

Location as a Key Enabler for a Digital Society

Professor Terry Moore

Institute of Engineering Surveying & Space Geodesy
The University of Nottingham



RCUK Digital Economy

- Digital Economy is defined by the Research Councils as:
The novel design or use of information and communication technologies to help transform the lives of individuals, society or business.
- The Digital Economy programme is:
 - Cross-Research Council (EPSRC, ESRC, AHRC)
 - Funded 2008-2011 for:
 - £80m research – including 3 x £12m hubs
 - £36m training – 8 x DTCs
 - Aimed at realising the transformational impact of ICT for all aspects of Business, Society and Government.



What is Horizon?

- A Digital Economy Research Centre at the University of Nottingham comprising:
 - A Digital Economy Hub
 - £20m from RCUK and university
 - Spokes at Cambridge, Reading, Exeter, Brunel
 - A Doctoral Training Centre
 - £15m from RCUK and university
 - 20 PhD students per year for 5 years
 - Was 40 now 90 partner companies

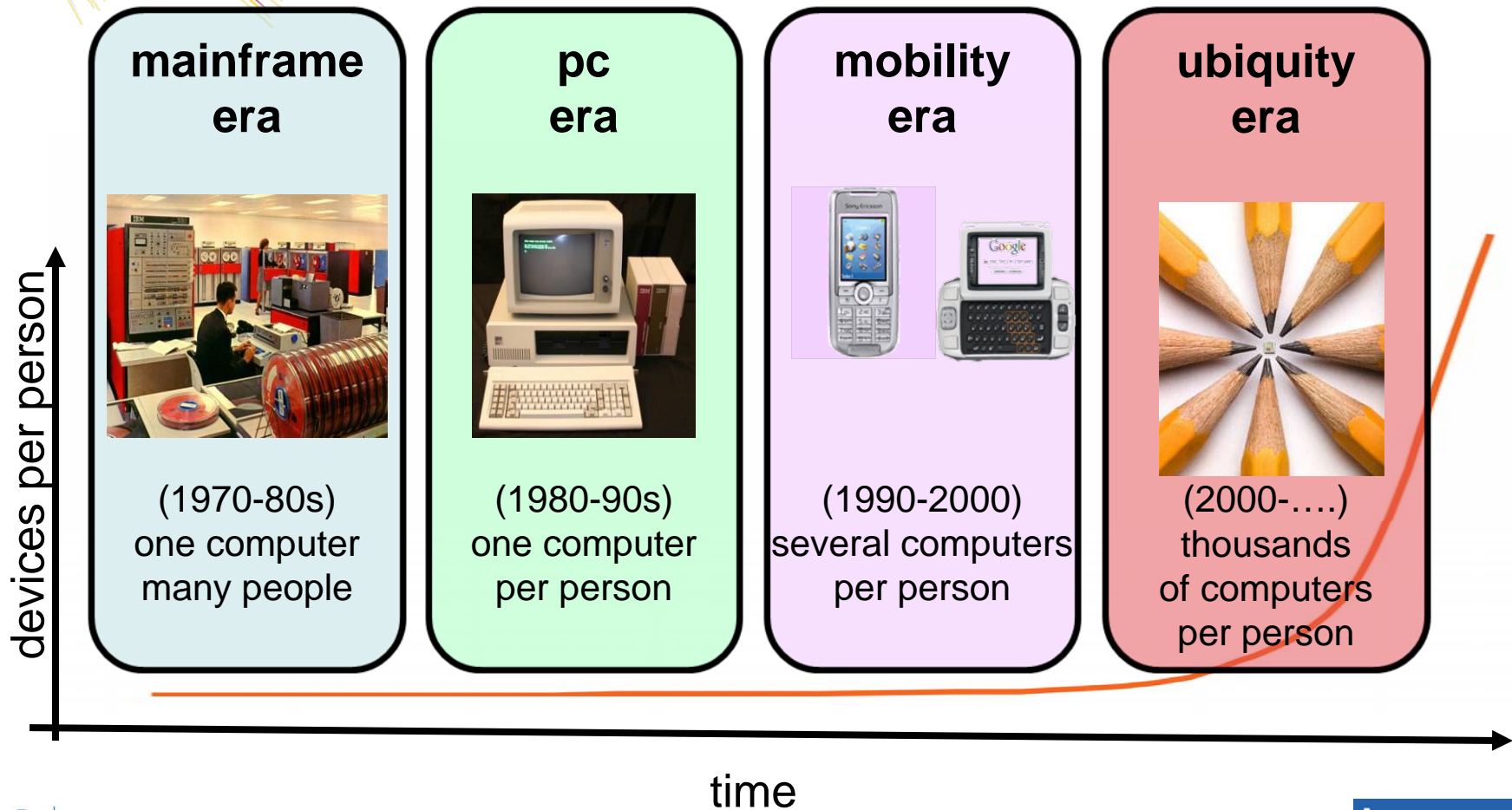
Our Digital Footprint

“Every time we register for a new web service, or upload our photos and videos, we are enlarging our own digital footprints”

