Powering e-business through affordable broadband access and grid computing: The next IT revolution for small business

Presentation to Conference: "Competitiveness: Challenges and Opportunities for Asian Countries" Bangkok

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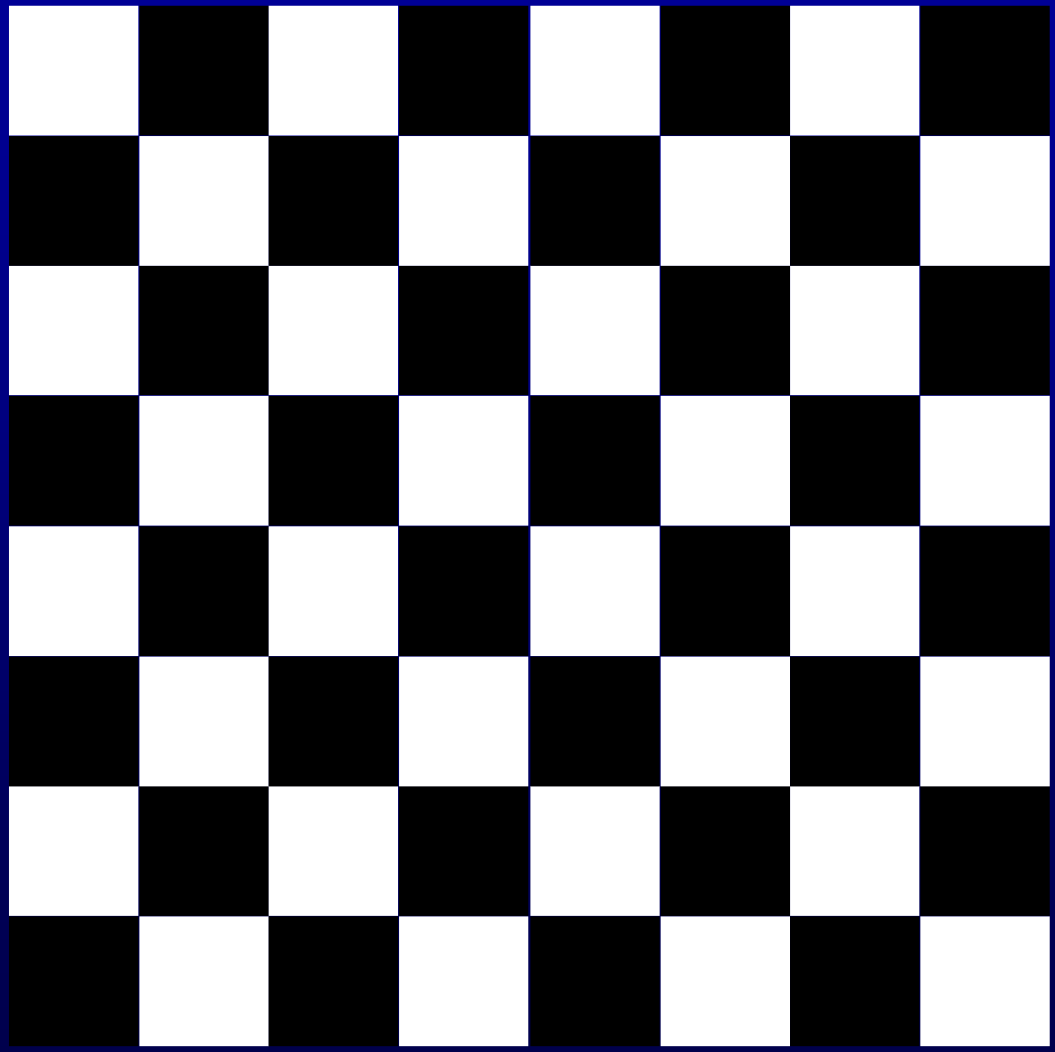
Prof. Jim Norton
Senior Policy Adviser
UK Institute of Directors
Former Director UK Cabinet Office
PIU e-Commerce team
www.profjimnorton.com

Issues to be covered

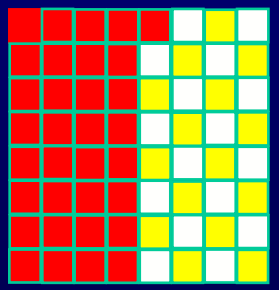
- Setting the scene - the impact of exponential growth.
- But isn't it all hype?
- Information & Communications Technology does boost productivity and enhance competitiveness.
- So what are the benefits?
- Which countries are doing best?
- Some final thoughts.

The second half of the chessboard

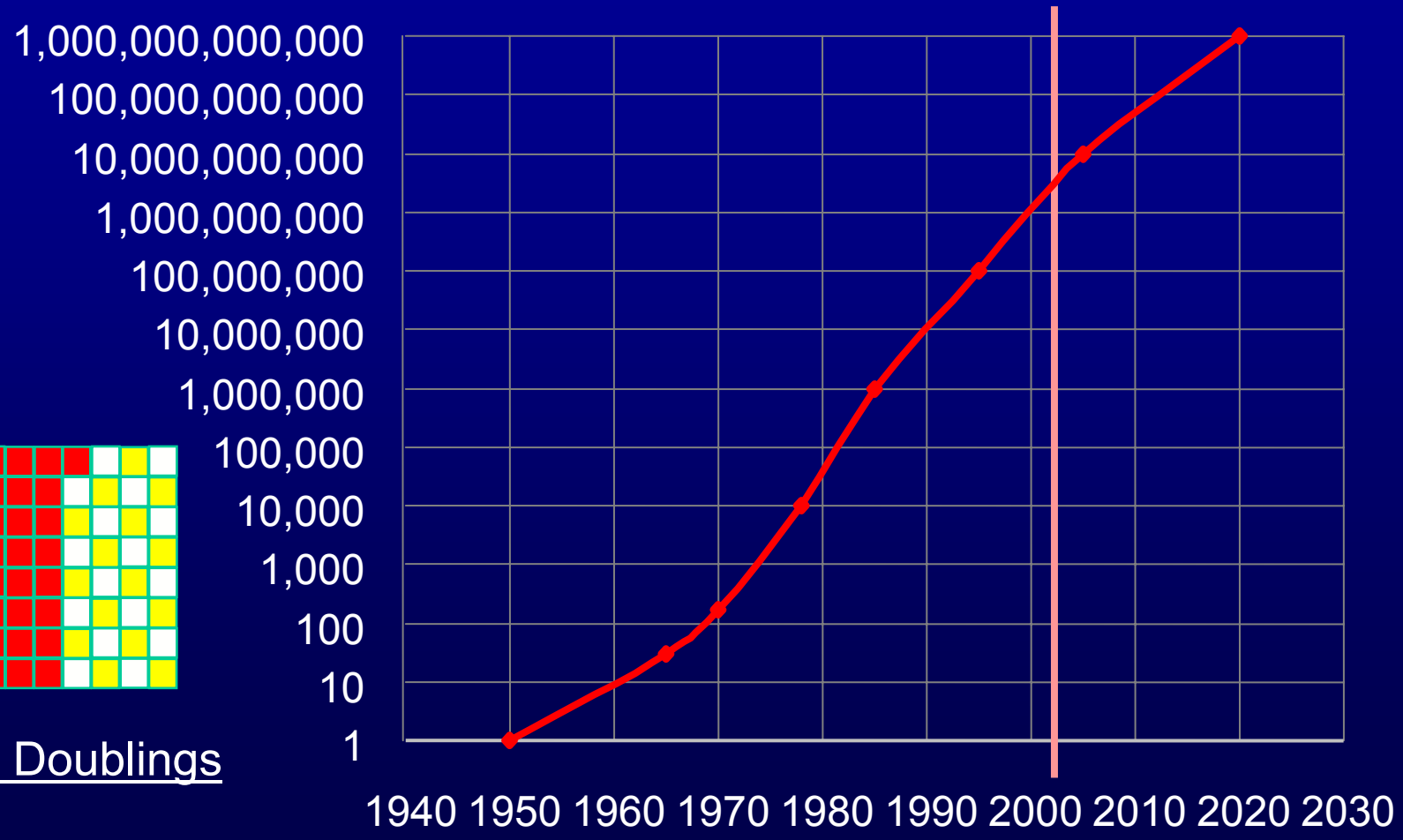


Original idea: George Gilder at the Cato-Brookings Institution conference "Regulation in the Digital Age," held in Washington D.C. on April 17-18, 1997.

The cost-performance of electronics doubles every 18-24 months (Moore's Law)



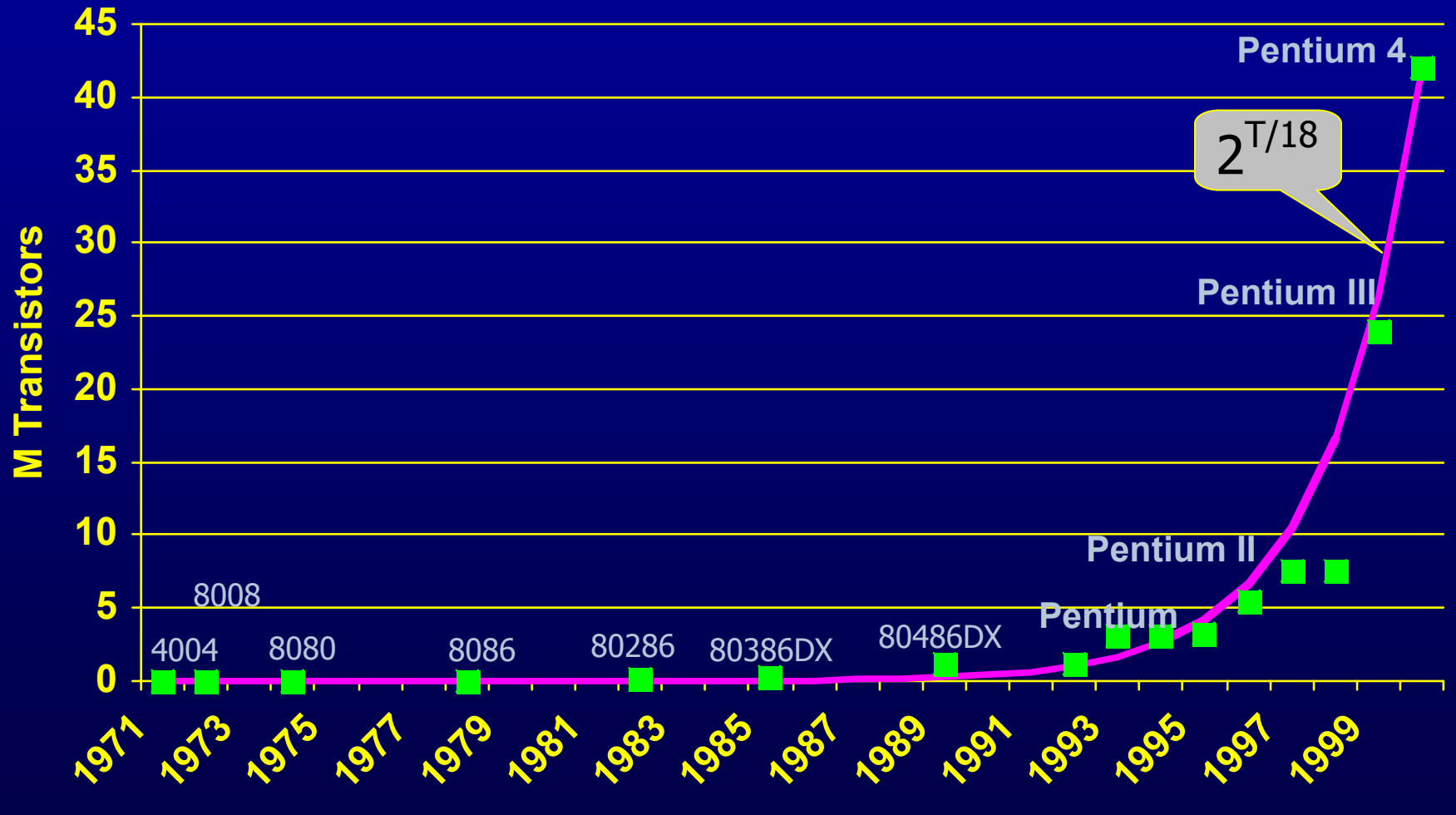
33 Doublings



Source: Analysys

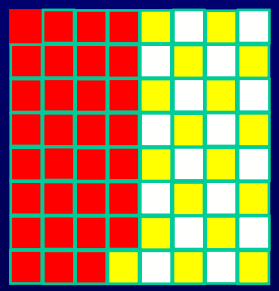
Moore's Law in Action:

