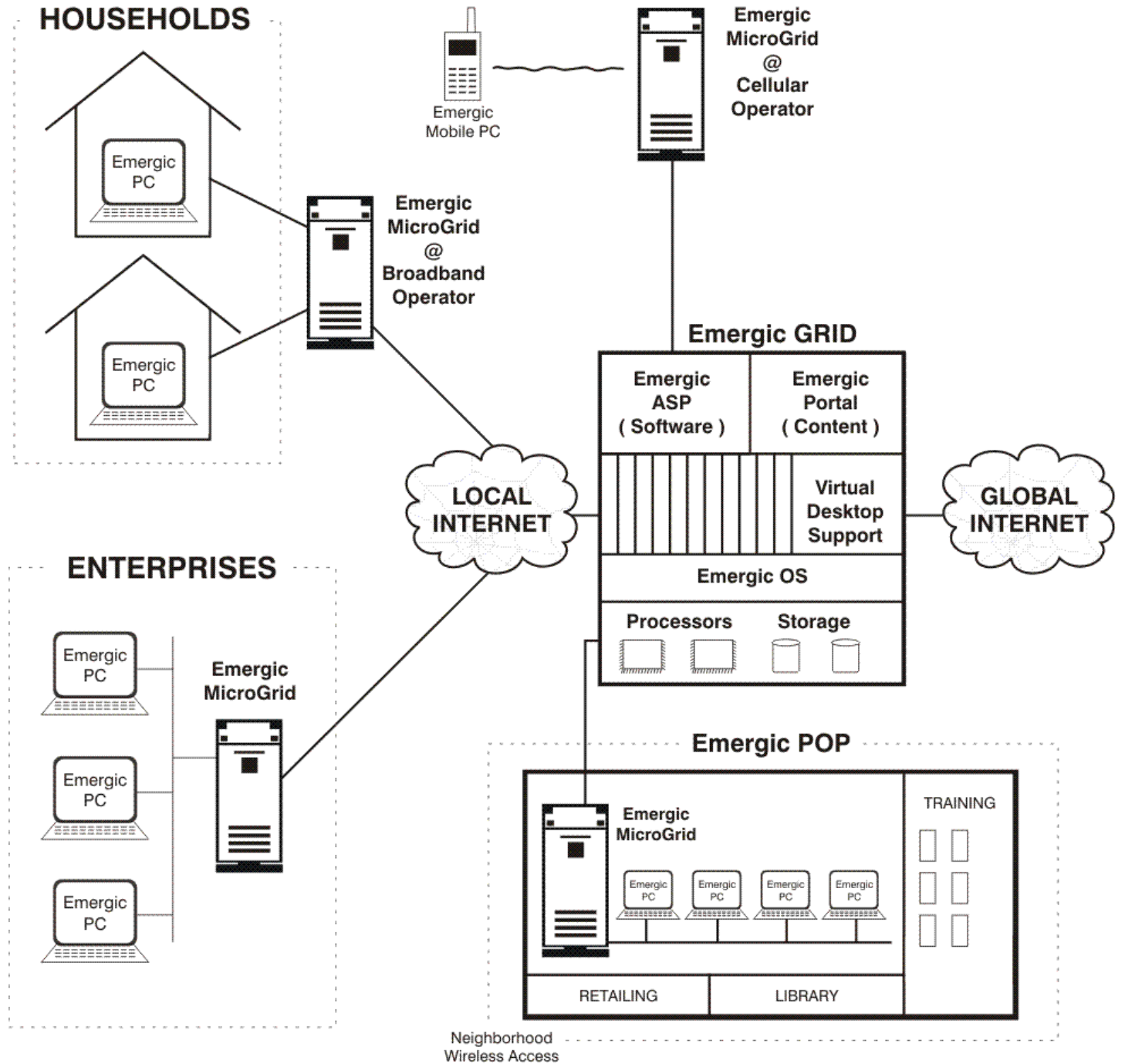
CommPuting Utility

- Solves ADAM problems in computing
 - Affordability, Desirability, Accessibility, Manageability; also: Security and Ubiquity
- Thin Clients connected to Server Grid
- Look-and-feel of Computers
- Can leverage huge existing base of Apps
- Subscription Service (Monthly Billing)
- Ubiquitous Access to data and desktop
- Broadband Wireless for masses, not classes
 - to complement wireline broadband