- This growing digital footprint is a significant part of the digital economy
- It also poses major societal and ethical challenges

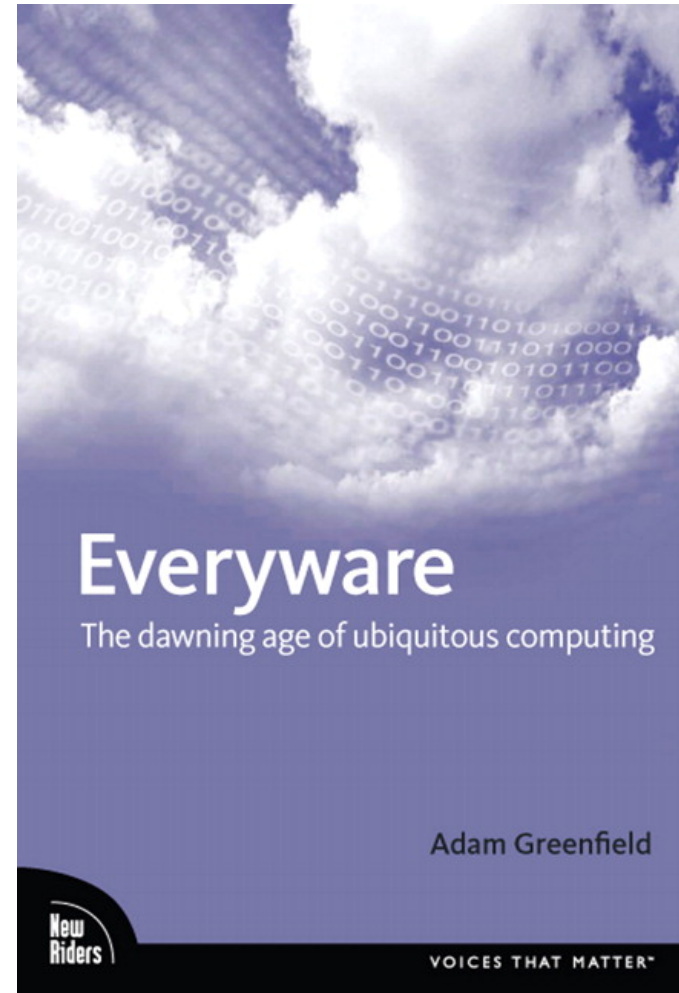
The screenshot shows a web browser displaying a BBC News article. The article title is "The spread of our 'digital footprint'" by Spencer Kelly. The main text discusses how digital footprints grow as we use the internet. A quote from the article reads: "Every time we register for a new web service, or upload our photos and videos, we are enlarging our own digital footprints". The article also mentions a 2006 incident involving Anne Darwin and a 2002 incident involving John.

