The Internet and Education
A Scottish Perspective

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Agenda

- **The Internet, Education and Productivity**

- **The New Learning Environment**

- **Scotland Leading the Way**

    Scottish Schools Digital Network

    Cisco Network Academies in Schools

- **Conclusions**

The Internet, Education and Productivity

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Issues Facing Government

Education and skills development

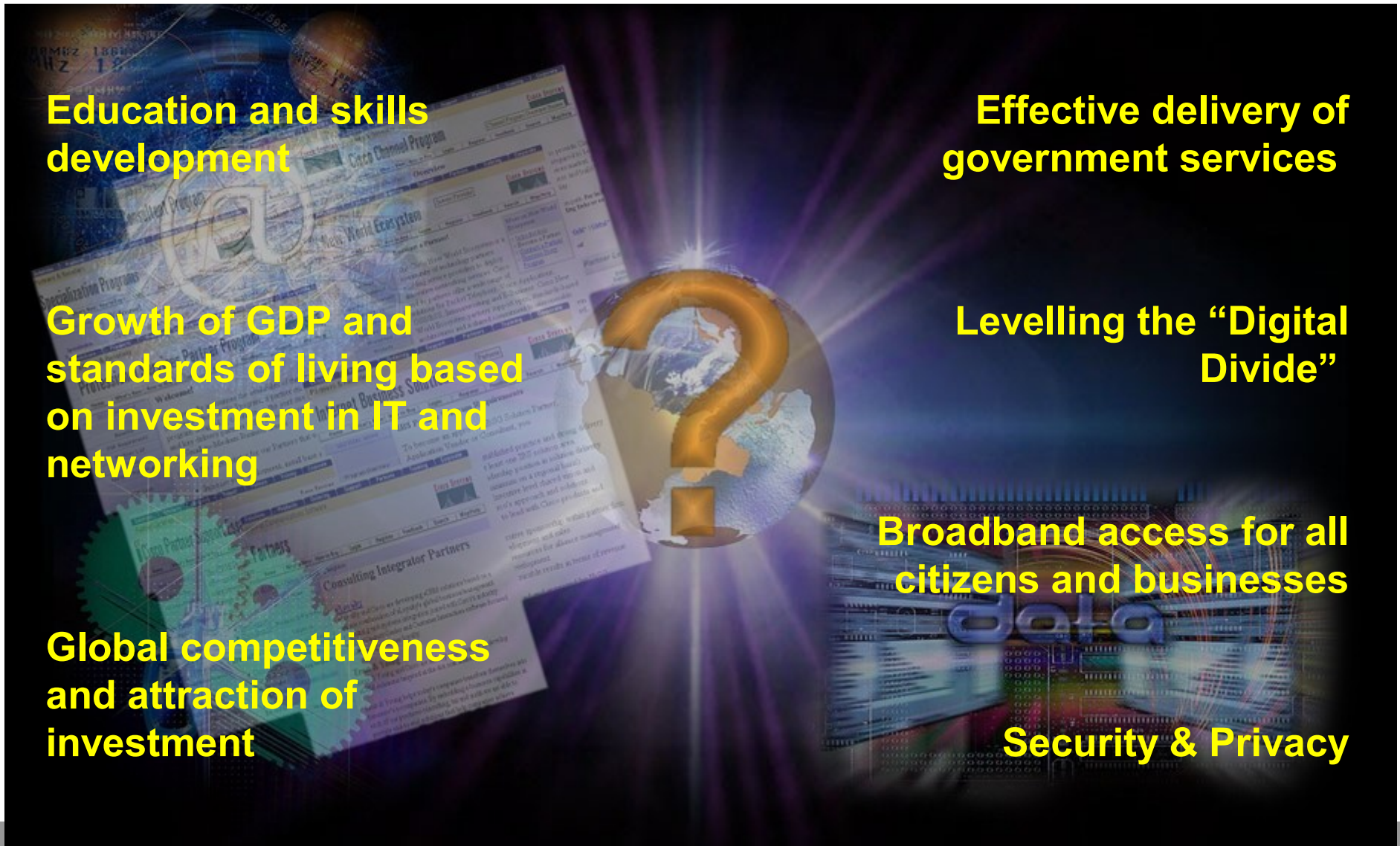**Growth of GDP and standards of living based on investment in IT and networking**

