The Next Wave of the Internet

Drivers, Inhibitors and Value

NEW PARADIGMS MARKETING GROUP

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What We'll Cover

- Some Assumptions
- Next Wave Drivers
- Next Wave Inhibitors
- The Value
- What Will It Happen

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Some Assumptions

- What is the Internet?
  - The *Internet*
    - Is not just a communications pipeline
    - Includes the servers, clients, content, apps etc.
- Do We Need to Say the Internet is Not Dead?
  - We have gone through a well established pattern:
    - New technology developed → Hype
    - Over investment, overcapacity →Crash
    - Recovery→ Consolidation and maturation
  - Examples:
    - First industrial revolution (1760-1820)
    - Railway revolution (1825-1875)
    - Second industrial revolution (1920-1970)

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Next Wave Drivers

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Drivers: Infrastructure (1)

- Plant
  - Long haul under capacity (10% fiber utilization)
  - “Last Mile Broadband”
    - 75% US homes passed by cable; 50% DSL capable
    - WiFi
    - Fiber (e.g., Chicago CivicNet)
- Connect rates
  - Consumers:
    - 500M consumers connect w/w
    - 50% HH connected US; 20% broadband (13% cable; 7% DSL)
  - Business
    - F1000 – 100%
    - SME - ~70% connected (>90% w/ over 100 employees); BB = ~15%
    - SOHO – Next target

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Drivers: Infrastructure (2)

- Servers
  - Over capacity – Utilization rates off a cliff after 2000 (from 90% to 60%)
  - Servers purchased at 1999 rates – still buying 1M units/Q
  - New technologies: Blade servers; edge services
- Clients
  - Starting to move off the desktop
    - Wireless
    - Handhelds
    - Set top
    - Games

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Drivers: Demographics

- Consumers
  - Big (35% CAGR) growth 97-01 in Internet use; stalling now
  - *But:*
    - As SES groups saturate at ~80%, lower groups connecting at higher growth rates
    - Computer literate youth cohort will drive growth
      - (70% <18 years old vs. 37% >50 years old)
      - Computer literate youth will drive growth
  - Work use continues to correlate with home use: 77% to 35%
- Business
  - Higher end of SME saturating; moving to broadband
  - Lower end (<100 employers) growing

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Drivers: Technologies in Play(1)

- Internet2/NGI initiatives:
  - Real-time HD video level networking (gigaPoPs)
  - Multicasting
  - IPv6
- Intelligent caching, edge services
- Web Services
  - All the big players in the game (MS, IBM, Sun, HP, etc.)
- Systems: Continued Rapid Expansion of Server, Client and N/W Technology

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Drivers: Technologies in Play(2)

- New Clients – Mobility, Ubiquity
  - Combined Phone/PDA w/ enhanced display
  - 3G in US
  - Set tops
  - Kiosks, ATM etc
- Data Entry and Display
  - Voice etc.
- More Intelligent Transactions

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Drivers: Capital

- Excess VC Capital on the Sidelines (~$250B)
- Public Equity Funding Also on the Sidelines
- Telecom Over-built
- Large Corporate Research Investment Still High

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Drivers: Demand(1)

- The “Color TV Paradox” at Play
  - Even more complex – we can only see outlines of the product
- Business
  - Realize promise of teleconferencing, collaboration
  - B2B adoption
    - App extensions
    - Better platforms
    - More online data and business rules (B2B content)
  - EAI

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Drivers: Demand(2)

- Consumer
  - Asynchronous entertainment
  - Personal teleconferencing
  - Web apps (ASPs)
  - Education: tele-learning
  - In home integration
- Interaction of Business and Consumer Sectors
  - B2C
  - Ubiquity in one helps drive ubiquity in the other
  - Large base to amortize costs

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Next Wave Inhibitors

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Inhibitors: Law & Regulations

- IP
  - Digital Millennium Copyright Act
  - Software patents
- Telecommunications Act of 1996
  - 225 CLECs bankrupt or acquired
- FCC
  - Mobile
  - Cable
  - Telco
- International
  - Export Control

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Inhibitors: Security and Privacy

