The IT Road Ahead: Driving Home

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Objective

To define the way open source developers and consumers can drive home the future of information technology in the global market.

The challenge is our understanding of home and what it looks like.

Agenda

- A birds' eye view of the past 25 years
  - Key developments in the IT industry
    - *Genesis of Hardware and Software*
    - *Creation of the software industry*
    - *The holy grail – the quest for a universal operating system*
- The market for IT goods and services
  - Key markets
    - *Buying public wants & needs*
    - *Consumer buying inertia*
    - *Translating the market into IT opportunity*
- Key economic and political trends
  - The frenzy of fear
  - Economics and the global digital divide
- Decisions that are shaping the future

Checkpoint 1

A Bird's Eye View of IT history

IT Origins

- Pre 1980
  - Software and OS was computer infrastructure
    - *Software delivered with the hardware*
    - *High costs limited who could afford a computer*
  - UNIX systems started to gain ground in 1970s
    - *Mainly custom systems*
    - *Quite costly*
- 1980's
  - OS delivered with the hardware
    - *Software as an add-on*
      - Genesis of the Apple II, Apple III, Lisa and the Macintosh
      - The IBM PC, MS DOS, MS Windows
      - VisiCalc, Lotus, StarOffice, MultiMate, etc.

Market developments

- Creation of a consumer market
  - Rapid change as markets developed
    - *Early adopters sought business applications*
      - Spread-sheets, Word Processing, custom programming
- Battle-lines drawn around platforms
  - Apple versus the IBM PC and its clones
  - Beginnings of commodity software
    - *At premium price (resale margins high)*
      - Copying of software became a problem
- UNIX - the high cost specialty platform
  - Dominates the market that Apple and IBM PC systems could/would not address
    - *Major focus on "soup to nuts" vertical business solutions*
    - *Entry of UNIX into technical workstation markets*

Four Market Development Phases

- Rapid, unconstrained development
  - All stops pulled out to get product ready for launch
    - *Product development is central focus*
    - *Technological barriers prior to release*
    - *What exists of the market is pure potential*
- Market establishment
  - Quest for market share – market development is key
    - *Competition emerges (the early bird catches the worm)*
    - *Competitors learn how to deliver a differentiated product / service*
- Standardization
  - Total focus on customer needs satisfaction
    - *Interoperability is key consumer demand*
- Commoditization
  - Affordability (cost) is key determinant of buying market size

Market maturation

- The era of the OS wars
  - UNIX vendors **not tuned to creation of a commodity market**
    - *Buying **public want lower cost** & more flexible business solutions*
- UNIX standards undermined by **proprietary extension**
  - UNIX platforms with non-portable features
    - ***Software locked** to hardware*
    - *Partnership agreements **locked customers to particular vendors***
      - Licensing cost high
        - *Tied to CPU categories (CPU power)*
- Computer software and hardware **market shake-out**
  - Many mergers and acquisitions
    - *Products rationalized*
      - Customers forced to change
  - Companies fail and go out of business
    - *Customers left marooned*

The modern era PC

- The 1990s - Microsoft
  - MS DOS obsoleted in late 1990s
  - Microsoft Windows matures
    - *Shrink-wrapped volume-priced software*
  - Competitive target
    - *Pre-1996 – Windows NT the UNIX killer*
    - *Post-1996 – Windows NT to dominate the internet*
  - MS Windows milestones
    - *1993 release of Windows NT 3.10*
    - *1996 Windows 95 and Windows NT 4.0 introduced*
    - *1999 Windows 2000 released*
    - *2002 Windows 2003 / Windows XP*
  - Microsoft Office becomes *de facto* office productivity suite
    - *effectively displaces competition*

UNIX in the modern era

- UNIX company rationalization
  - Rationalization of UNIX companies – many disappear
    - *Catalyzes interest in alternatives*
  - Major move towards unification of UNIX standards
    - *Creates interest in a free reference implementation*
- Open source software becomes more popular
  - Perl, emacs, apache, samba, *BSD, Linux, etc.
  - Awareness of robustness grows
    - *Fast bug-fix turn-around increases desirability for business use*
- Dot.Com boom escalates open source software development
  - Linux becomes a major beneficiary
    - *Ultimately makes Linux a better UNIX*

