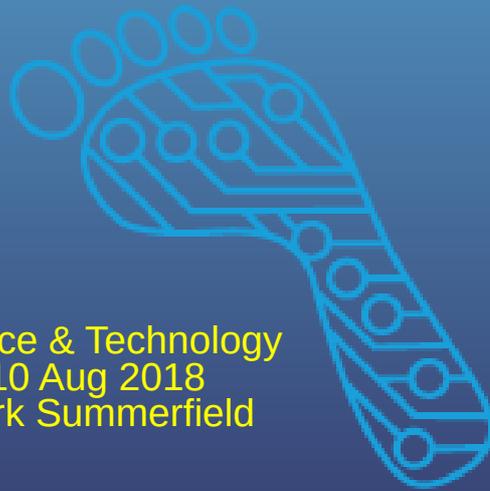


Your Digital Footprint



Science & Technology
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Mark Summerfield

Society

- We take it for granted that society needs to know some things about us:
 - Birth, death and marriage records
 - Medical records
 - Travel – records are kept when we travel between countries
 - Local government and service providers have details of our names and addresses
 - Central government has tax records, vehicles and driver details
 - Company directors, Church Officials
 - Schools record our academic performance



Our human society generally collects and holds information about its members – this is nothing new, and no the subject of todays talk.

- Many records that were originally on paper are now digitised and made available on the internet
- Example - MS on the Canton 1952

Things we do

- Publish things such as:
 - Books, articles scientific papers, news paper articles
- Feature in newspaper or TV material:
 - Brave deeds, accidents, criminal behaviour, views
- Members of a group:
 - Minutes, on a list of names, taking part in performances, Church members



- The important thing to remember is that these things don't disappear. Generally they are still there somewhere on the internet – and if not then available through sites like the Wayback Machine.

The Wayback Machine web pages store an internet archive of pages that are no longer on line

- Examples

Search for mark summerfield submarine escape
Mark in Great Egg Race BBC TV 1984

So What has changed?

- Our digital society has made it easier for :
 - Data to be captured
 - Data to be stored – paper to disk ratio 
 - Data to be shared – or stolen
- There is less clarity about who owns data
- People are surprisingly willing to share personal data – eg Facebook
- Businesses are able to collect data that was previously not available (eg shopping habits)

Why am I talking to you?

- Example of neighbour

- We create 16.3 zeta bytes of data a year

This is predicted to rise to 125 zeta bytes by 2025

A zeta byte is a trillion gigabytes

Scale is gigabytes, terabytes, petabytes, exabytes, zetabytes

We store less than 1% of the data we create

- 5 million books requires about 2Tb storage – all books ever = ~ 100million = 40Tb.