- Lack of Deployed Authorization and Authentication Standards
- Digital Rights
- Credit Card Fraud
- Cyber Attacks
- Terrorists' Use

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Inhibitors: Business Models

- 90’s Business Model Panned – No Proven Replacements
  - No clear value extraction models
- Not Yet Matured for Content, Transport
  - Broadband 5% net operating margin
  - Still struggling with advertising
  - Tiered content charging tried, not proven

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Inhibitors: Industry Structure

- Entertainment Industry, Technology Industry Stand-off on DRM
- Monopoly Control of Copper and Coax Plant
- Standards
  - Propriety vs. industry standard battles continue
  - Some adopted, not proven – e.g., HTDV, web services

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The Value

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The Underlying Value Proposition

Compression of:

- Time ("anytime")
  - Memory in the system – I can read, watch, listen when I want (asynchronous)
- Space ("anywhere")
  - Speed of light transmission – If I have to wait, why bother
  - Virtual reality – If it doesn't sound like the Rolling Stone, I don't want to listen

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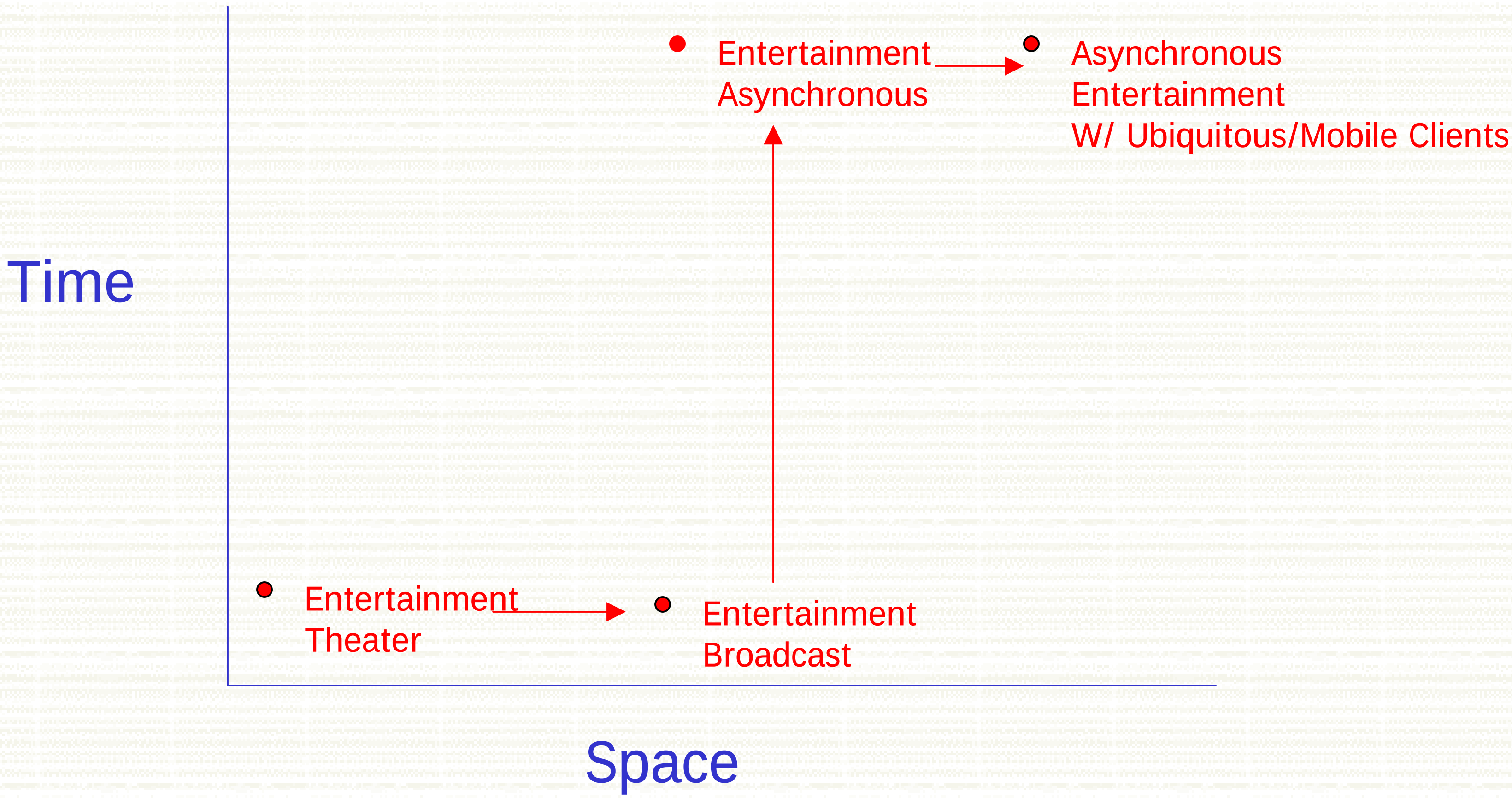
Time & Space Example (1)