The past 5 years

- 1999/2001
  - Windows 2000 welcomed by business users
  - Improvements over Windows NT4 holds back Linux adoption
  - Dot.Com bust takes its toll on Linux companies
- 2002-2003
  - Release of Windows XP secures the desktop
  - Windows 2003 Server secures most corporate IT infrastructure
  - Linux gains ground as web and database servers in Enterprise market
- 2003/2006
  - Linux for business companies face rationalization
    - *Novell acquires SuSE, many mergers, many failures*
    - *Linux continues to gain market share*
  - Sun Microsystems releases Solaris code as open source
  - Intellectual Property litigation involving Linux business

The OS Wars

- Tilted view of the world
  - The term **The OS Wars** gains momentum
    - *Implied imperative to identify a universal operating system*
    - *Additional quest for a **knock-out*** battle in software markets

- Some unanswered questions:
  - There can be peaceful co-existence
  - Why must consumers be forced into a "*one or none-at-all*" rat-hole?
  - Perhaps the real boundaries that define the market are:
    - Consumer choice
    - Open standards
      - OS tool-sets, protocols, file formats

Checkpoint 2

Examining Global IT Opportunity

The Software Industry Challenge

- Open source software interest emerges world-wide
  - Initially software companies deny its validity
  - Major IT vendors join the thrust for a new way of doing business
    - *Few find it!*
- Why interest in Linux and open source software?
  - **Cost, cost, cost, cost**
    - *Lower cost means more potential customers can afford to be in the market*
    - *Increases market for hardware sales*
- Linux Standards Base extends UNIX standards
  - Internationalization opens the boundaries for business
    - *Partly answers the quest for the universal OS*

The Changing Face of Software

- What is the cost so commercial vendors can beat open source software development?
  - How can existing commercial development sustain competition from open public royalty-free software?
    - *Major area of conflict*
  - How far can open source development passion and determination go?
- Why are major vendors committed to Linux and open source software?
  - Mass standardization on the X86 platform drives prices down and capitalizes on a growing abundance of free software
  - Faster CPUs and more memory expands potential use of Linux
- Choice and lower cost drives consumer interest

US Business Statistics

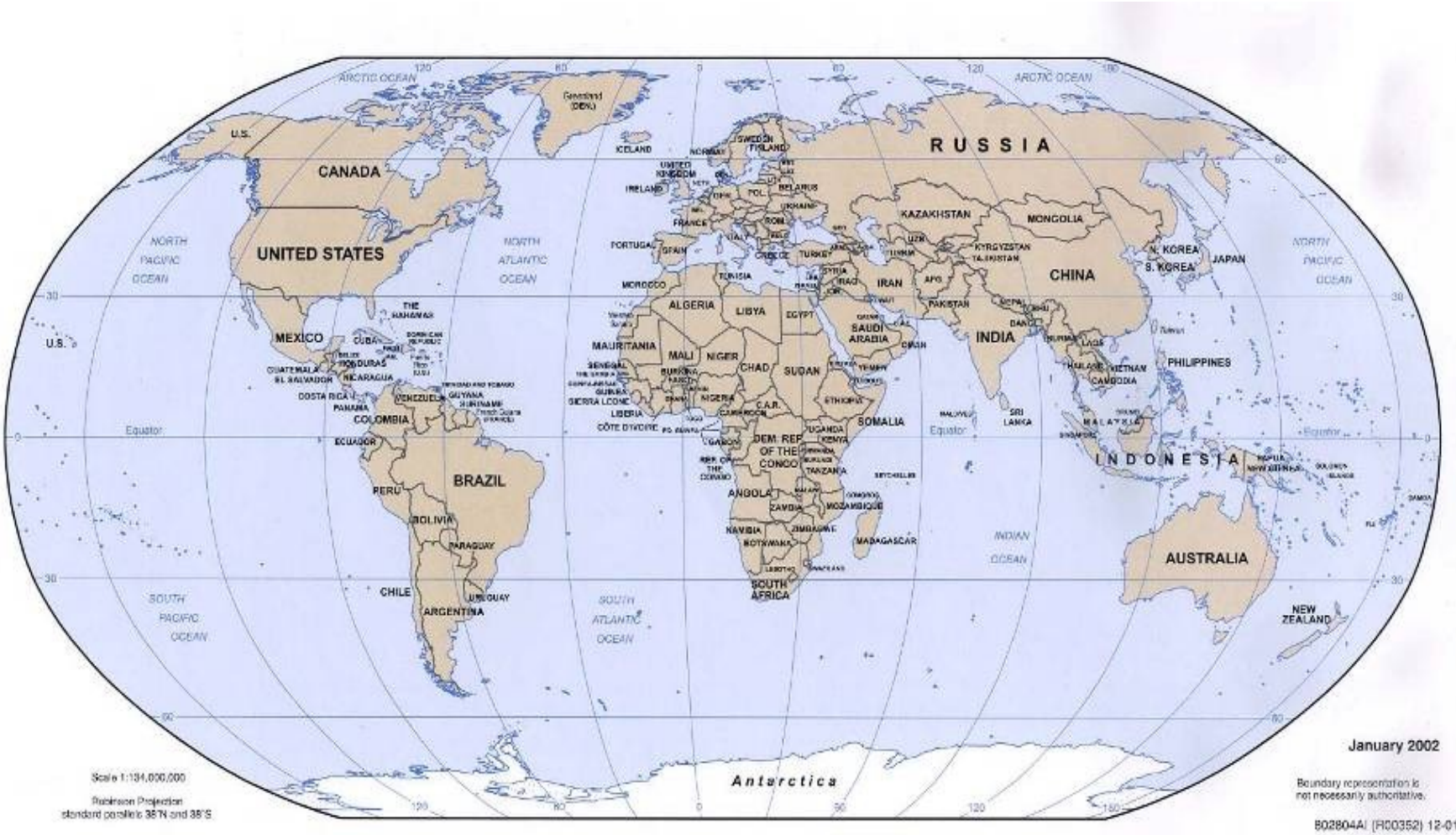
2002 IRS Returns – Companies by Employment Size