Intel Microprocessors

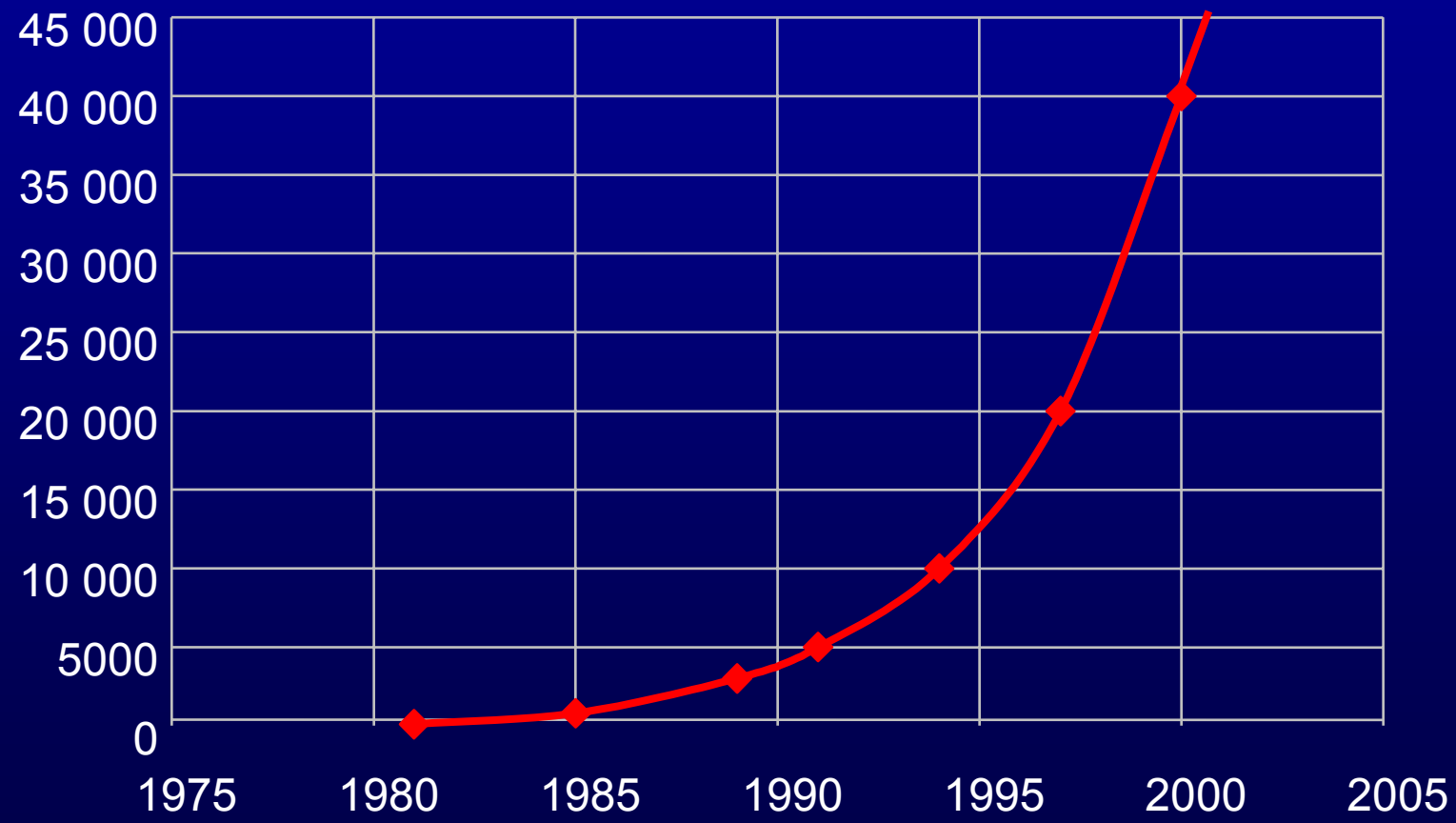


Source: Intel & Silicon Image

Opto-electronics follow the same path (Moore's Law operates in telecoms, too)