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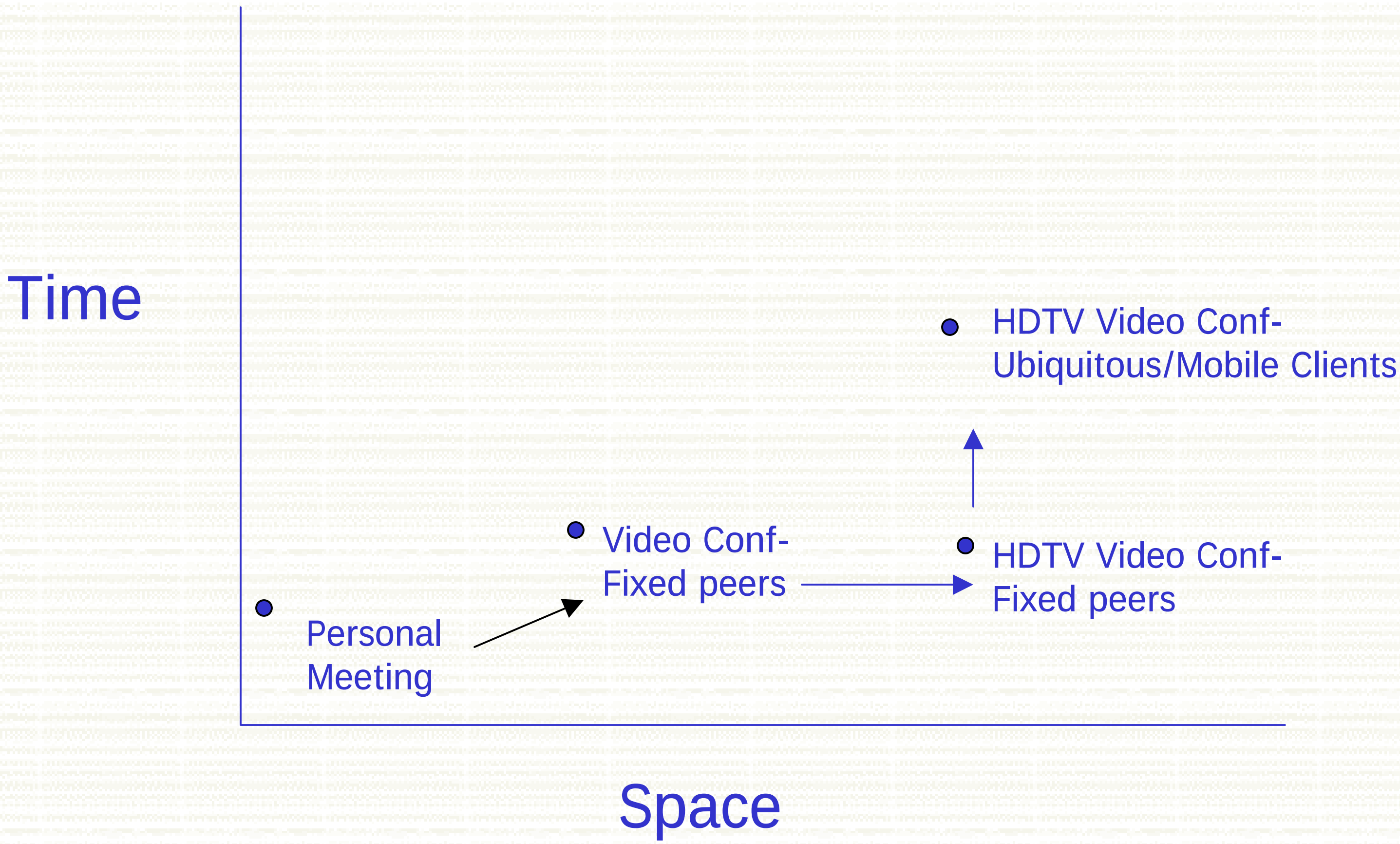
Time & Space Example (2)