Global competitiveness and attraction of investment

Effective delivery of government services

Levelling the "Digital Divide"

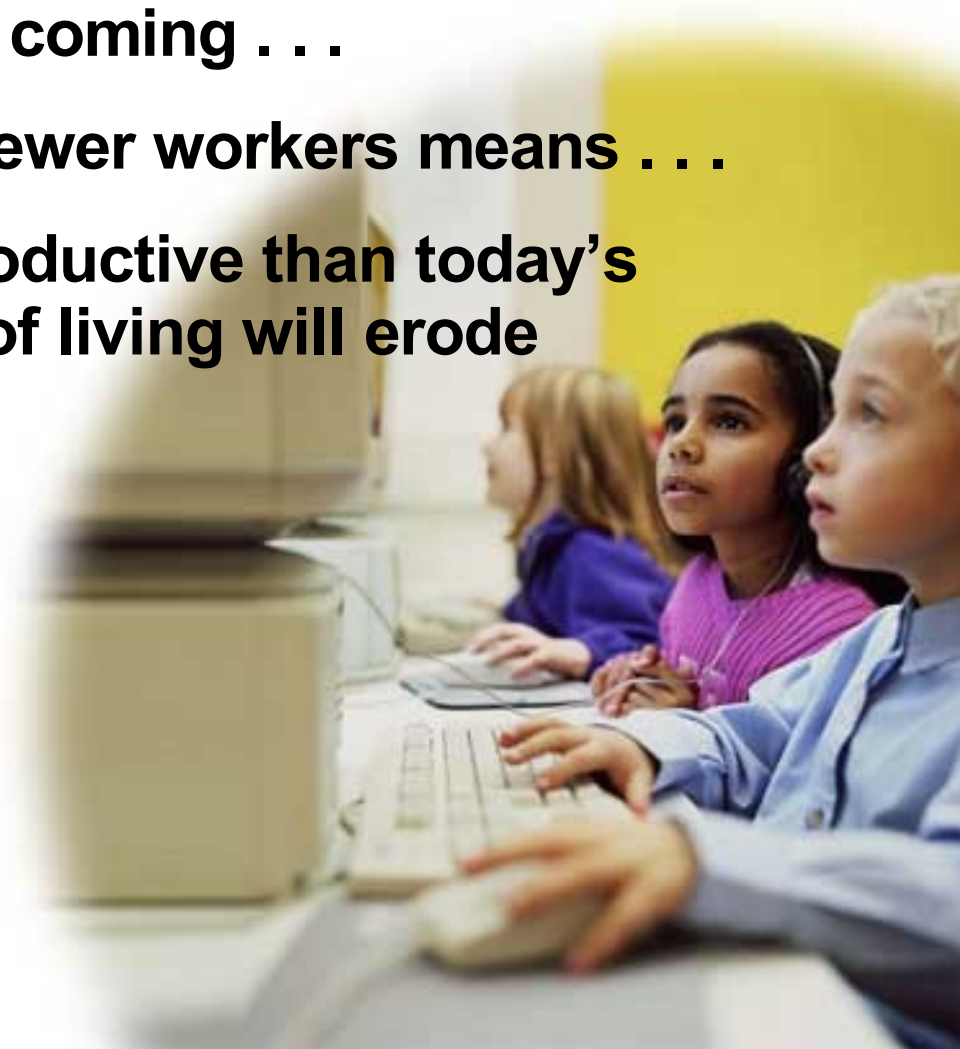**Broadband access for all citizens and businesses**
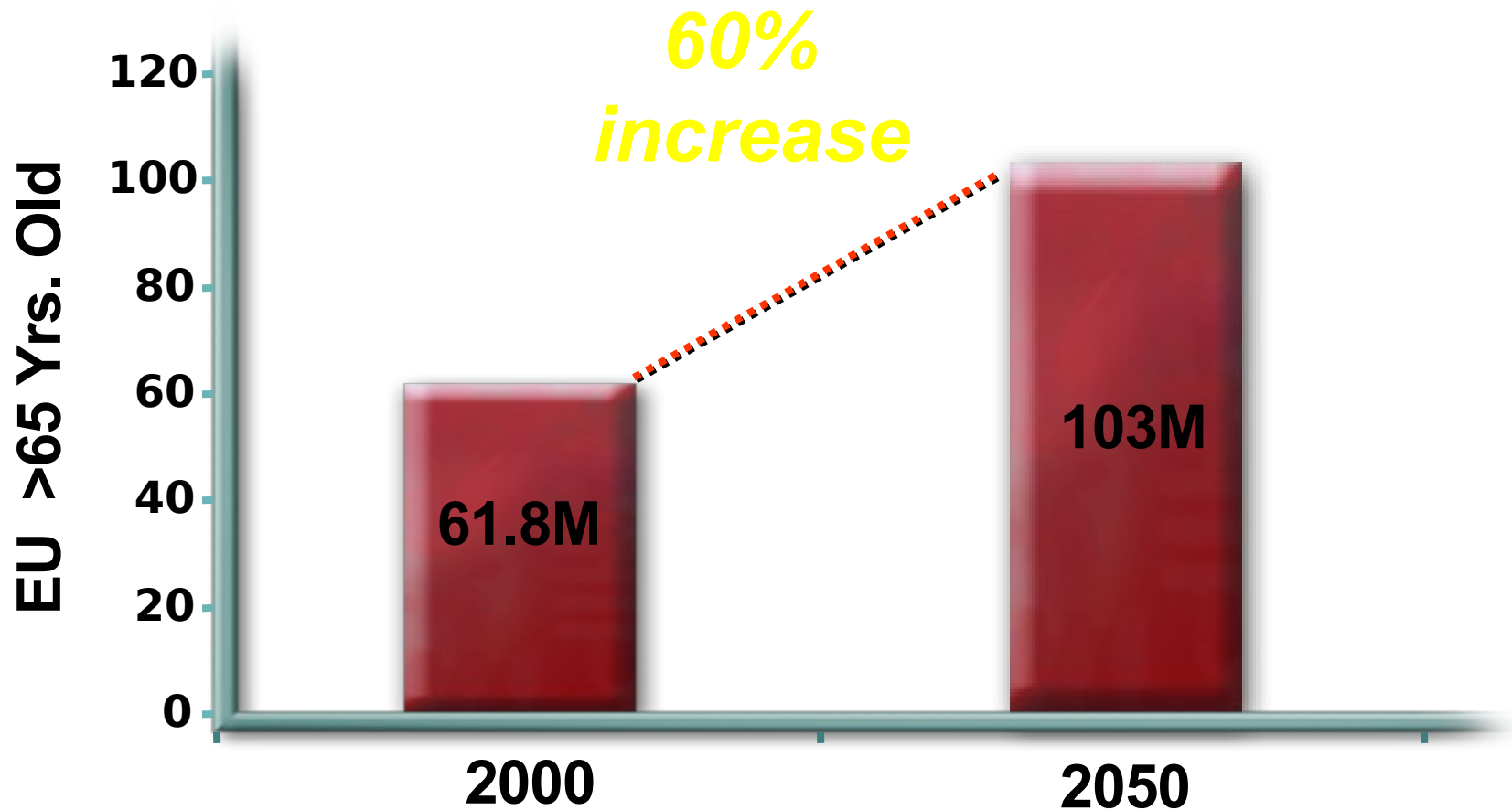
Security & Privacy