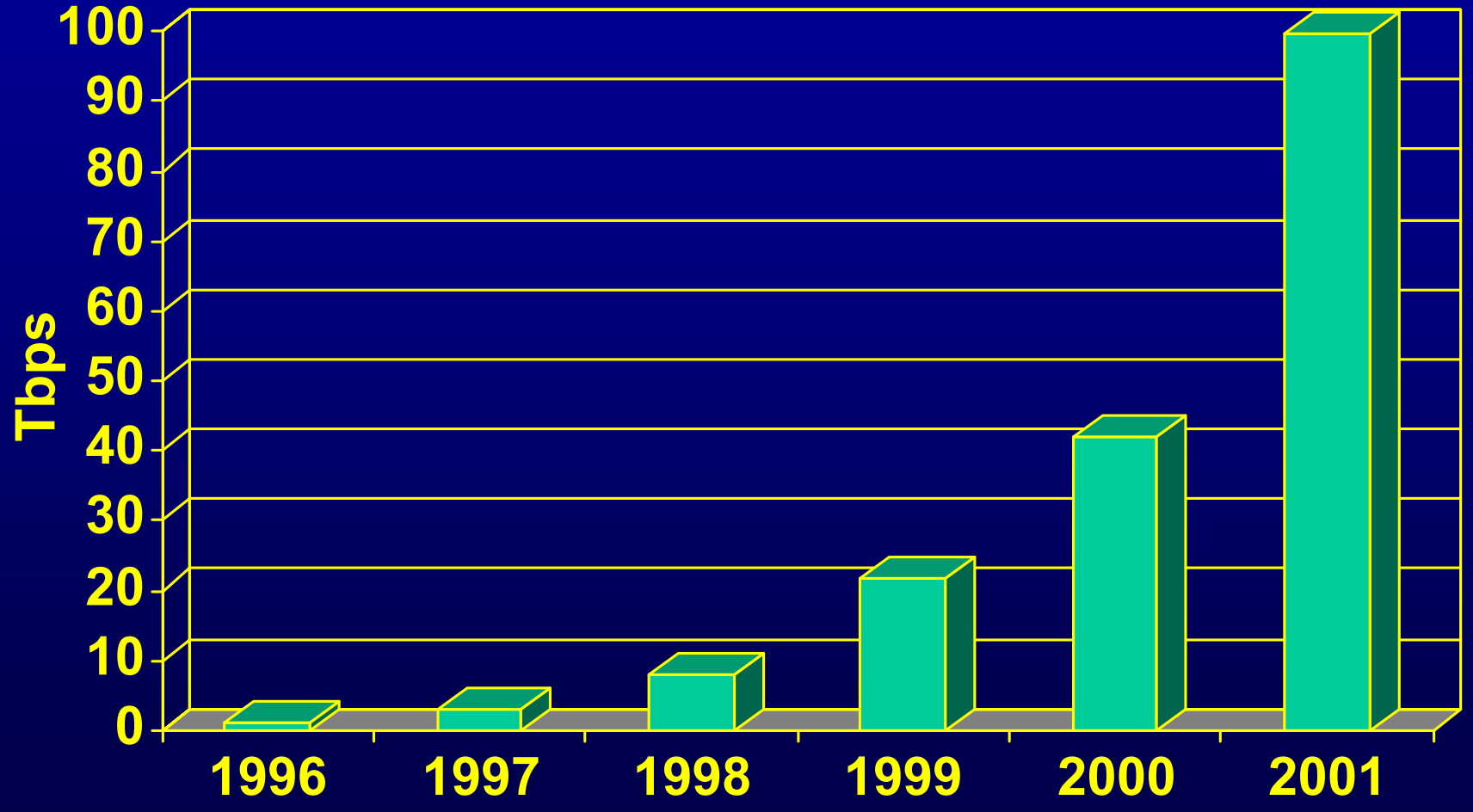


31 Doublings



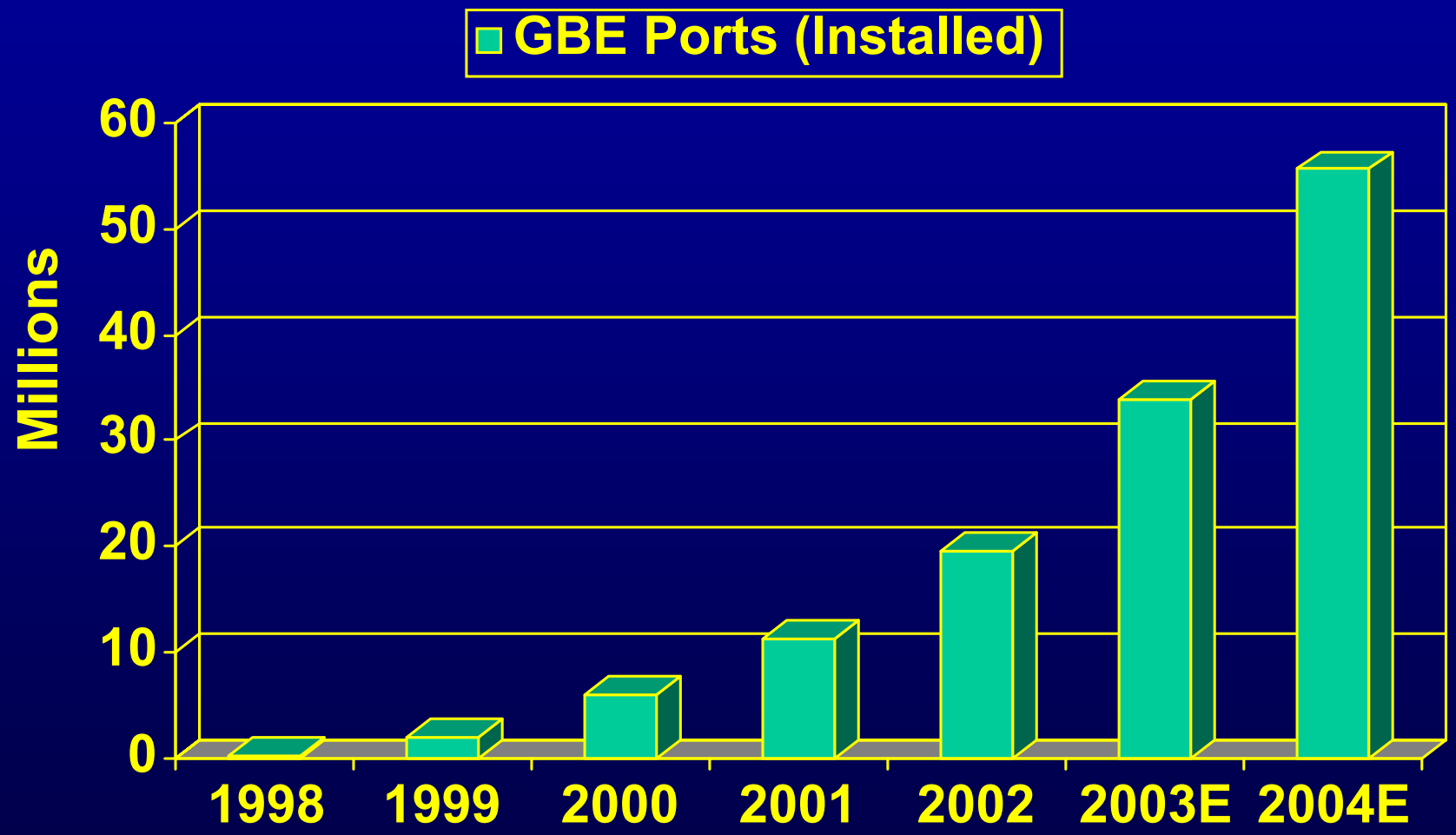
Source: Analysys

Exponential growth in US WAN fibre bandwidth



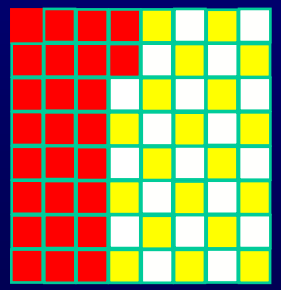
Source: Cisco & Silicon Image

Gigabit Ethernet installed base growth

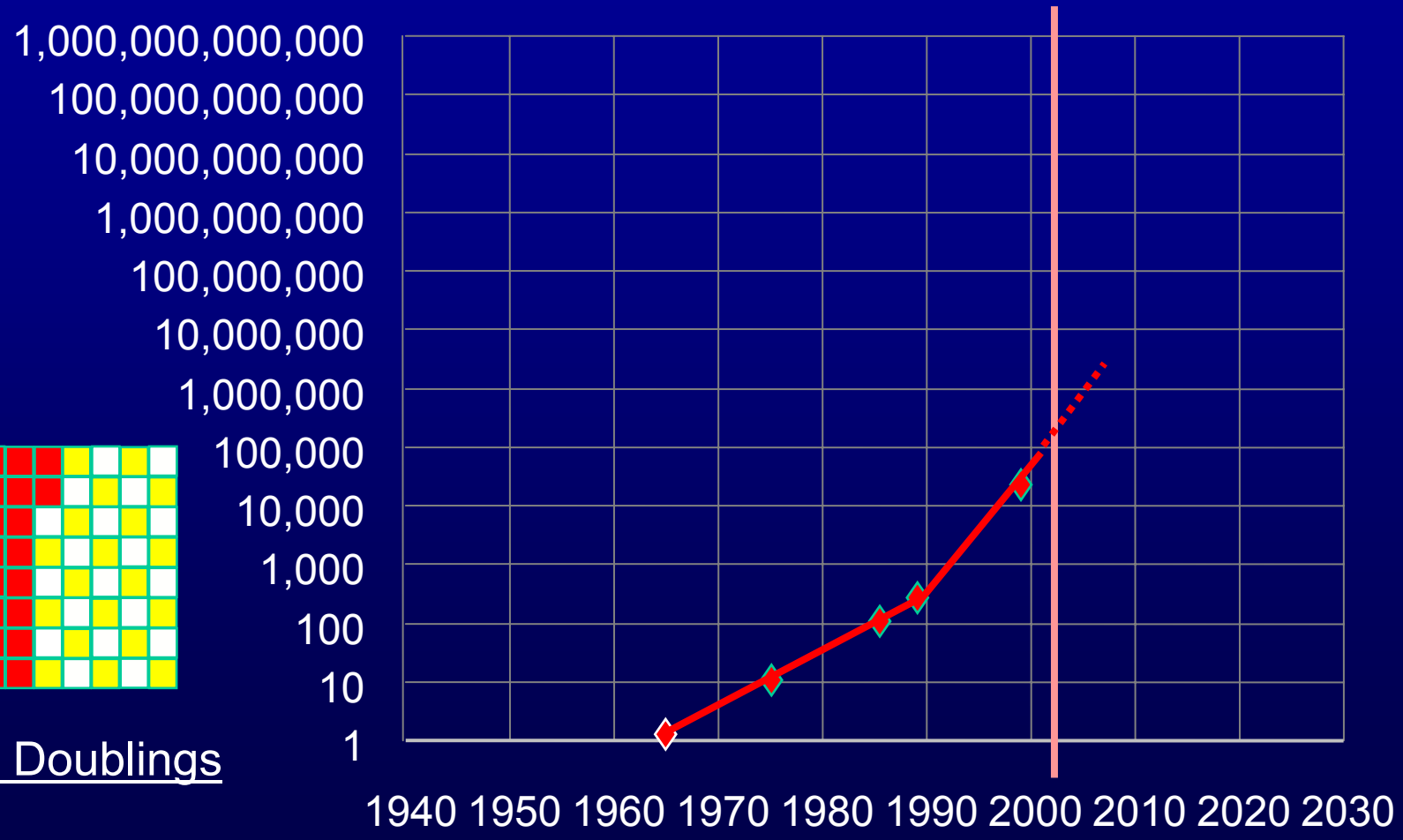


Source: IDC & Silicon Image

The cost-performance of magnetic storage doubles roughly every 18months…

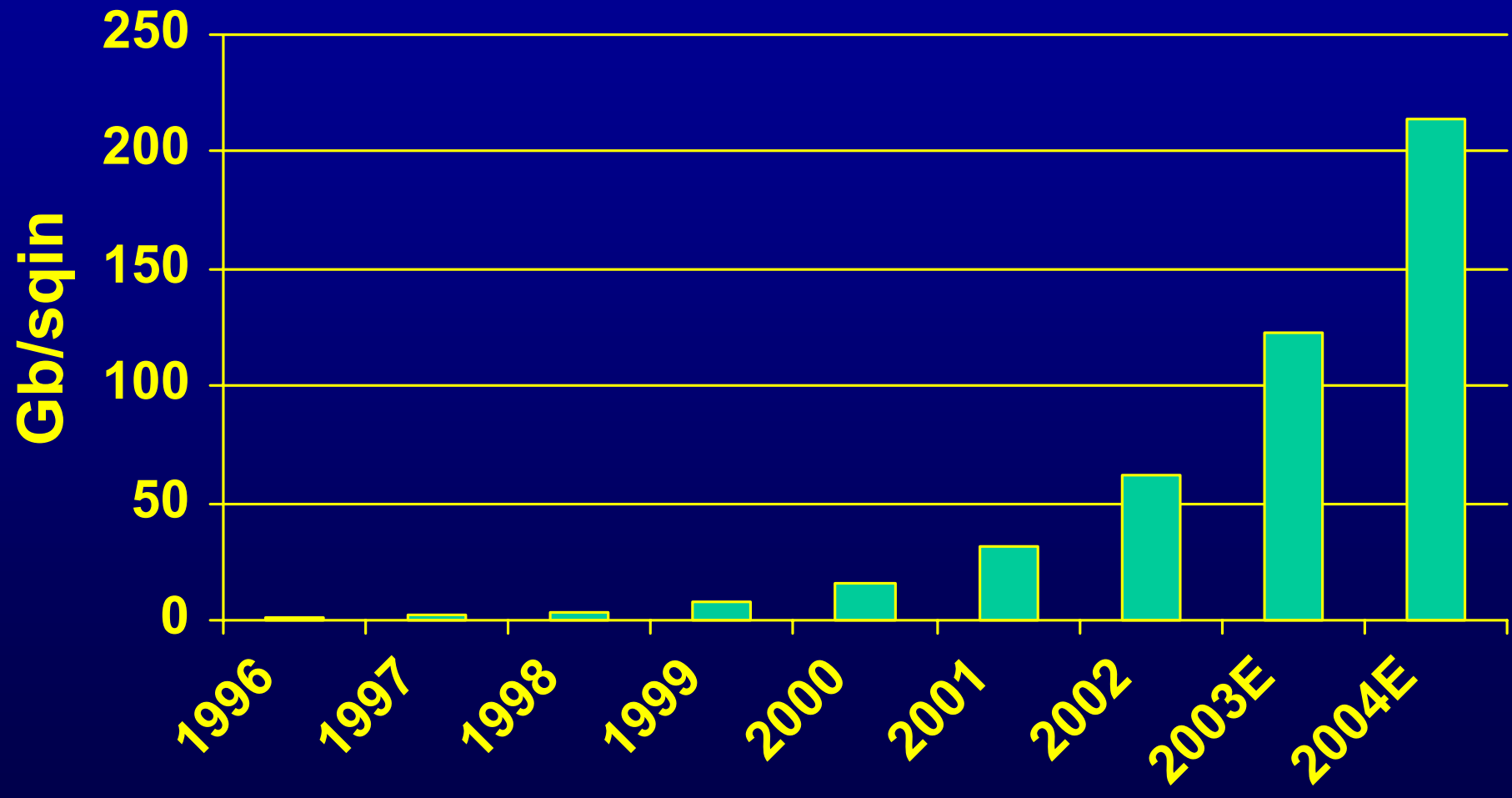


26 Doublings



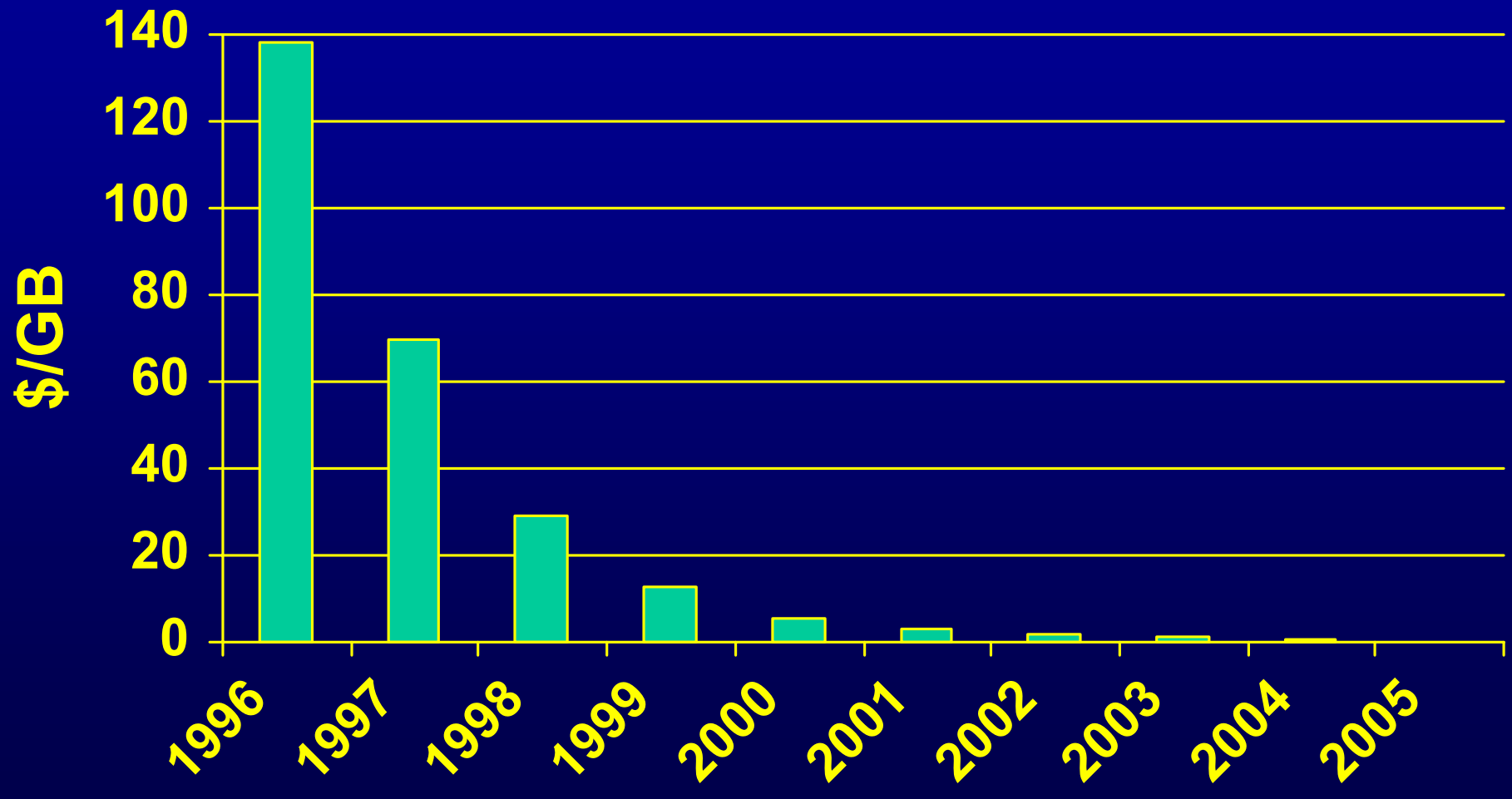
Source: Silicon Image

Disk storage density is growing exponentially too…



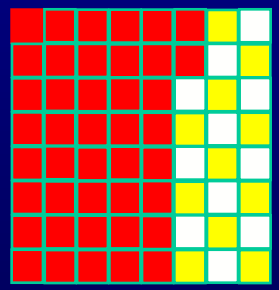