PC - CENTRIC COMPUTING

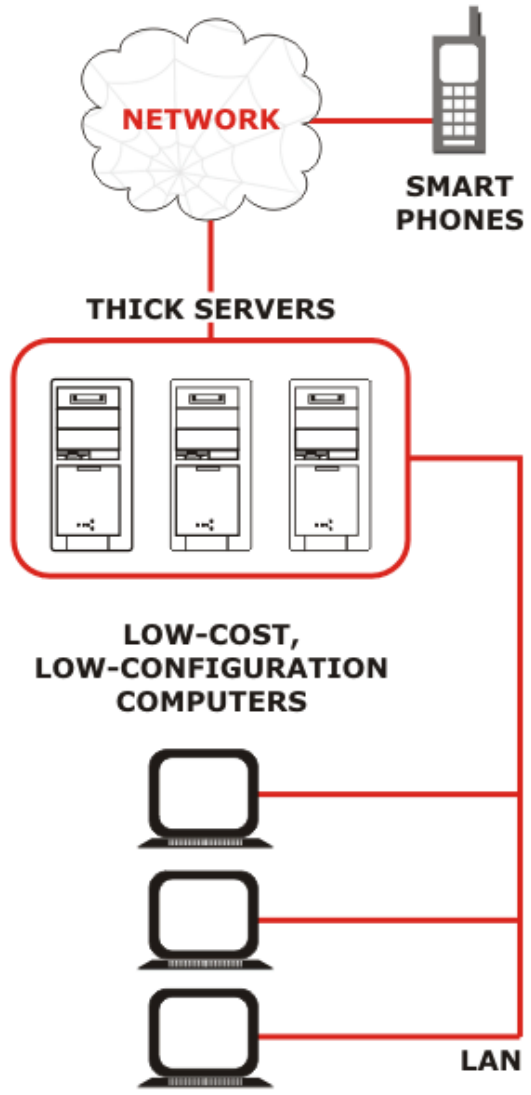


EMERGIC COMPUTING

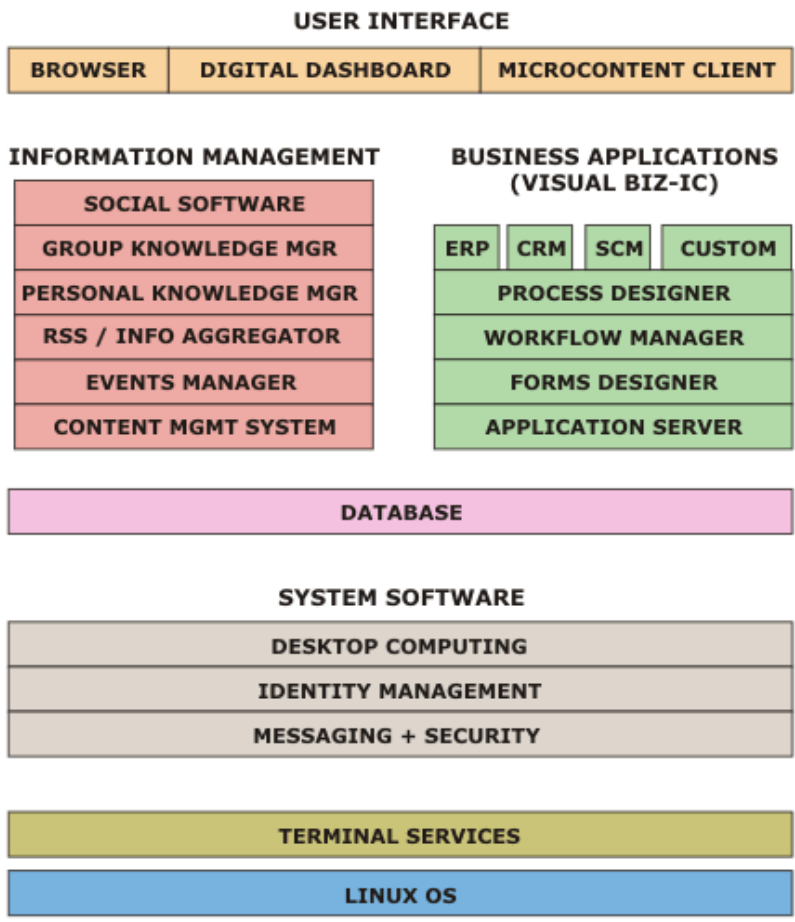


REFERENCE ARCHITECTURE

THIN CLIENTS & SERVER-CENTRIC COMPUTING



HARDWARE ARCHITECTURE



SOFTWARE ARCHITECTURE

Four Network Computer Options

- PC
 - Affordability and Manageability
- Cellphones / PDAs
 - Input/Output Footprint; Connectivity Cost
- TV+Set-Top Box
 - Display Resolution and Quality; Family (not Personal) Entertainment Device
- Game Console
 - Can't be subsidised because of game software piracy

Network CommPuters

- Price Point: Rs 3,000, excluding display
 - Add Old/New Monitor for Rs 2,000/4,000
 - Total Cost: Rs 5,000-7,000 (\$110-150)
- Hardware: \$10 processor for \$50 computer
 - Support OS; Drive VGA Display; Authentication
 - Client-side multimedia encoding/decoding
- Software: OS + remote desktop display
 - Support: Peripherals (KVM, USB, Networking)
- Connectivity: Ethernet; WiFi, GSM/CDMA

2 Scenarios

- Thin Clients connected to LAN-Grid
 - SMEs, Education, Govt, BPOs, Cybercafes
 - Grid Server connected via wireline broadband to Internet
- Thin Clients connected to Op-Grid
 - Homes, Shops, Kiosks, Rural (eGovernance)
 - “Singleton Computers” connected over wireless network to server platform

LAN-Grid

- Virtualised Computing Infrastructure for LANs
 - Scalable platform for 25-1,000 users
 - Provisioning of Linux Desktops
 - User Management and Billing
- Can also provide:
 - Messaging and Security; File/Print Server; Search
 - Dashboard; Collaboration; Business Applications
 - Backup to Net-Grid; Content Library (Multimedia)
 - Cellphone Integration
 - Alerts; Desktop and Data Access

Operator-Grid

- Centralised Computing Infrastructure
 - Work over Neighbourhood Network / WAN
 - From Campus to City
 - Support for large number of users
 - Computing and Storage
 - Support for Multimedia Content and Software
 - Support for Singleton Computers (Thin Clients)