The industrialized world faces a Productivity Imperative

- **A Demographic Crunch is coming . . .**

- **More retired people, and fewer workers means . . .**

- **Workers must be more productive than today's workers, or our standard of living will erode dramatically**

Education needs to be the foundation to improve the productivity of our future workforce

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European Union Population Aging

Source: FT, 4 Oct. 2003

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European Union: 2000 vs. 2050

EU Adult Population

-16% decline

Retired

243M

203M   *Workers*

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

2000
5:1

2050
2:1

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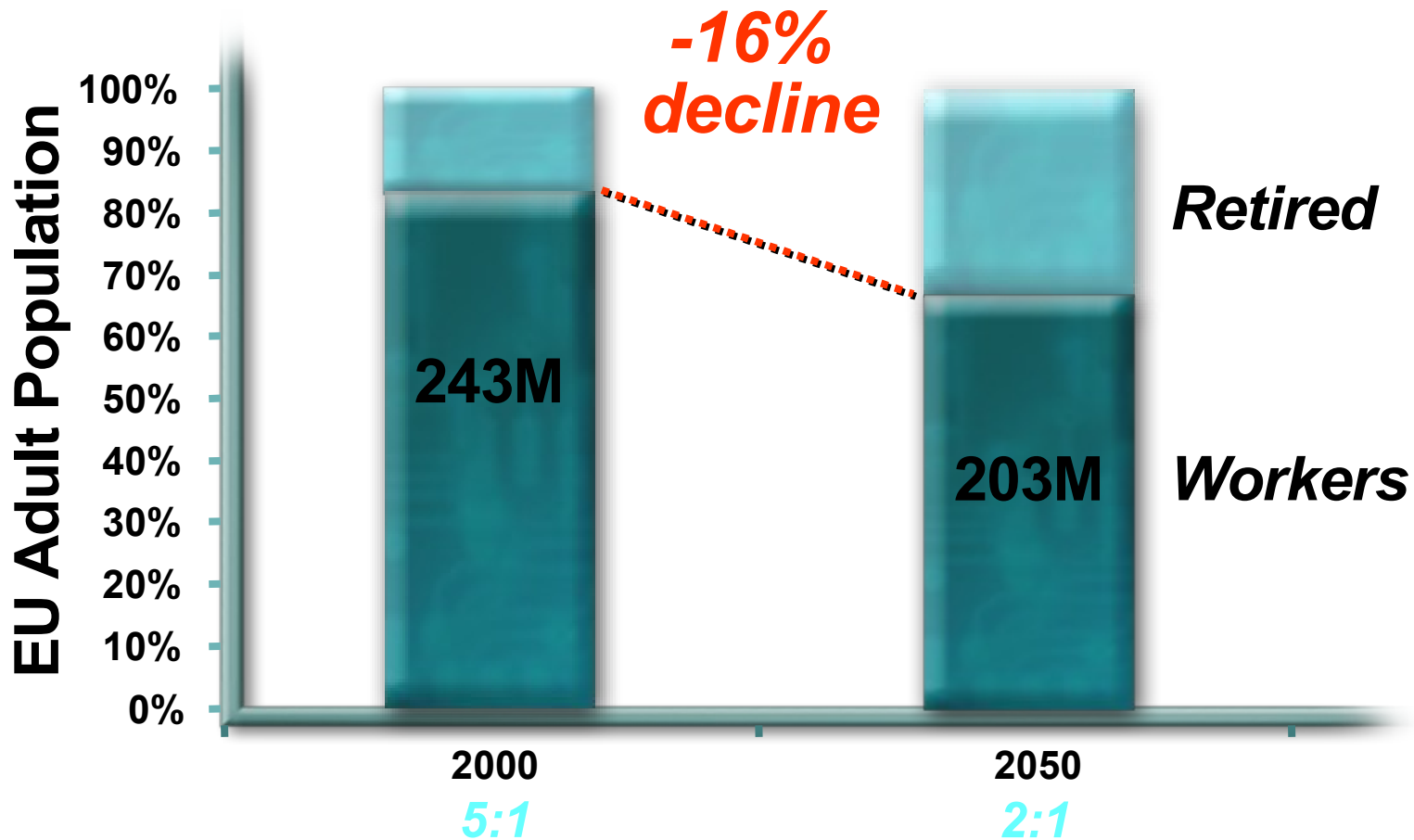
Internet and Education

The New Education Environment

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Education is not a place…………

Innovation

…………… It's a Process

It used to be about IP….