Source: IDC & Silicon Image

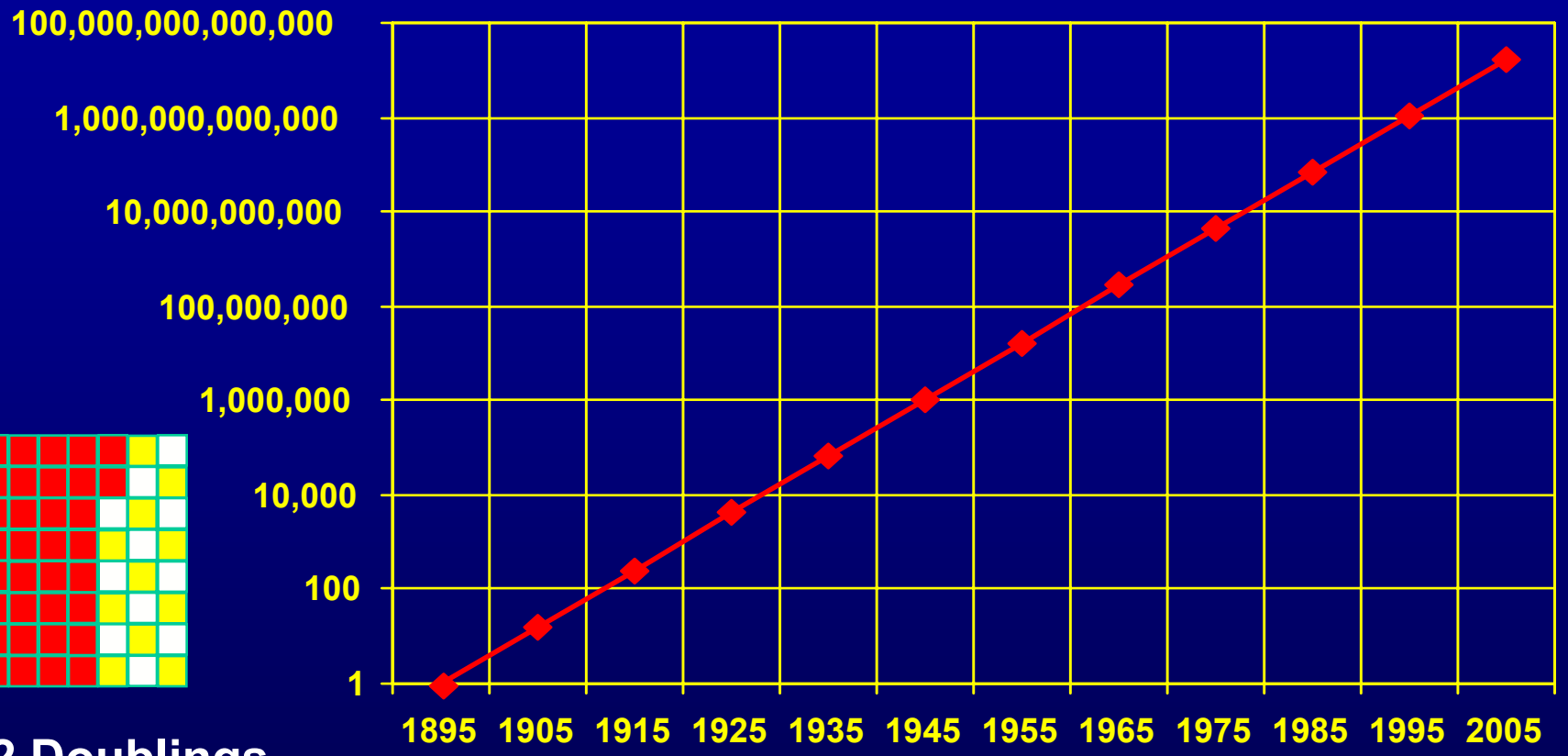
Magnetic disk costs (3.5” platters)



Source: IDC & Silicon Image

Cooper's law for wireless



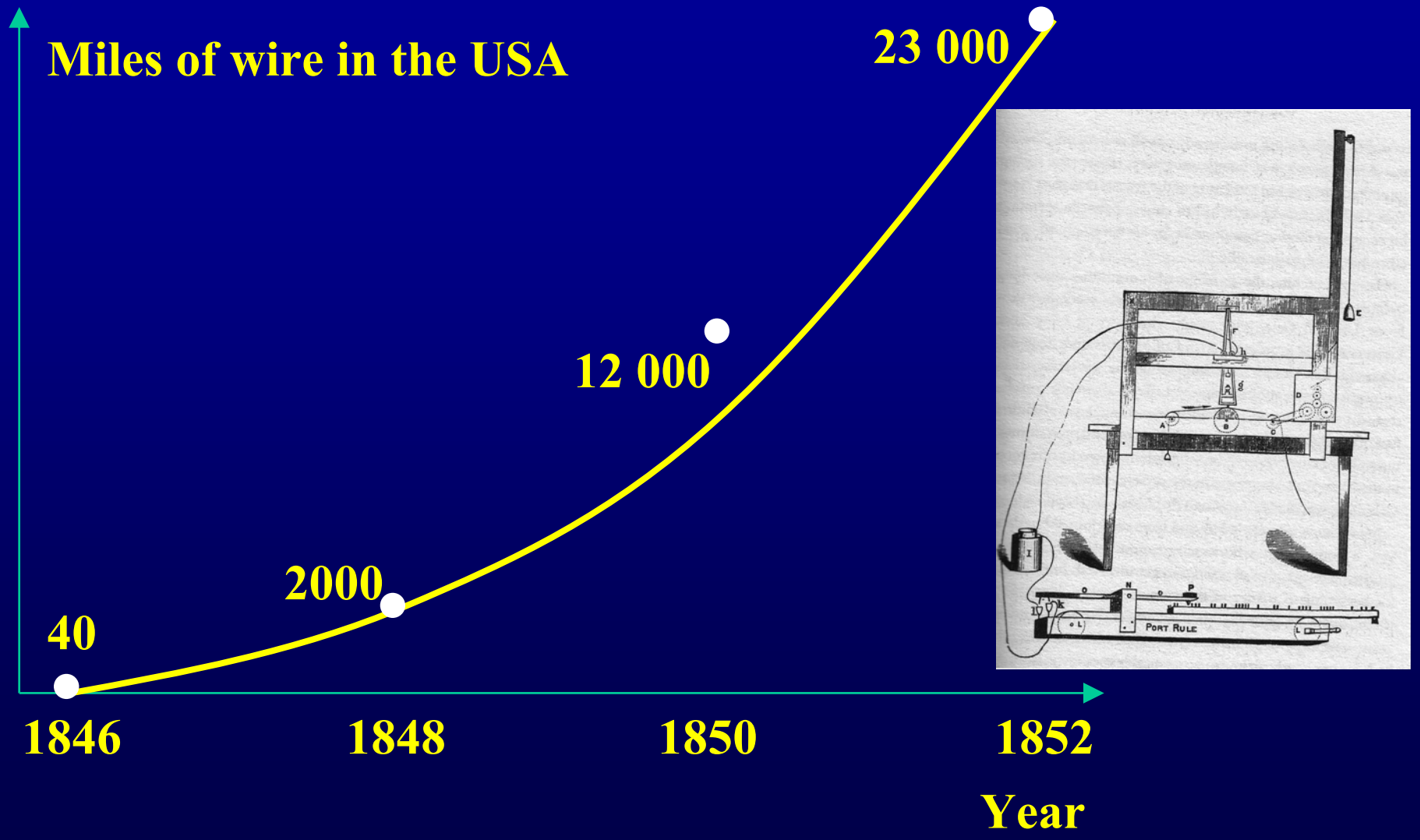


42 Doublings

Cooper's Law, (after ArrayComm Chairman, Martin Cooper), states that the number of conversations (voice and data) conducted over a given area, in all of the useful radio spectrum, has doubled every two and a half years for the last 105 years, ever since Marconi discovered radio in 1895

Source: ArrayComm

But we have seen this before in the context of the telegraph…



Source: Tom Standage, *The Economist*, "The Victorian Internet"