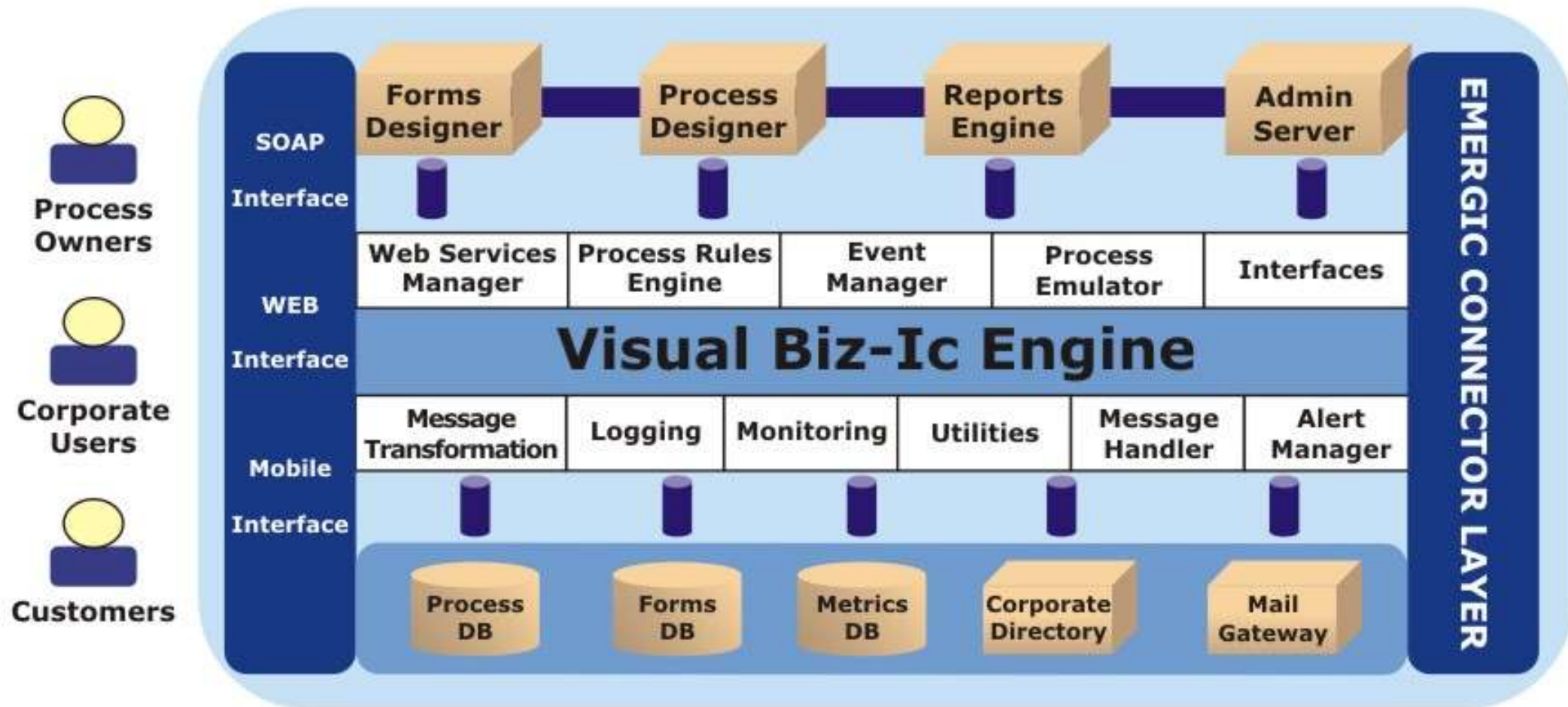
Utility-like Business Model (like Mobile Phones)

- “CommPuting” as a Service
- Full Solution for Rs 700 (\$15)/user/month
 - Client: Deposit to cover cost + Rs 200/month
 - Client lifetime is double that of a PC
 - Grid Services: Rs 100/month (software and content)
 - Broadband: Rs 350/month (256+ Kbps)
 - Reseller Margin/Support: Rs 50/month
- No long-term commitment; Pay for Use



Visual Biz-ic

Business Process Automation for SMEs



Tomorrow's World

- Thin Clients
- Server-based Computing (Grids)
- CommPuting as a Service
- Ubiquitous Broadband, Wireless Networks
- Mobility Integration
- Multimedia Content
- Architecture of Participation
- Emerging Markets as Early Adopters

Entrepreneurial Opportunities

- LAN-Grid and Operator-Grid
- Broadband Content Factory
- Software Aggregator
- Mobilising Enterprise Applications
- Business Process Libraries
- Micro-eBays
- Micropayments Infrastructure

for more information

blog: www.emergic.org

see right panel section "my best writings"

Tomorrow's World (ongoing)

CommPuting Grid

Massputers, Redux

The Network Computer

Reinventing Computing

The Next Billion

The Rs 5,000 PC Ecosystem

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