…now its about collaboration

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Does Education Mean IQ

PQ + **CQ** > **IQ**

Passion Quotient + **Curiosity Quotient** > **Intelligent Quotient**

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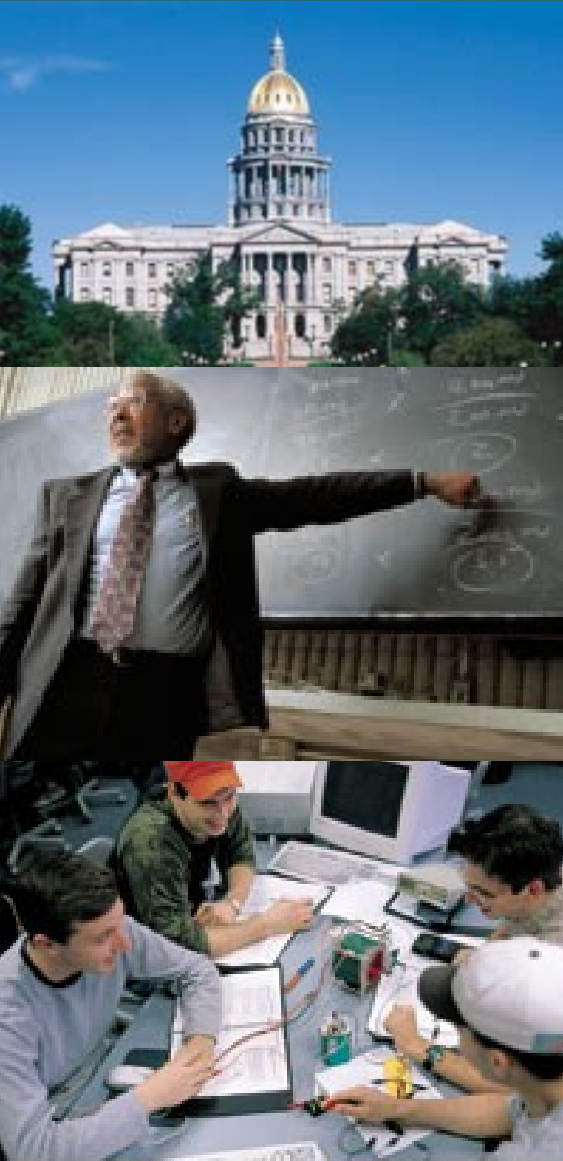# Education's New Differentiator

Connect

Collaborate

Compete

Scotland Leading the Way

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Education at a "Technology Tipping Point"

- ## Governments:

    Integration of technology into classrooms is major focus for educators & governments

    Teacher shortage: 35% of teachers to retire over next 10 years

    Higher expectations via accountability (eg. NCLB)

- ## Educators:

    Augment teacher's ability to reach a distributed student body

    Learning more collaborative: web-sharing, video conference.

    Record the class, assist absentees or for review purposes

    Utilize specialists & subject matter experts

- ## Students:

    Students comfortable with technology and the internet

    Students lives are hectic & fraught with schedule conflicts

Background to Local Education Circumstance

The promise of the internet 10 years ago was of

'a huge library based system offering infinite easy to find sources of information on every conceivable subject'.

☐ **National Initiatives & Strategy - SSDN**

   18 month roll out for CDI

☐ **Local Initiatives & Strategy**

☐ **Pupil and Teacher needs**

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What do Teachers want..?

☐ **No more changes now - too many already..!!**

☐ **Ease of use - mixed ICT confidence & skills**

☐ **Benefits to teaching process & classroom**

The internet's great. I'm sure there's everything I want up there. However, I don't have the time to spend wading through the ⁎⁎⁎⁎ to get to where I need to be..! Please make it easy for me.