The Era of Ubiquity

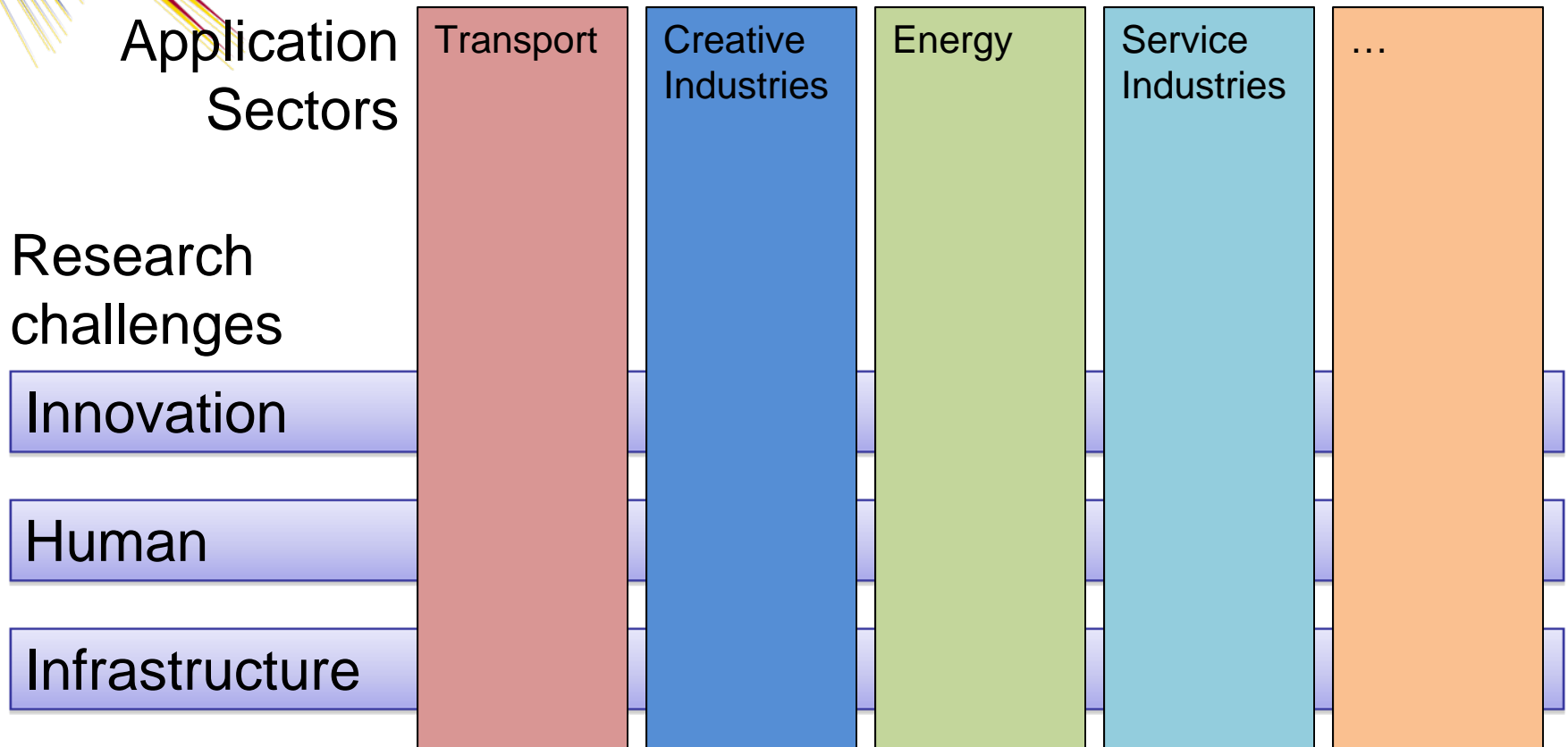


Contextual Footprint

- As we enter an era of ubiquity data increasingly comes from:
 - Buildings, furniture, artefacts, vehicles, clothing, biosensors
- Combined with:
 - Location, context, interactions..
 - ..both virtual and physical
- Our **contextual footprint** blends physical and digital interaction



Sectors and challenges



A Bad Latitude

If we have to
turn it off
we won't
turn it on...



LOCATIONS		
TIME	MEGAN	ROBER
11:00 AM	HOME	
12:30 PM	EASTVIEW ADULT TOY STORE	HOME
1:30 PM	HOME	
2:00 PM	LAKETOWN SEX TOY SHOP	SCHOOL
2:30 PM	HOME	
3:00 PM	FRY'S ELECTRONICS	
3:30 PM	ED'S POWER TOOL EMPORIUM	SUBWAY
4:00 PM	HOME	
4:10 PM	HOSPITAL BURN WARD	

Location in Context

From: NottIS (Derek McAuley)