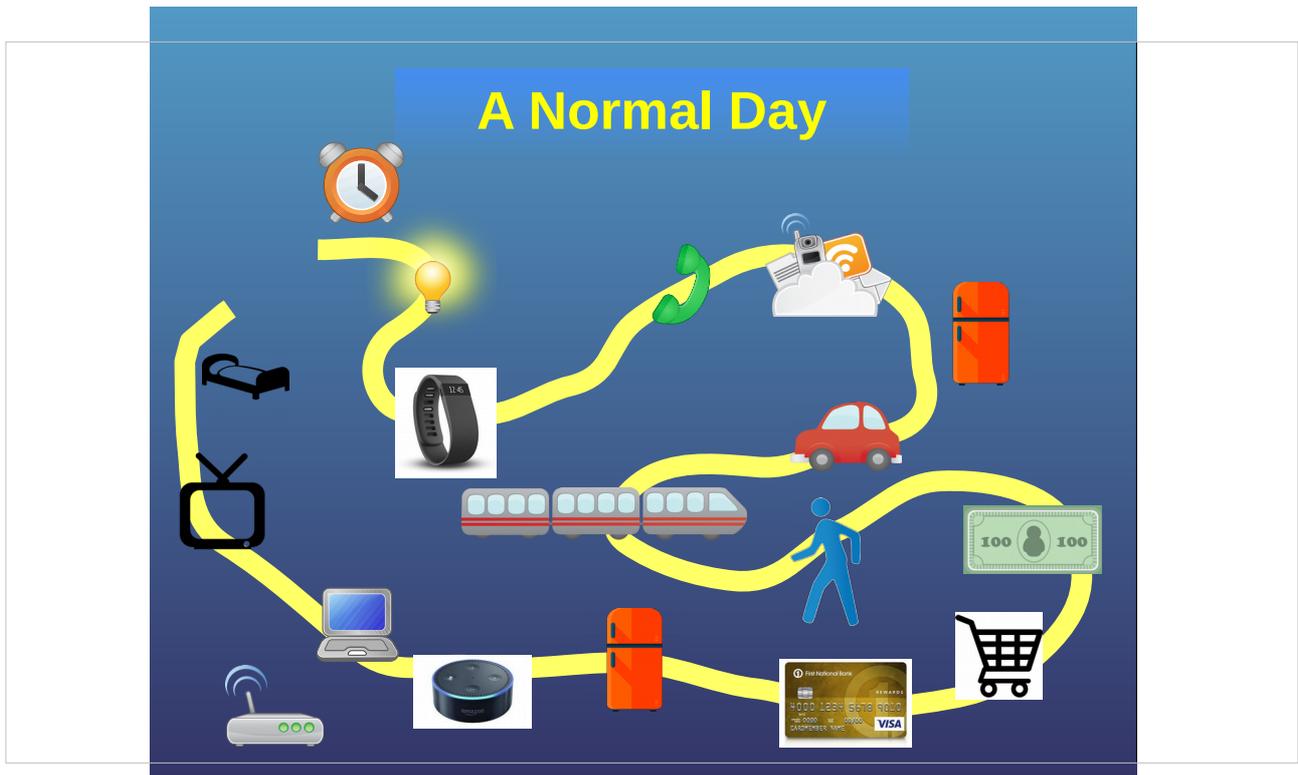
- Ownership

When I send an email who owns it? - the recipient or the sender?

When I take a digital photo - who owns it the subject or the photographer?

Who owns the data from my smart meter?

Who owns my medical records?



Using a normal day as an example we are going to look at all the different types of information that someone or something gathers. Lets explain the slide then look in a bit more detail.

Wakeing



- Power and utilities
 - Smart Meters
- Personal Monitors
 - Fitbits, scales, toothbrushes,



What wakes you up in the morning?
Smart meters monitor and report energy usage levels
Smart meter is the meter not the display
Personal monitors like Fitbit



Phones & Tablets



- Mobile Phones
 - Mast data
 - Operating System
 - Applications
 - Maps
 - Browsers
 - Contacts
 - Sensors – GPS, Accelerometer, Compass
- Landline Phones
 - Call data

Smart phones probably collect more information about you than almost anything else.



Transport



- Connected cars
 - GPS
 - Driving style
 - Car usage
- ANPR (Automatic Number Plate Recognition)
- Parking payments
- Electronic Tickets - Trains, Planes, Ships

- Connected cars stream data to a manufacturers central database.
- Statistics such as mileage, MPG, performance figures, location possibly driving style, faults.
- Some insurance companies offer phone based apps which monitor driving style and adjust insurance premiums accordingly.

ANPR -In UK 10,000 cameras, creating 50million records per day.

- Police link to MOT, insurance, road tax.
- Potential to track speed, locations, duplicate number plates, unregistered vehicles.

Parking - increasingly non cash based

Tickets - ticketless trains and planes



Walking

- Fitbit activity trackers
- Google Location Monitoring
- CCTV



Fitbits measure

- Activity
- Location
- Heart rate

Allows full activity monitoring and sleep tracking

Location Monitoring - Google monitors where you go and sends you a report each month.

CCTV – about 5 million cameras in the UK

Spending Money



- ATMs
- Credit/ Debit Cards
- Phones
- Bank Transfers
- Loyalty Cards?
- What about cash?

All non cash spending provides information on:

- Location
- Spending habits
- Lifestyle
- Interests, Hobbys,
- Financial status

-What you buy is more important than how much you spend

Loyalty cards were created by Tesco to track customer spending habits.

- Cash is the only anonymous way to make a purchase
- Cards now used for a > % transactions than cash
- Why do you think card companies want to make it easier to use their cards – contactless payments

Home Gadgets



- Security cameras & their software
- Home Assistants
 - Google
 - Amazon
 - Apple
- Smart Meters
- Smart TV
- Smart Fridges, Cookers, Locks, Thermostats, Ovens, Washing Machines, Scales, Hubs, Toothbrushes.....
- The Internet of Things



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Using Computers

- ISP
- Browsers
- Mail
- Social Media – Facebook etc
- Cloud services and backups
- Malware
 - Keyloggers

- ISP – every website you visit is logged by your ISP
Your router is connected to your ISP and who has a gateway to the internet.
- Browsers give away information about you to every website you visit.
- Chrome - Webkay analysis
- Firefox – Lightbeam shows connected third party sites
- View and manage your activity
google.com/myactivity

Why are companies doing this?

- On 1 February 2018 J Sainsbury plc announced that it had purchased the Nectar card business from Aimia for £60 million – what value did they buy??
- Google had turnover of over \$100 billion last year – what does it sell?

- Google doesn't make it's billions by selling advertising space in the conventional way. Google business model is about targetted or relevant advertising.