Teacher @ BETT 2004   [widely held opinion]

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Basic Objective of CDI

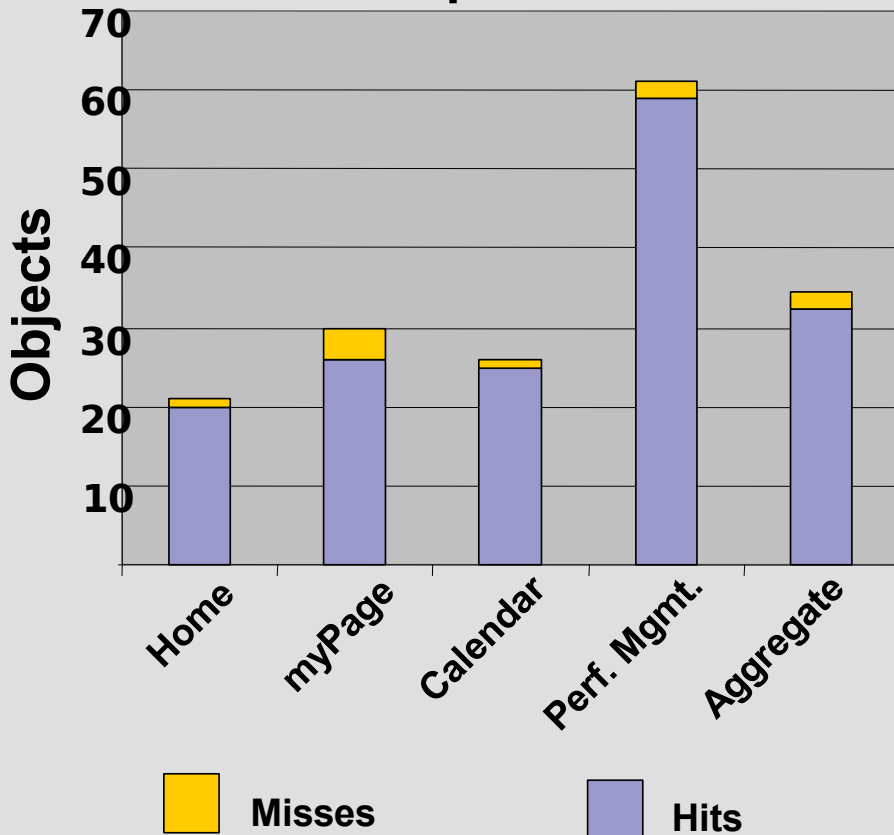**Deliver content in the most efficient manner.**

CDI allows the Local Education Authorities to maximise the impact of communicating via the web by overcoming the bandwidth issues of delivering rich-media to the desktop.

CDI ensures that high quality video and rich audio are delivered with fast response times, and large graphics and other high bandwidth files can be delivered with speed, accuracy and consistency.

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Predictable, High Quality Application Performance

Vast majority of application requests locally served

Requests

Objects axis: 10, 20, 30, 40, 50, 60, 70

Categories: Home, myPage, Calendar, Perf. Mgmt., Aggregate

Legend: ■ Misses ■ Hits

Significant performance increase
(30 ms vs 5-6 second response times)