Employees	Total	< 20	20–99	100-499	500+
Firms	5,697,759	5,090,331	508,249	82,334	16,845
Establishments	7,200,770	5,147,526	692,775	332,508	1,027,961
Employment	112,400,654	20,583,371	19,874,069	15,908,852	56,034,362
Percent of Total Employment		18.3%	17.7%	14.2%	49.9%
Percent of Firms		89.34%	8.92%	1.45%	0.30%
Average Empl / Firm		4	39	193	3326
Average Empl / Location		4	29	48	55
Average Locations / Firm		1.0	1.4	4.0	61.0

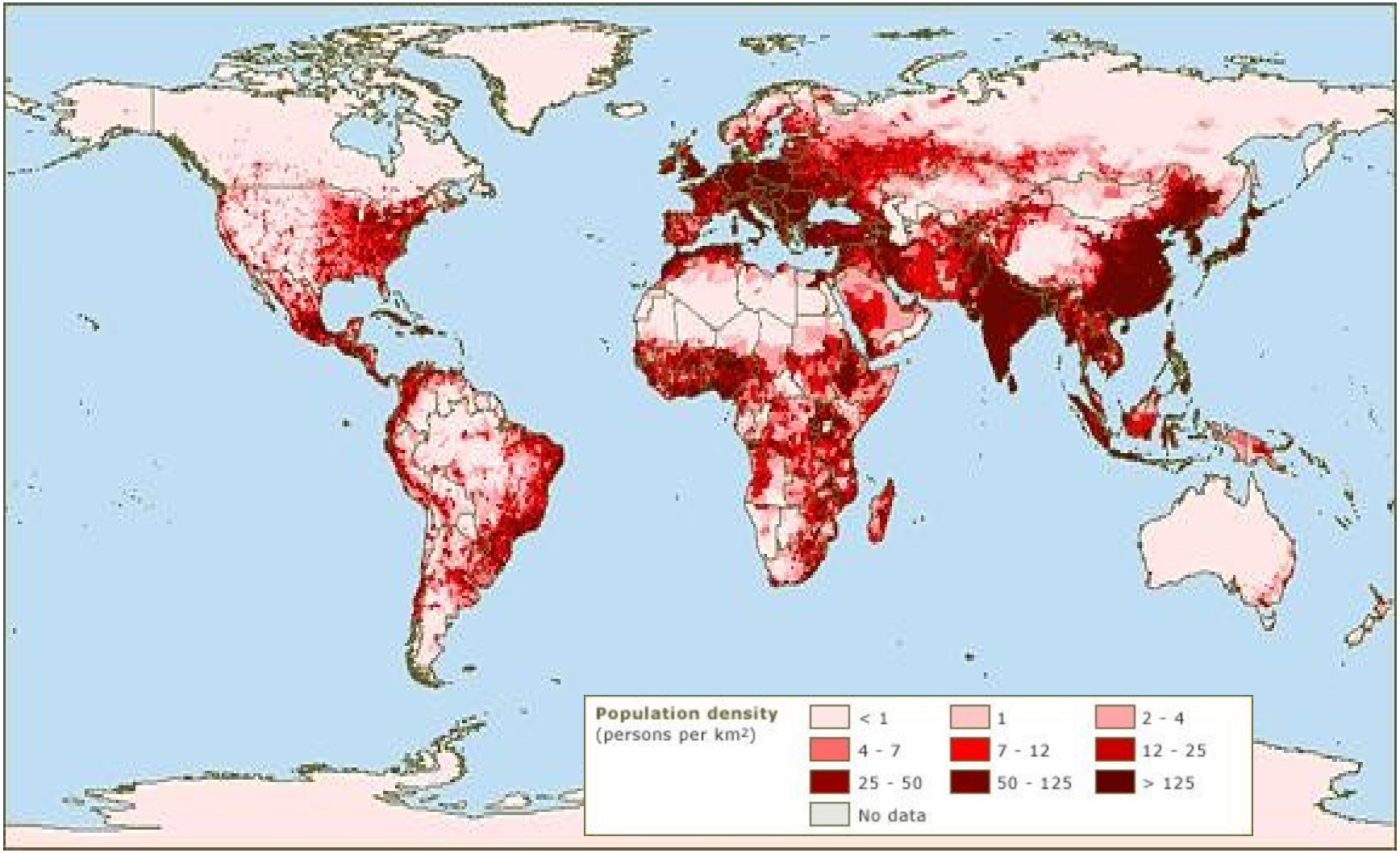
Market Segments

- Consumer Market
  - *6.4 billion global population - 957 million existing consumers*
- Small to Medium Business
  - *2-150 Employees*
  - *30+ million companies world-wide*
- Small to Medium Enterprise
  - *150-500 Employees*
  - *300,000+ companies world-wide*
- Enterprise
  - 500+ Employees
    - *50,000+ companies world-wide*
    - *Government markets*

The global IT market?



Population density



Obvious indications

- There is huge opportunity for IT growth
  - Many markets are untapped
  - Identify:
    - *Socio-economic market determinants*
    - *Consumer wants and needs*
    - *Potential buyer motivation and interests*
- Current IT trends and practices
  - How will these markets be developed?
  - Who will benefit from this development?
  - What are the key benefits of development?
- Open source software role untapped markets?

The Consumer Market Place

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2005 Est.)	Population % of World	Internet Usage, Latest Data	Usage Growth 2000-2005	% Population (Penetration)	World Users %
Africa	896,721,874	14.0 %	**23,867,500**	428.7 %	2.7 %	2.5 %
Asia	3,622,994,130	56.4 %	**327,066,713**	186.1 %	9.0 %	34.2 %
Europe	731,018,523	11.4 %	**273,262,955**	165.1 %	37.4 %	28.5 %
Middle East	260,814,179	4.1 %	**21,422,500**	305.4 %	8.2 %	2.2 %
North America	328,387,059	5.1 %	**223,779,183**	107.0 %	68.1 %	23.4 %