Adwords – advertising in searches (70% revenue)

Adsense – targeted advertising on sites

Chrome has 60% browser share

- “Free” Internet services like mail and cloud are not free – they are a trade of your information in exchange for a service.

- Analysis of large data sets is big business, to understand trends and identify niche markets.

- Businesses want to create an accurate pictue of your lifestyle and habits so they can sell you relevant products.

-This trawling through all the data about you in order to create an accurate picture of your lifestyle is called 'big data' analysis. This is what marketing people are trying to do.

Can we avoid this?

Probably Not!

- But we can reduce it
- And we can be more aware of it – eg usage agreements



Given the tools we have today and how we interact with various internet services, it is very difficult to avoid leaving a digital footprint.

However we can take steps to minimise it

Or maybe you don't want to

Should we be worried?

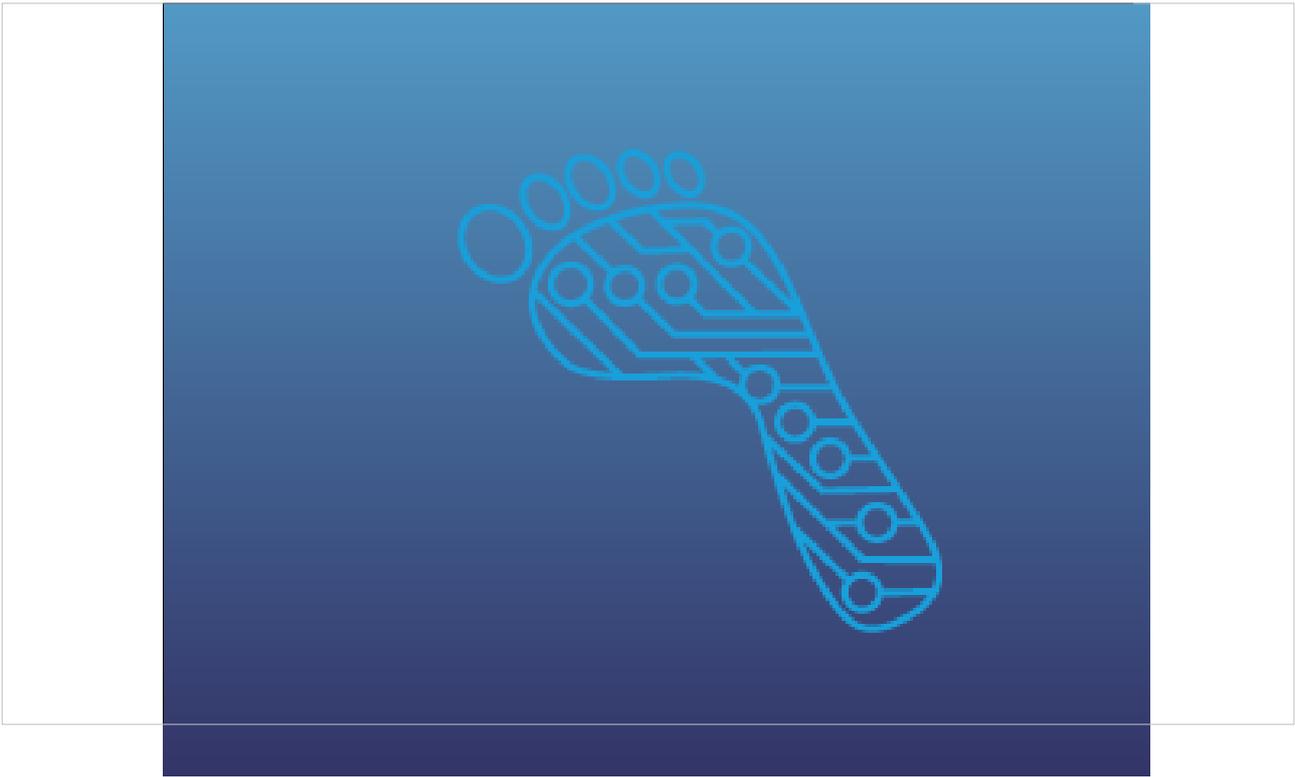
- It is likely that data about us will be used for more than marketing – insurance, employers, finance etc
- We should certainly be worried by other people's ability to look after our data – the record is not good.
- We should be worried if we are unable to view and check the data held about us. - e.g. Credit Rating

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Some things you can do

- Google yourself to see what is out there
- Unsubscribe from sites you no longer need (Ghost Sites)
- Set 'do not track option' on your browser
- Minimise social media usage
- Manage your cookies
- Don't put personal details in e-mails or on the cloud
- Don't participate in unnecessary surveys
- Have different e-mail addresses for buying and personal use.
- Don't forget offline data – details you give on the phone can be sold on to others.

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The end