CE Latency Benefit

Seconds axis: 1.0, 2.0, 3.0, 4.0, 5.0

Categories: Home, myPage, Calendar, Perf. Mgmt., Aggregate

Legend: ■ With CDI ■ Without CDI
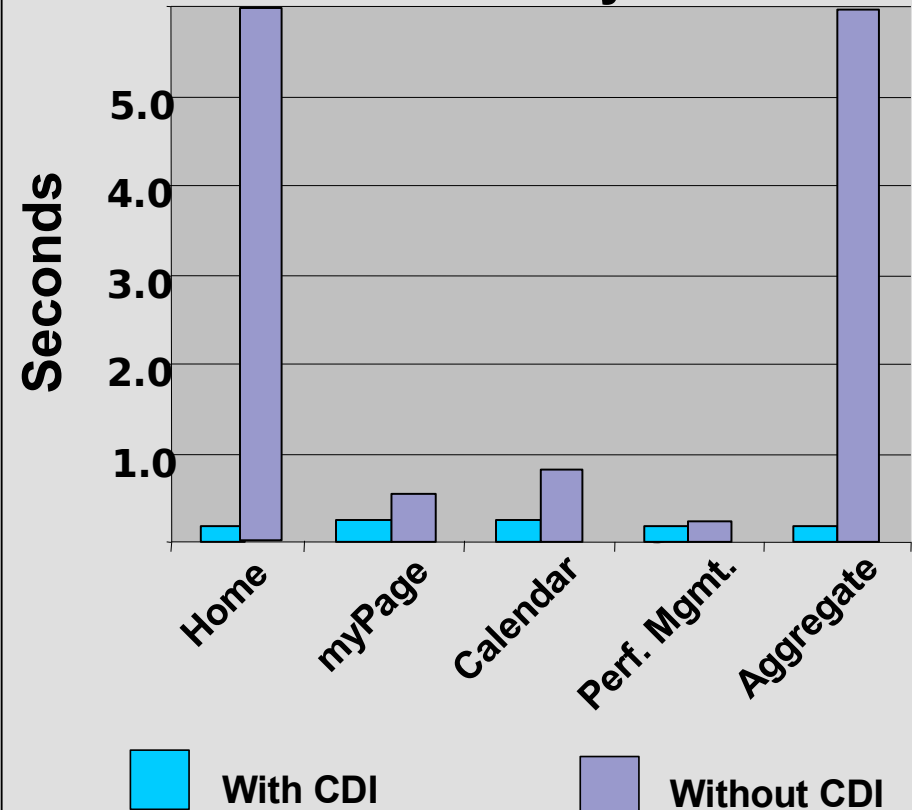
Content - 3 Types served by CDI

On-Demand Content:

Acquired, cached and delivered by school triggered demand.

First client request for each piece of content - retrieved from original Web Server and provided by Content Engine which also stores/caches same.

Pre-Positioned Content:

Means of distributing content and populating Content Engines in a managed CDI Environment (managed Centrally or at other levels e.g. LEA).

Bandwidth intensive content e.g. Java Apps, Flash, Shockwave
Live Content: distribution to Content Engines during off-peak scheduled for distribution to Content Engines during off-peak
Acquired as live streaming broadcast from
hours.
Satellite/Terrestrial
Source. CDI configures policies for acquiring live multimedia.

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Advantages of CDI

Faster content (whatever form) to the network edge / classroom:

- **Bandwidth and Cost Savings**

- **50% increase in throughput generally.**

- **80% in Education Environments (hitting same page more often).**

Centralised Management @ National & Local levels.

- **Drive On-Line Content Standards Nationally & Locally.**

- **Stats / Reporting on usage / content value.**

Pre-Positioning is the REAL ADVANTAGE

- **Real time access to required content – no waiting**

- **Improved productivity for Teacher and pupil**

Improved Learning Experience

Cisco Networking Academy Program

« Public Private Partnership between Cisco, Governments, Educational Institutions, NGO, and industry, created to teach students how to design, build and maintain computer networks »

Demand

2,281,884

2005

Supply

1,661,251

Projected Shortage 27%

Cisco Networking Academy Program
A Global Success—http://cisco.netacad.net/public/index.html

43,000 + Online Tests Daily
22,185,730 Total Tests Taken

10,590 Academies
151 Countries/Territories/Entities

25,408 Instructors

523,161 Students
Currently Enrolled

Networking Academies in Scotland

- **Social Inclusion Academy Program**

- **Delivered in partnership with local regeneration companies in Glasgow**

- **Objectives**

  - **Shortage in local IT workforce**

  - **Create Careers, not jobs – social improvement**

  - **Make IT training more accessible, give people a chance**

  - **Make IT resource more accessible for SME's**

Govan Initiative – The First in Europe

- **The Benefits**
  - **Jobs for long term unemployed**
  - **IT professionals available to local SME's**
  - **Improved community spirit and recognition**
  - **More money invested locally**
  - **Now being replicated across Glasgow**
- **Now being taken in Glasgow Schools**
- **Being integrated through 'Scottish Qualifications Authority'**

Conclusions

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Some Personal Thoughts……

- We need a new education experience

- We cannot fail any of our children

- We need to make all pupils productive future employees for our sustainability

- Give them passion

- Allow them curiosity

- Its a long road but we have started off on the right track

- Education and the Internet are the foundation!