Latin America/Caribbean	546,723,509	8.5 %	**70,699,084**	291.31 %	12.9 %	7.4 %
Oceania / Australia	33,443,448	0.5 %	**17,655,737**	131.7 %	52.8 %	1.8 %
WORLD TOTAL	**6,420,102,722**	**100.0 %**	**957,753,672**	**165.3 %**	**14.9 %**	**100.0 %**

http://www.internetworldstats.com/stats.htm

Checkpoint 3

Key economic and political trends

Intellectual property

- Patents, trade marks, service marks, branding create
  - Barriers to market entry
  - Barriers to innovation
    - *Cost*
    - *High risk of failure*
    - *Legal risk*
- Restricts deployment and exploitation
  - Designed to protect businesses that are quick to register
- Application areas
  - Manufacturing methods
  - Business methods
  - Concepts
  - Algorithms

Protectionism

- Consequence of economic policies
  - Eliminate or control competition
  - Adds to cost of doing business
- Protectionism requires defense infrastructure
  - Value lies in defense
    - *Social costs*
    - *Business costs*
- Retrospective action
  - Can erase a business
    - *Penalties for infringement can destroy opportunity for both the legitimate property holder as well as for the business that is charged with infringement*

Checkpoint 4

Critical decisions for the future

Decision framework

- Implications of decisions
  - Social
    - *What type of world do you want to live in?*
      - What is community?
        - *Who is my neighbor?*
        - *What is neighborhood?*
      - Knowledge
        - *What is it?*
        - *How ought it to be used?*
        - *Who owns it?*
        - *What should it cost?*
  - Economic
    - *How can we sustain businesses?*
    - *What is acceptable risk?*
  - Political
    - *International conflict, codevelopment & cooperation*

Are we there yet?

The future is in your hands, please make the right choice.