The first half of the chessboard has already delivered some surprises

Microsoft Corporation, 1978

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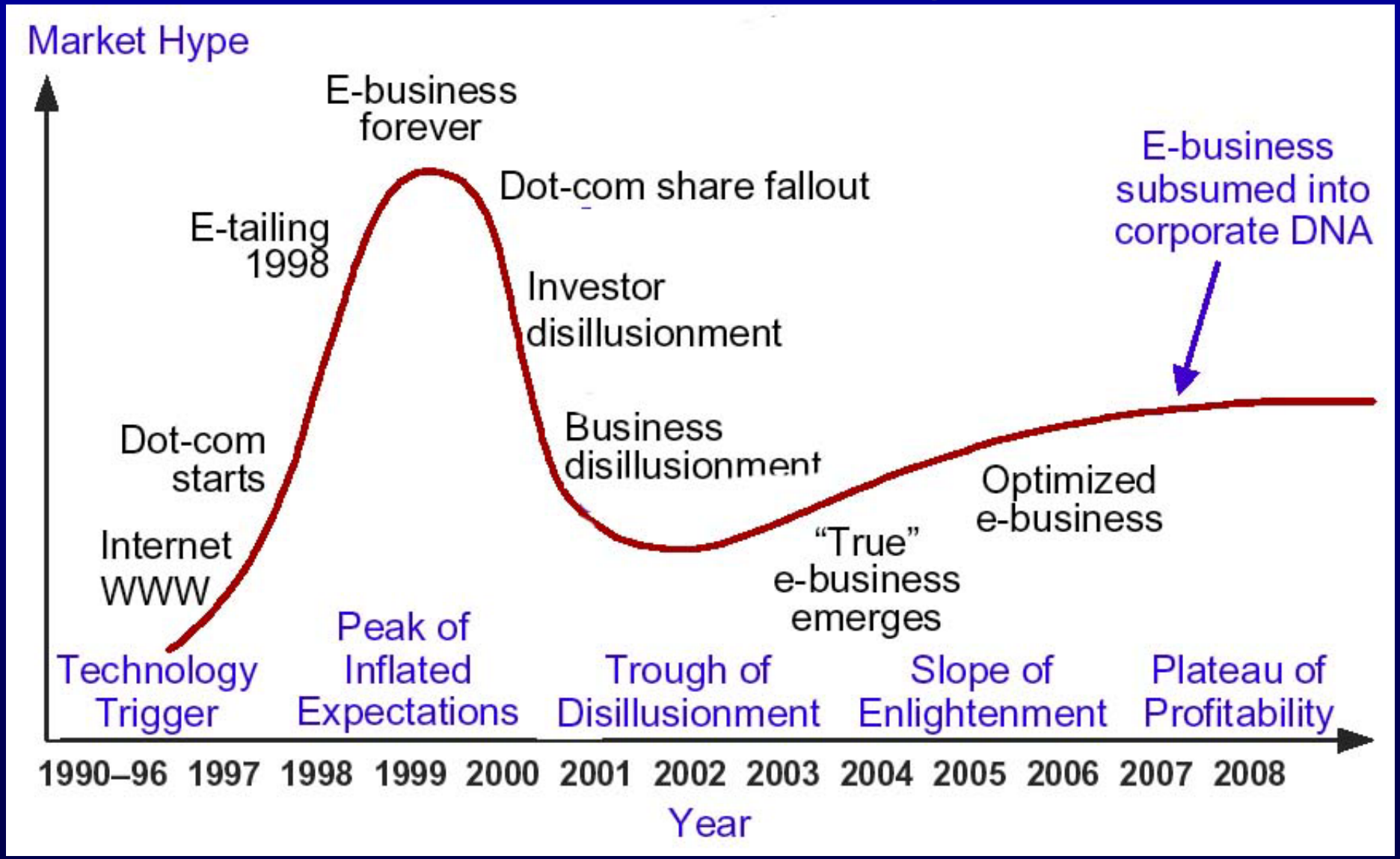
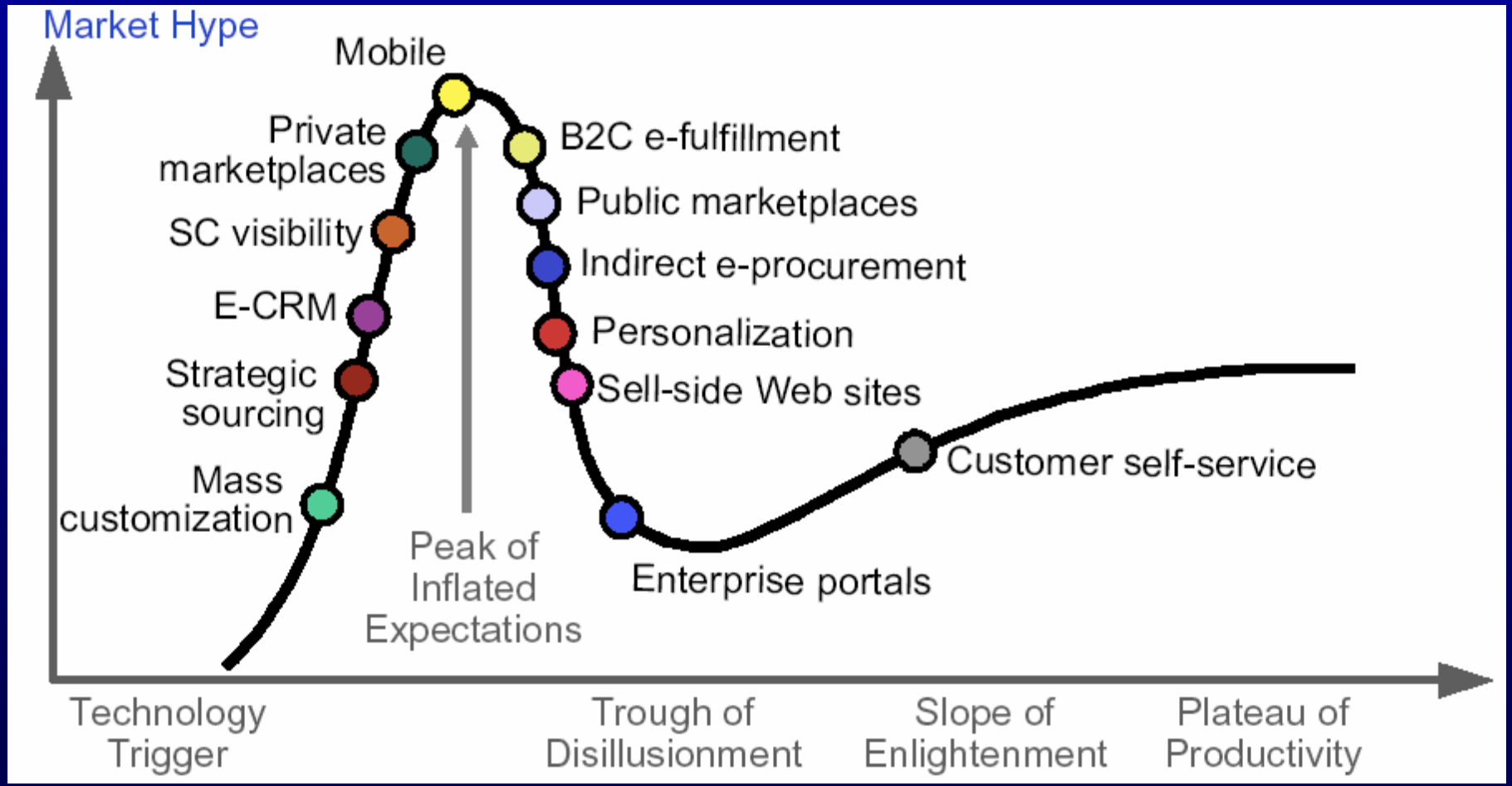
With acknowledgement to the UK Office of the e-Envoy

It was ever thus…the e-Biz trough of disillusion



Source: Gartner Group

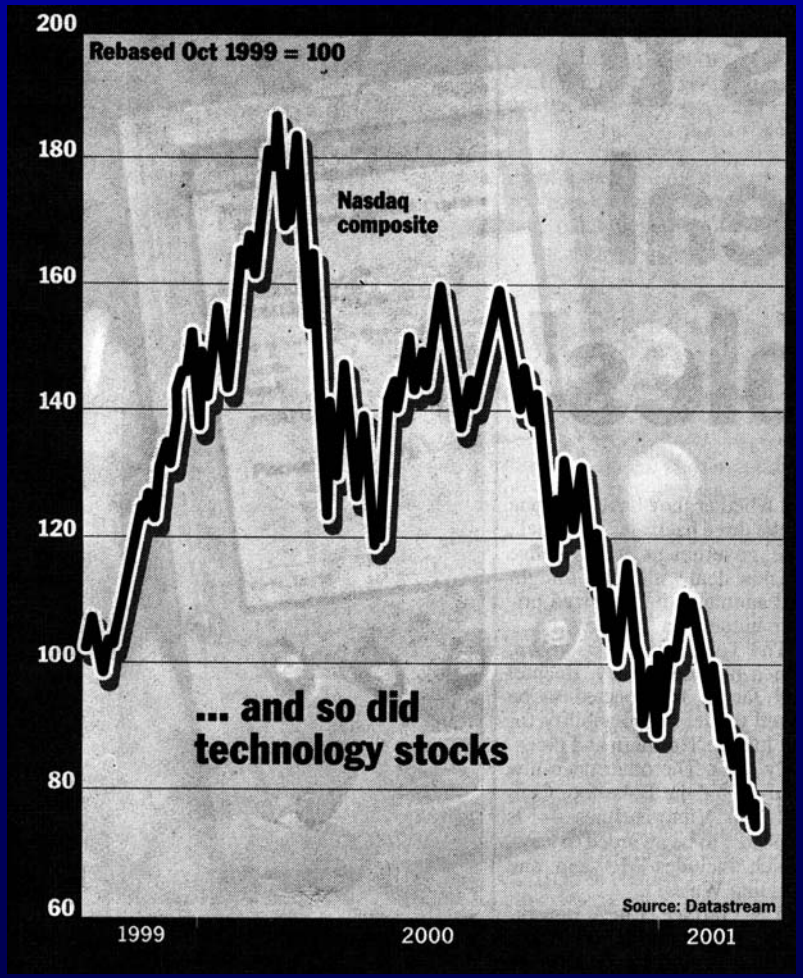
The e-Business capability 'hype' cycle



Source: Gartner Group

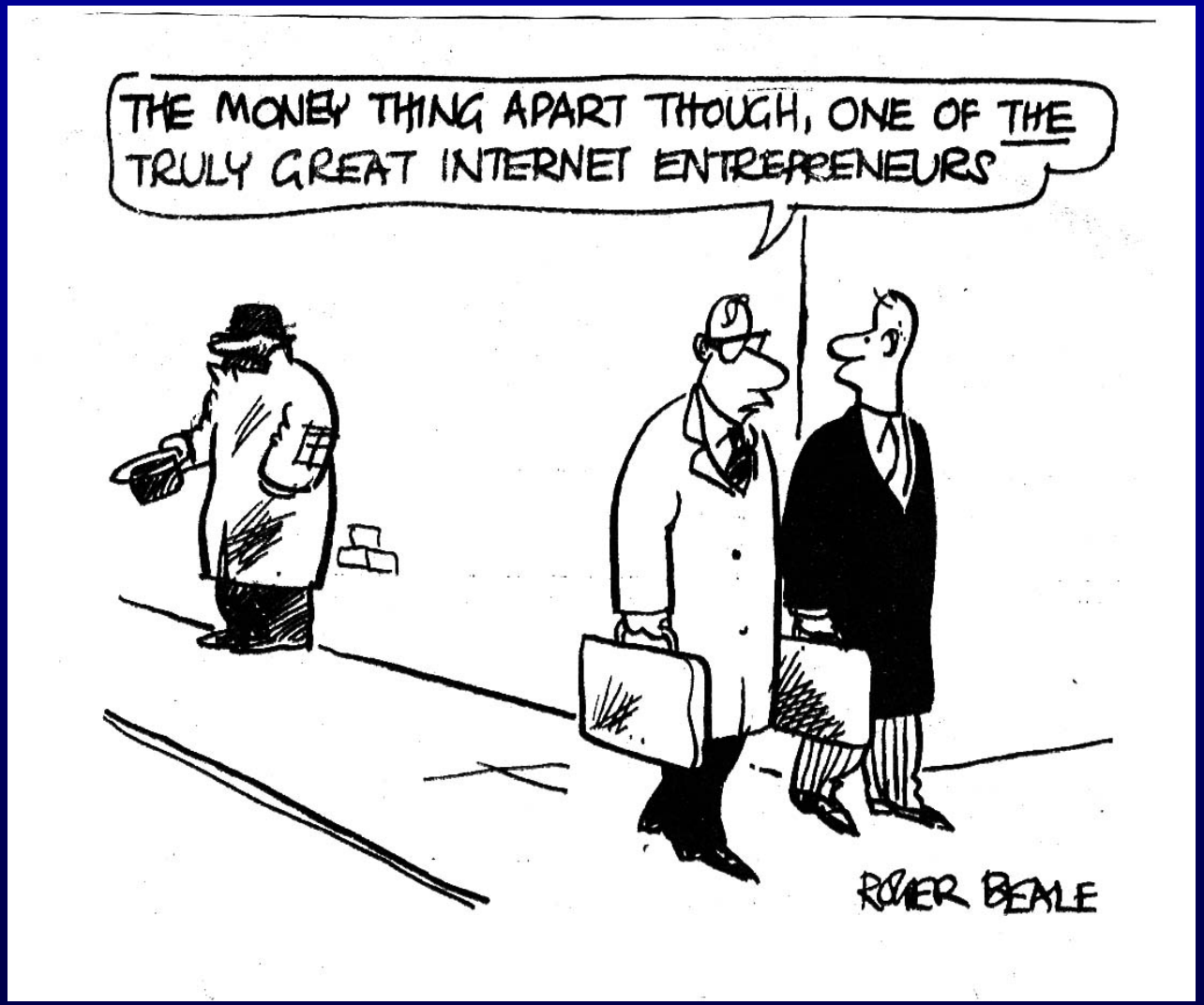
Does this remind you of anything?