Invite: J.Bond@mi6.gov.uk O.BinLaden@alqueda.org

Subject: Drinks reception

Location: Room A, Universal Imports, London

Start: Fri, 25 Dec 2009 09:00 All-day event

End: Fri, 25 Dec 2009 10:00

25 December 2009 

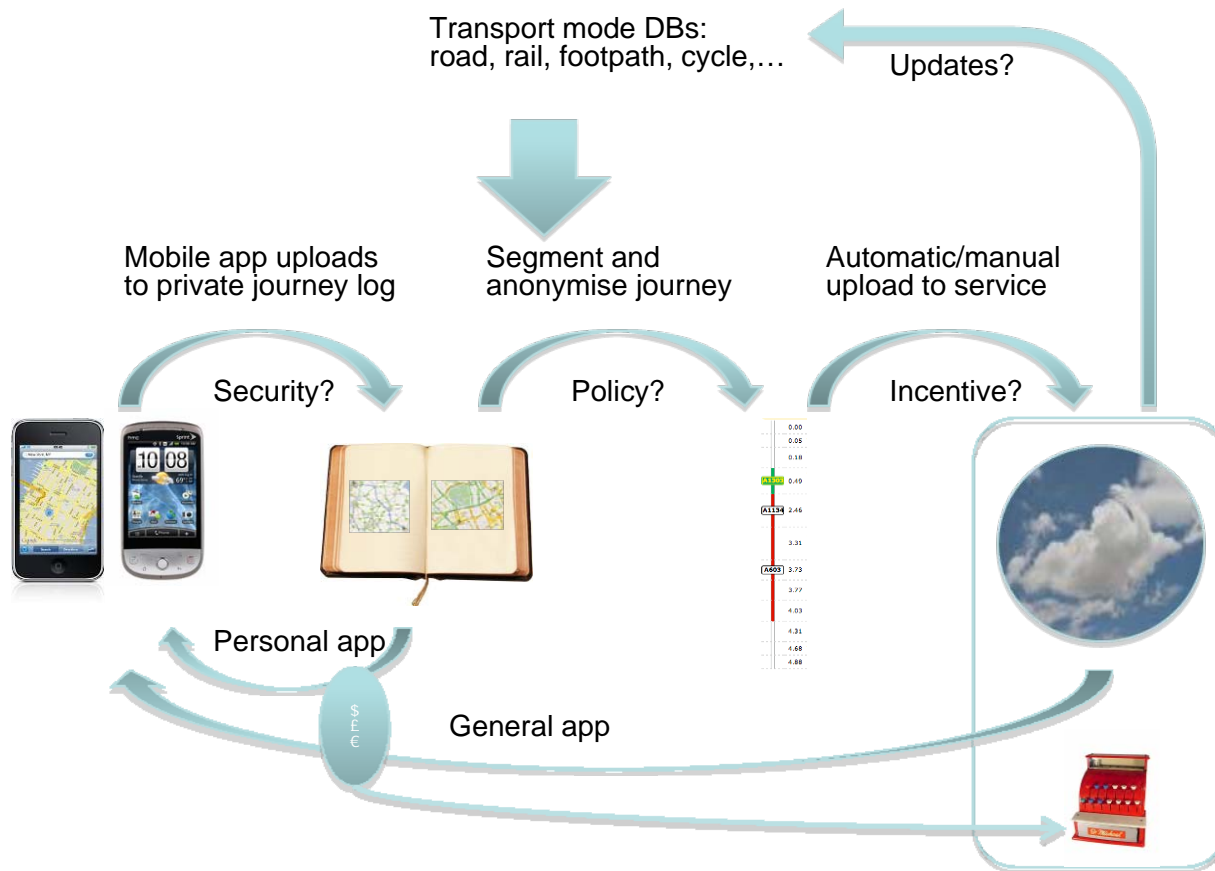
08:53 live location

All attendees	Location	Attending
D McAuley	Room A	Present
J Bond	Universal Imports	On his way
O BinLaden	Afghanistan	Not coming

Show all day

25 December 2009	
9 ⁰⁰	10 ⁰⁰
All Attendees	
Derek McAuley	
J.Bond@mi6.gov.uk	
O.BinLaden@alqueda.org	

Crowdsourcing Movement



- Process personal movement data to provide generic useful services...
- Transform personal to public service information via aggregation and anonymization

Socially Connected Car Sharing

- Rationale
 - People would like to car share but they don't
 - Why?
 - Potential negatives: Safety, convenience, reliability
 - But potential positives: environment, cost, social networking
- Existing systems
 - Matchmaking/buddying (e.g. liftshare)
 - Real time location based car sharing (e.g. Avego)
- The Horizon concept: ad-hoc social networks for matching people on a one-off basis
 - For getting people home from a meeting
 - For getting people from one business site to another
 - For impromptu car sharing at a shared location



car sharing

application

Behavioural Challenges

- When are people most likely to car share?
- With whom are people happy to car share?
- How do different technologies make car sharing more effective?
- Research approaches:
 - Diary studies:
asking potential sharers about journeys throughout the day
 - Interviews:
identifying barriers and opportunities for car sharing
 - Technologies:
reviewing different technology based solutions to car sharing



Technical Challenges

- Accuracy requirements for location tracking to record journeys and destinations
- Storing large data sets recording journey details
- Naming places
- Integrating social and location based matching requirements
- Matching – how much to automate, and how much to leave to the individual
- Supporting infrastructure and interoperability



Foot-Tracking Location Technology



<http://www.horizon.ac.uk>



terry.moore@nottingham.ac.uk