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What Will Happen

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Value: Promise and Problems

- Technology ***Drivers*** Will Continue to ***Compress Time and Space*** – Look for the Trends
- *If* the ***Inhibitors*** Don’t Stop the Progress
- ***Compression of Time and Space*** has Huge ***Value***
  - Monetary Direct (e.g., less travel, fewer meetings, quicker transactions)
  - Monetary Indirect (e.g., develop time to market advantage, customer satisfaction)
  - Psychic (e.g., watch West Wing when I want, w/o commercials!)
- *But* We Don’t Know What the Apps Will Be, or What People Will Pay (Value Extraction)

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When Will "It" Happen

I don't know!

But –

- Convergence of the key drivers won't happen at once
- It will come in waves and shocks
- Inhibitors will slow or kill the process

Market Development Strategy Needs to Understand the EcoSystem and Monitor for Changes

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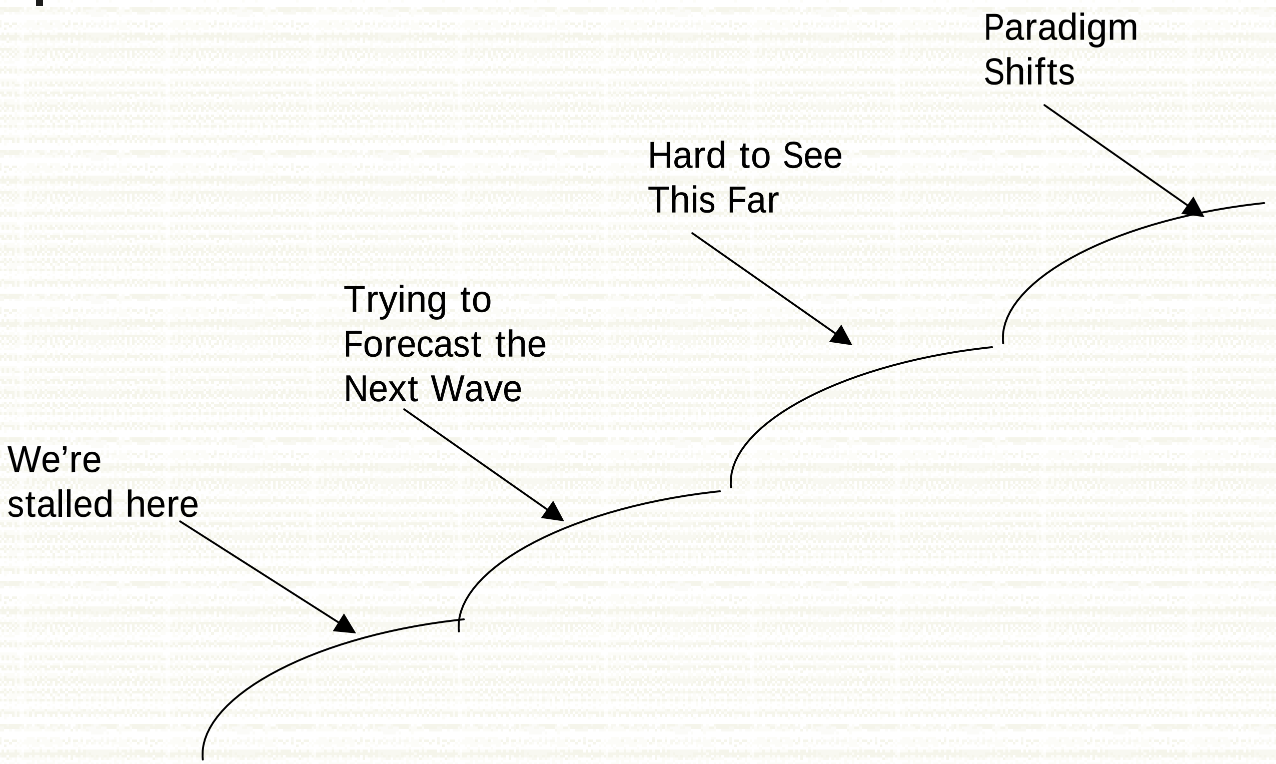
The Future Comes in Waves