UK Great Western Railway



Source: Bains, Crafts & Leunig - UK Sunday Times

A cartoonist sums it up beautifully…



With acknowledgement to Roger Beale at the Financial Times - 13/3/01

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Resolution of the Solow productivity paradox

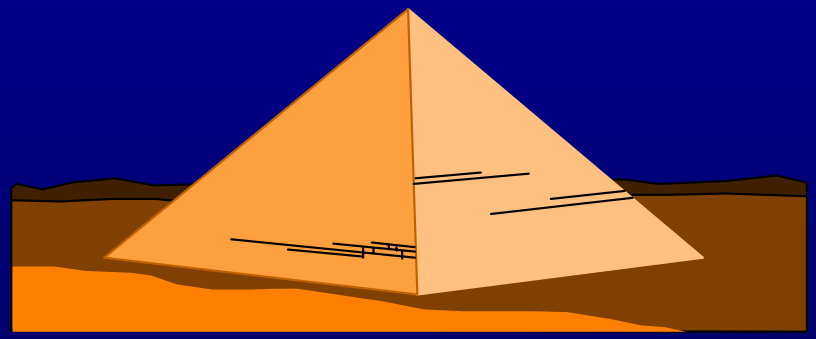
Policy-makers and economists have long debated the role of information and communications technology (ICT) in the economy. The traditional view in the 1980s and 1990s was that its impact was limited. This was well characterised by the Solow Productivity Paradox that "you can see the computer age everywhere but in the productivity statistics". A confluence of new evidence based on analysis of US economic performance in the late 1990s demonstrates a strong inter-dependence and that ICT has had a substantial impact on GDP.

This view has been supported by research by the EC that lies behind the claim by Erkki Liikanen, Commissioner for enterprise and information society, in October 2003 that "there is more and more evidence that the adoption of ICT is a key to productivity growth. In the US, it has been unusually robust, and has spread to the wider economy."

Innovation in ICT has a transformational impact on productivity and growth - in the US, ICT produced an estimated one percentage point increase in yearly GDP growth in the late 1990s. Evidence and reasoned argument point to this productivity and growth improvement continuing for many years to come. Applying the same logic to the European economy, ICT could increase our future GDP growth rate from 2 per cent to 3 per cent. ICT can do to our economy in the 21st century what railroads did in the 1800s and electricity in the 1900s.

Source: Andrew Heaney of Spectrum Strategy Consultants and Brian Williamson of Indepen, "Reaping the Telecoms Dividend" January 2004. Quoted in the Financial Times 18 Feb 2004

Eight key landmarks for e-business to navigate by:



- Customers
- Creativity
- Co-operation
- Commitment
- Charging
- Competition
- Culture
- Cost

The eight 'C's of e-business strategy...

Why is broadband access key to e-business?

A key mistake in early e-business adoption was to have a sales site hosted by an ISP (and thus 'always on') but not to have the 'back office' permanently online and linked in real time to the sales site….

Affordable broadband allows:

- **cost effective 'always on' linkage between 'front' and 'back' office systems ensuring that what is sold is genuinely in stock and can be delivered…!;**
- **genuine participation by SMEs in the 'extranets' built around industry supply chains;**
- **access by customers into the company's core systems for design and configuration**

Broadband access reduces the asymmetries between large and small companies …

Source: UK Broadband Stakeholder Forum

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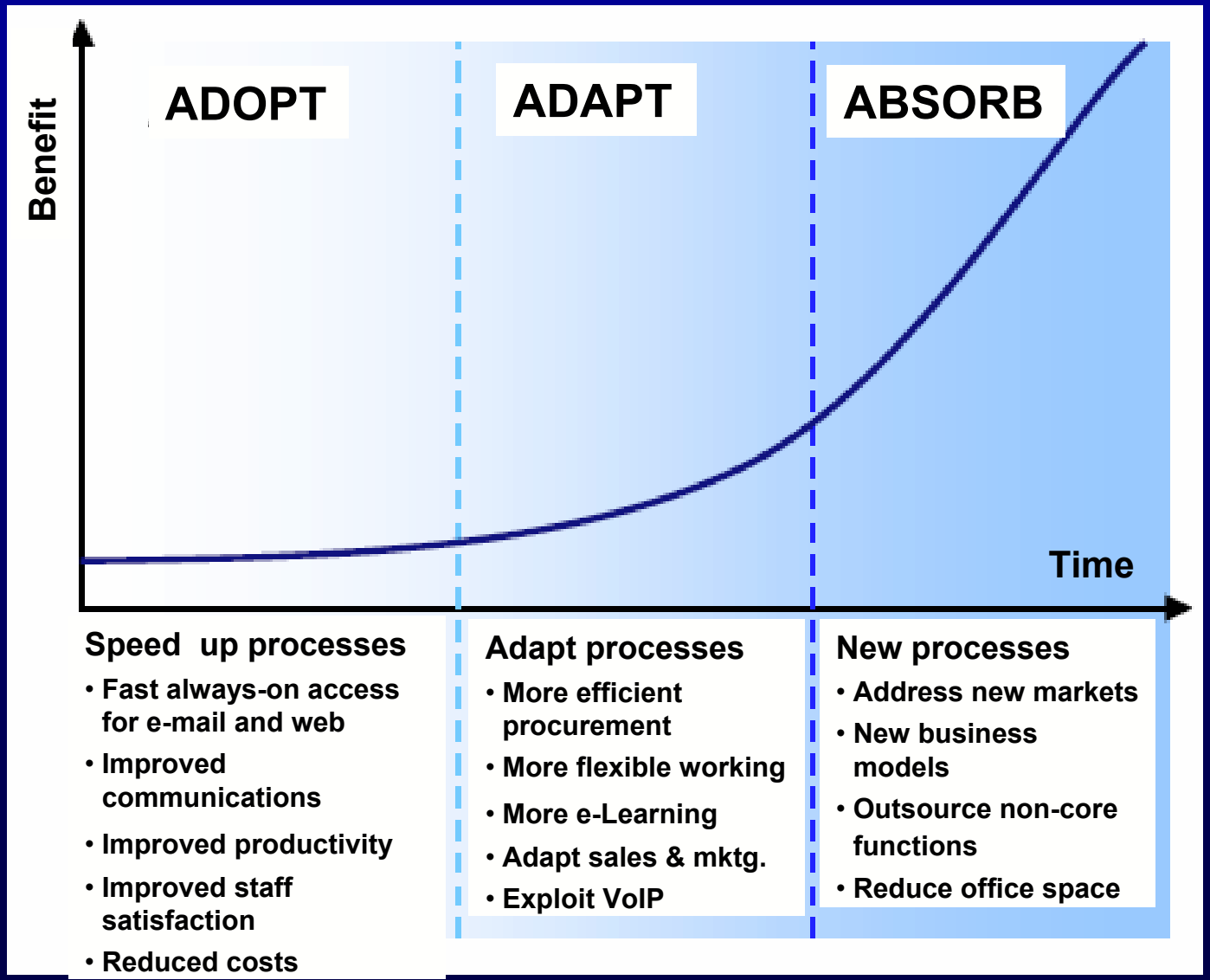
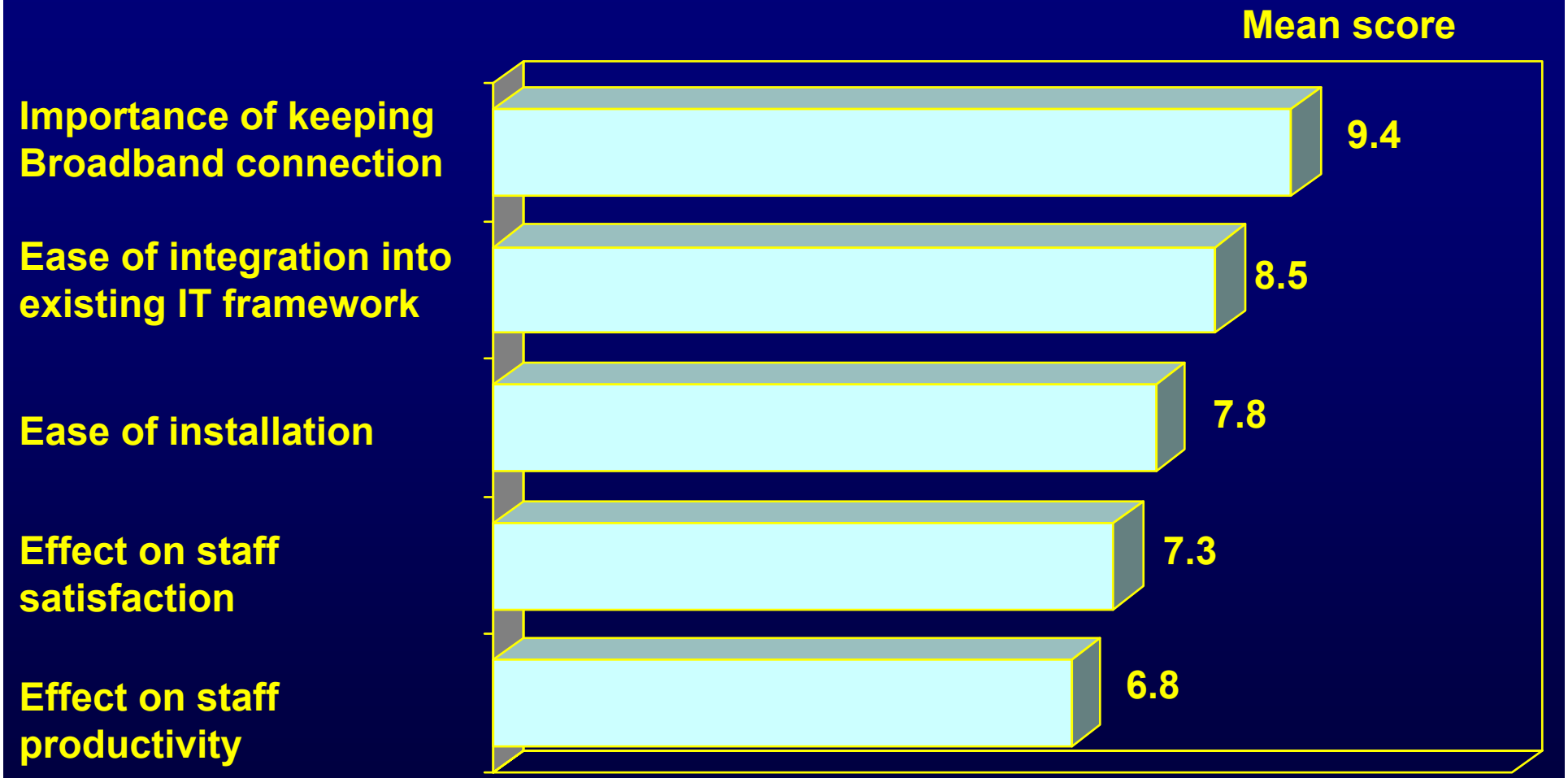
Broadband impact on e-business processes



Source:

UK Broadband Stakeholder Forum

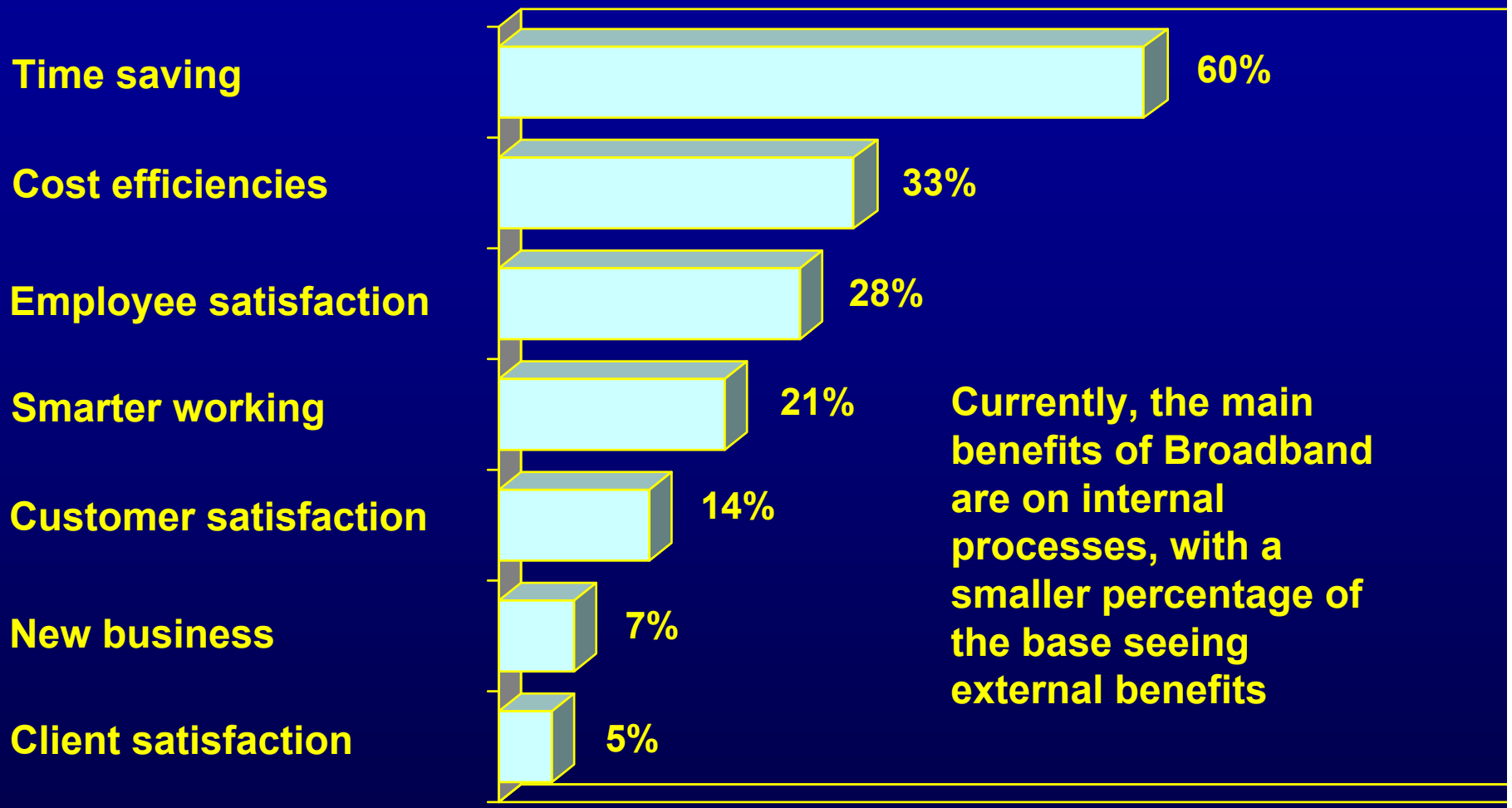
UK ICT Sector SMEs: Affordable broadband access satisfaction & importance



Scale: 1 is negative and 10 is positive

Source: UK Trade Association Intellect and NOP Sept '03

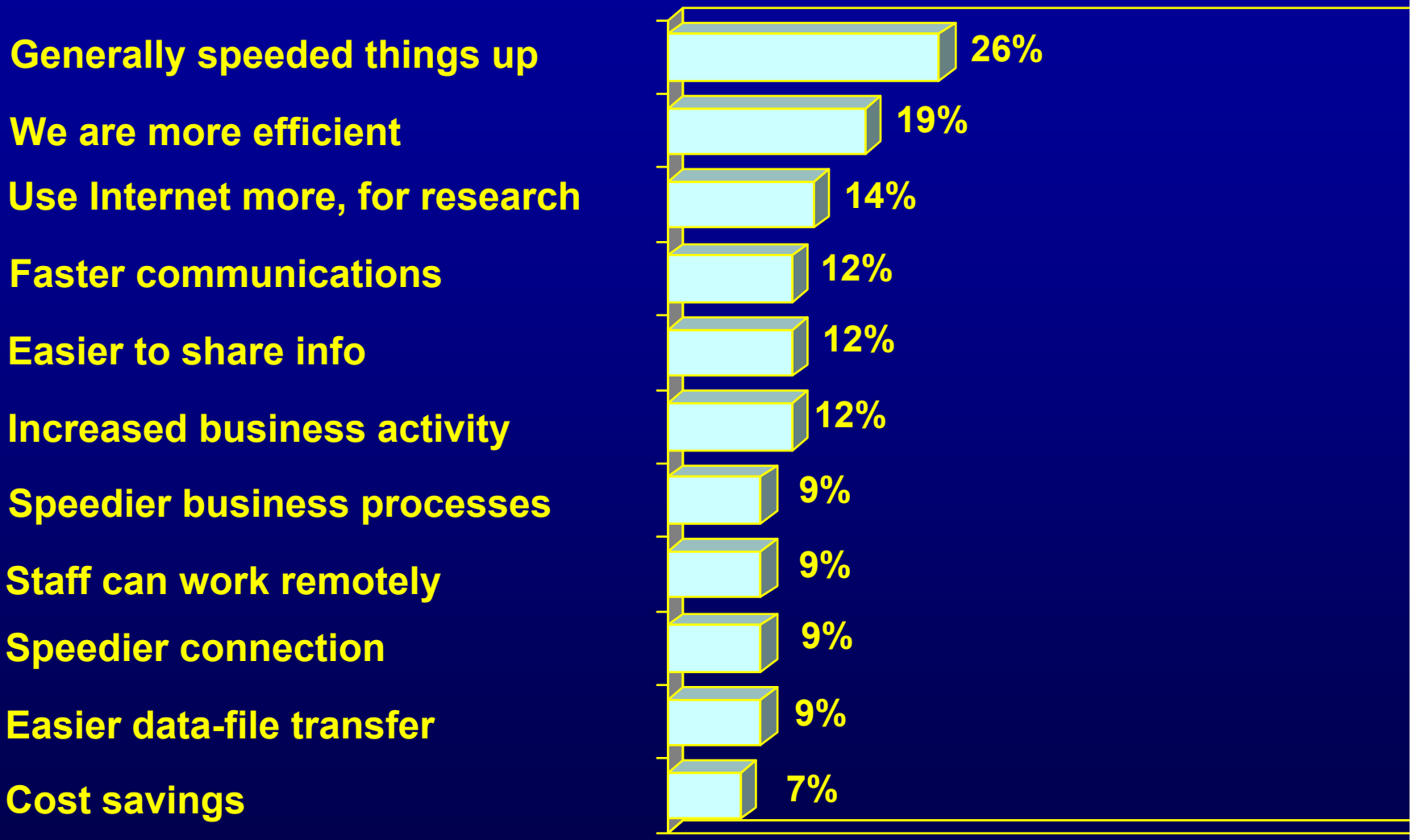
Benefits of Broadband Connectivity
UK ICT SMEs



Currently, the main benefits of Broadband are on internal processes, with a smaller percentage of the base seeing external benefits

Source: UK Trade Association Intellect and NOP Sept '03

Effect on Business Processes - UK ICT SMEs



Source: UK Trade Association Intellect and NOP Sept '03

Will we see new models for processing?

Today's model, based on individual processors and servers on the end of 110 million broadband connections across the world, is inherently insecure.

Even with the heroic assumption that 99% have fully configured firewalls and up to date virus protection, this would still leave more than 1 million processors infected with "trojan" viruses and able to participate in denial of service attacks. This is not sustainable.

I suggest that processing will move into the network, leaving very thin clients (screen scrapers). Software, processing and storage will be available on a pay per use basis.

This model powered by broadband access will greatly benefit small business…

Source: UK Broadband Stakeholder Forum

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Defining the sophistication index

The technology innovation lifecycle approach:

- ***Awareness*** **- the ability to make an informed decision based on 'knowledge';**
- ***Adoption*** **- decision making, 'ownership' of, or access to, particular resources;**
- ***Deployment*** **- 'usage and optimisation' of particular resources; and**
- ***Impact*** **- the 'outcomes realised' from the adoption and deployment of particular resources.**

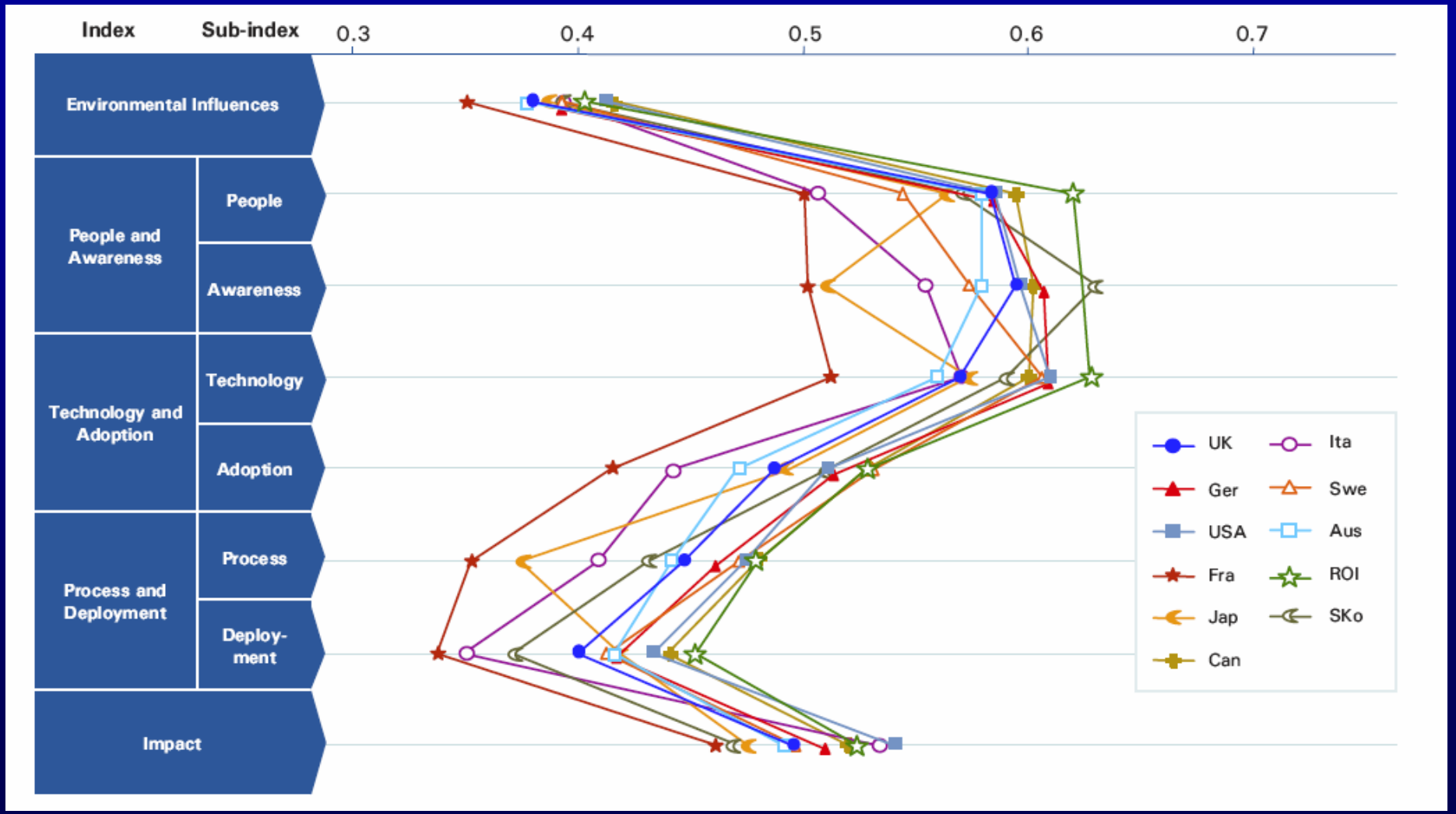
The three pillars approach:

- ***People*** **- the leadership, skills and culture of business;**
- ***Technology*** **- 'online' platforms and applications;**
- ***Processes*** **- 'buy-side', 'sell-side', and 'inside' processes, which support specific business functions;**

and surrounding them all *environment* - competition, government, customers, suppliers and other influences.

Source: UK DTI Business in the Information Age: International Benchmarking Study 2003 Page 125 www2.bah.com/dti2003

Overall sophistication index scores



Source: UK DTI Business in the Information Age: International Benchmarking Study 2003 Page 126
www2.bah.com/dti2003

Sophistication index - numerical results 2003

Overall Index

ROI	0.53
Can	0.52
USA	0.52
Ger	0.51
Swe	0.51
SKo	0.50
UK	0.49
Aus	0.49
Jap	0.47
Ita	0.45
Fra	0.42

Environment

Can	0.42
USA	0.41
ROI	0.40
Ger	0.39
Swe	0.39
Ita	0.39
SKo	0.39
Jap	0.39
UK	0.38
Aus	0.38
Fra	0.35

People

ROI	0.62
Can	0.59
Ger	0.59
USA	0.59
UK	0.58
Aus	0.58
SKo	0.57
Jap	0.56
Swe	0.54
Ita	0.51
Fra	0.50

Technology

ROI	0.63
Ger	0.61
USA	0.61
Swe	0.61
Can	0.60
SKo	0.59
Jap	0.57
Ita	0.57
UK	0.57
Aus	0.56
Fra	0.51

Process

Can	0.48
ROI	0.48
USA	0.47
Swe	0.47
Ger	0.46
UK	0.45
Aus	0.44
SKo	0.43
Ita	0.41
Jap	0.37
Fra	0.35

Awareness

SKo	0.63
ROI	0.62
Ger	0.61
Can	0.60
USA	0.60
UK	0.59
Aus	0.58
Swe	0.57
Ita	0.55
Jap	0.51
Fra	0.50

Adoption

Swe	0.53
ROI	0.53
Can	0.53
Ger	0.51
SKo	0.51
USA	0.51
Jap	0.49
UK	0.49
Aus	0.47
Ita	0.44
Fra	0.41

Deployment

ROI	0.45
Can	0.44
USA	0.43
Jap	0.42
Ger	0.42
Aus	0.42
Swe	0.41
UK	0.40
SKo	0.37
Ita	0.35
Fra	0.34

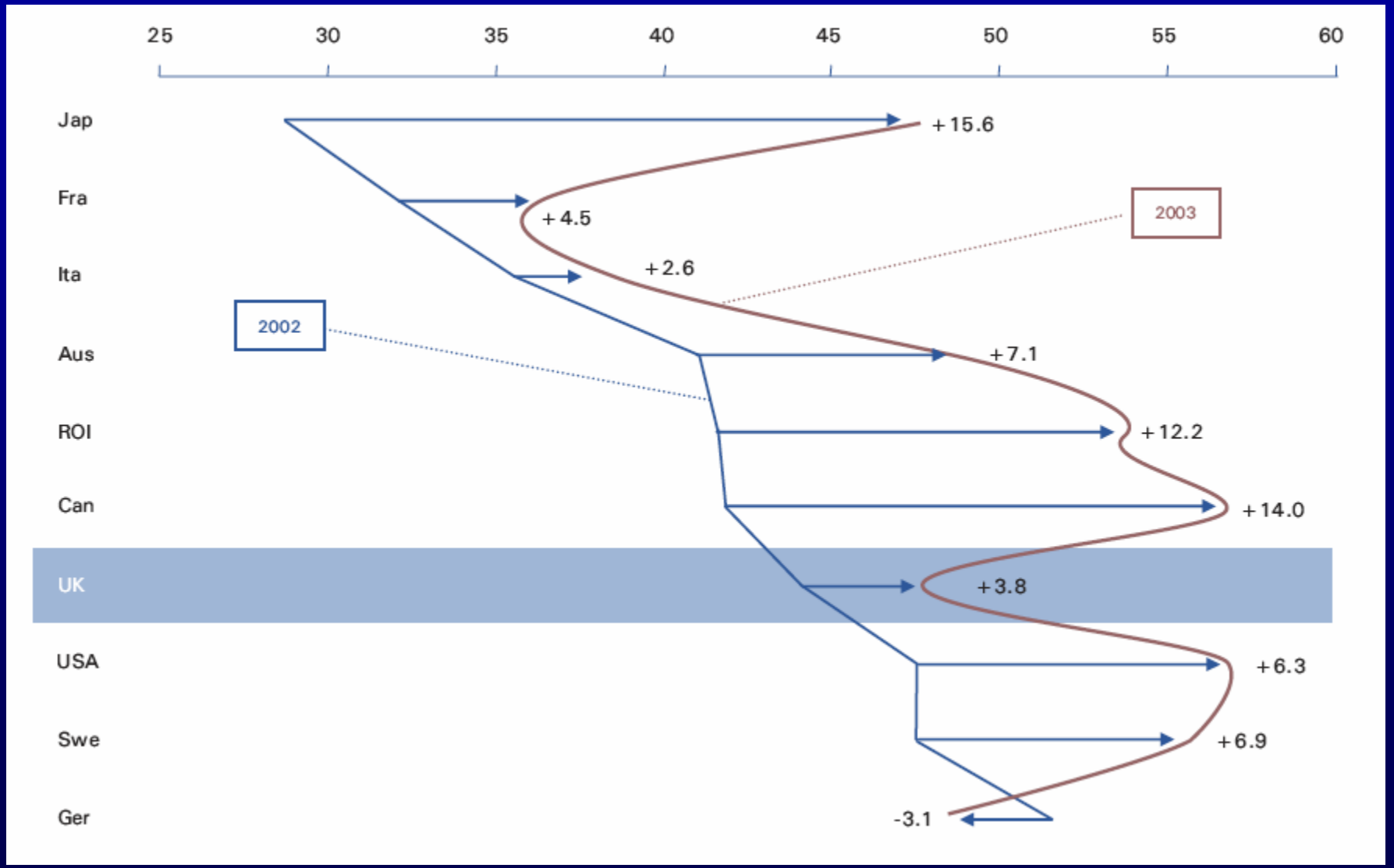
Impact

USA	0.54
Ita	0.53
ROI	0.52
Can	0.52
Ger	0.51
Swe	0.50
UK	0.50
Aus	0.49
Jap	0.48
SKo	0.47
Fra	0.46

The absolute score differences between nations are generally quite close, in most cases within ten percentage points. Overall the leading nations are Ireland, Canada and the USA.

Source: UK DTI Business in the Information Age: International Benchmarking Study 2003 Page 127
www2.bah.com/dti2003

Year on year sophistication index change



Source: UK DTI Business in the Information Age: International Benchmarking Study 2003 Page 133
www2.bah.com/dti2003

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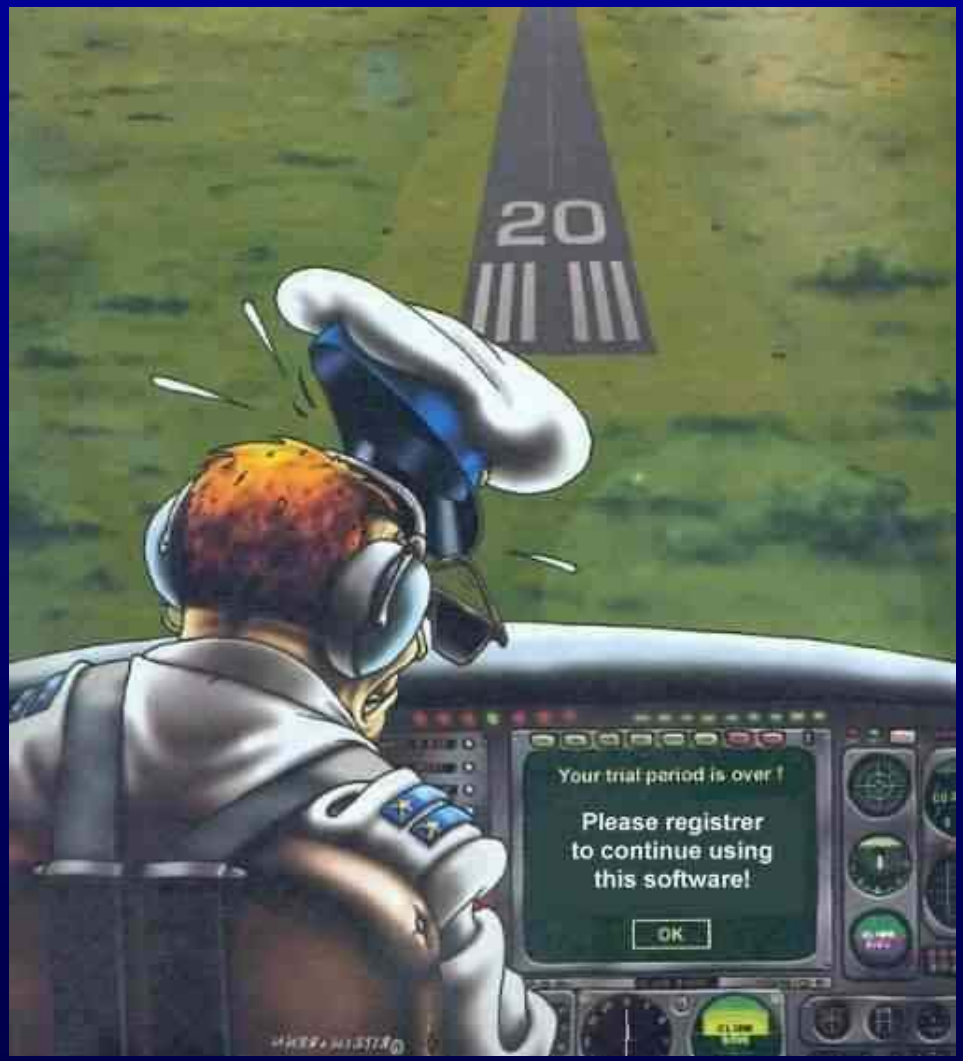
Technology of course makes an excellent servant but a poor master…



As an engineer and director my strong concern is with the process by which increasingly rapid change in technological capability diffuses out into society and the economy…

Source: Jim Norton, COGS Network Meeting, University of Sheffield, 20/01/03

The people dimension…part one

Networked information systems can be either (or both!) a benefit and a curse…

- **Major scope to improve quality and lower cost in product manufacture and service delivery…**
- **Potential for SMEs to "level the playing field" with large companies…**
- **Immense potential in sharing "knowledge" across divisional boundaries…**

- **But poor track record in building systems which align people, systems and processes.**
- **But many SMEs continue to be loathe to adopt e-business seriously.**
- **But how to overcome the "knowledge is power" barriers and reward knowledge sharing?**

Source: Jim Norton, COGS Network Meeting, University of Sheffield, 20/01/03

The people dimension…part two

Networked information systems can be either (or both!) a benefit and a curse…

- **Potential for enhanced information flow and more responsive management exploiting e-mail…**
- **Opportunity to codify explicit knowledge into attractive expert systems…**
- **Potential to tailor private and public sector services to individual consumers…**

- **But widespread poor practice leading to information overload and excessive hours worked.**
- **But increasing premium on tacit knowledge strengthens 'clusters'.**
- **But major absence of the 'trust' required to permit the holding and use of personal data.**

Source: Jim Norton, COGS Network Meeting, University of Sheffield, 20/01/03

Some final thoughts….

- E-business has not gone away!
- The excess of gloom on the 'downside' was just as wrong as the earlier excess of 'hype'.
- Normal 'Darwinian' processes have removed from the market those who had wacky business plans and little common sense…
- E-business is now being integrated into 'traditional' business, bringing major cost savings, service enhancements and new business opportunities.
- Affordable broadband access levels the playing field between large and small business
- Remember though that, in e-business, people and processes are much more of a challenge than technology…

But always remember that new technology can sometimes have unexpected impacts….

Oh dear…!

Questions?