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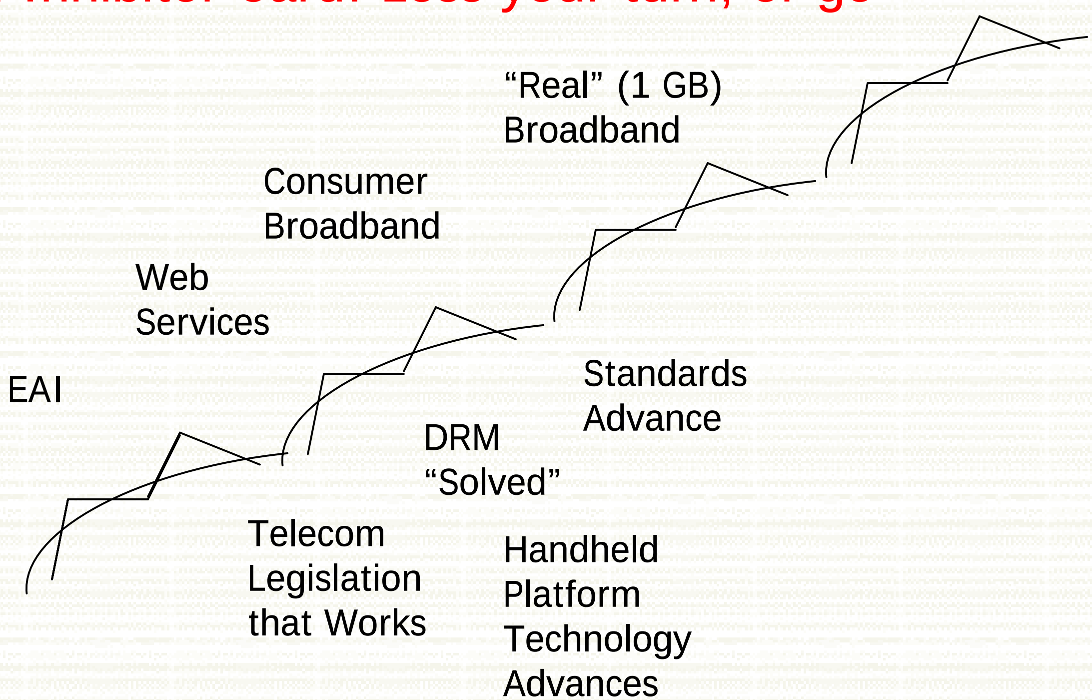
Drivers and Inhibitors: How to Play the Game

- Draw a Driver Card: Move ahead a few squares
- Draw and Inhibitor Card: Loss your turn, or go backwards



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OK - A Few Predictions

- By 2003
  - Web services will have successes, advancing EAI, B2B – Confidence regained
  - Interesting new handhelds, G3 spark new platform interest
  - Home entertainment systems advance, integrate (VOD finally, music servers etc.)
  - But consumer side still stalled
- By 2004
  - Consumer broadband passes 50% penetration
  - Entertainment and technology industry find a “solution”
  - Consumer interest refueled
- By 2005
  - New multi-media intelligent service take hold
  - B2C starts anew

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OR

... Something Else Happens!

BUT WHATEVER...

... It will be game changing

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Stay Tuned
(Wired)

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