

A 15 MILLION IMAGE LIFELOG

THOUGHTS & EXPERIENCES

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Dublin City University & Insight Centre for Data Analytics
Quantified Self 2015

(Expo) 20 June 2015

Archived Lifetimes

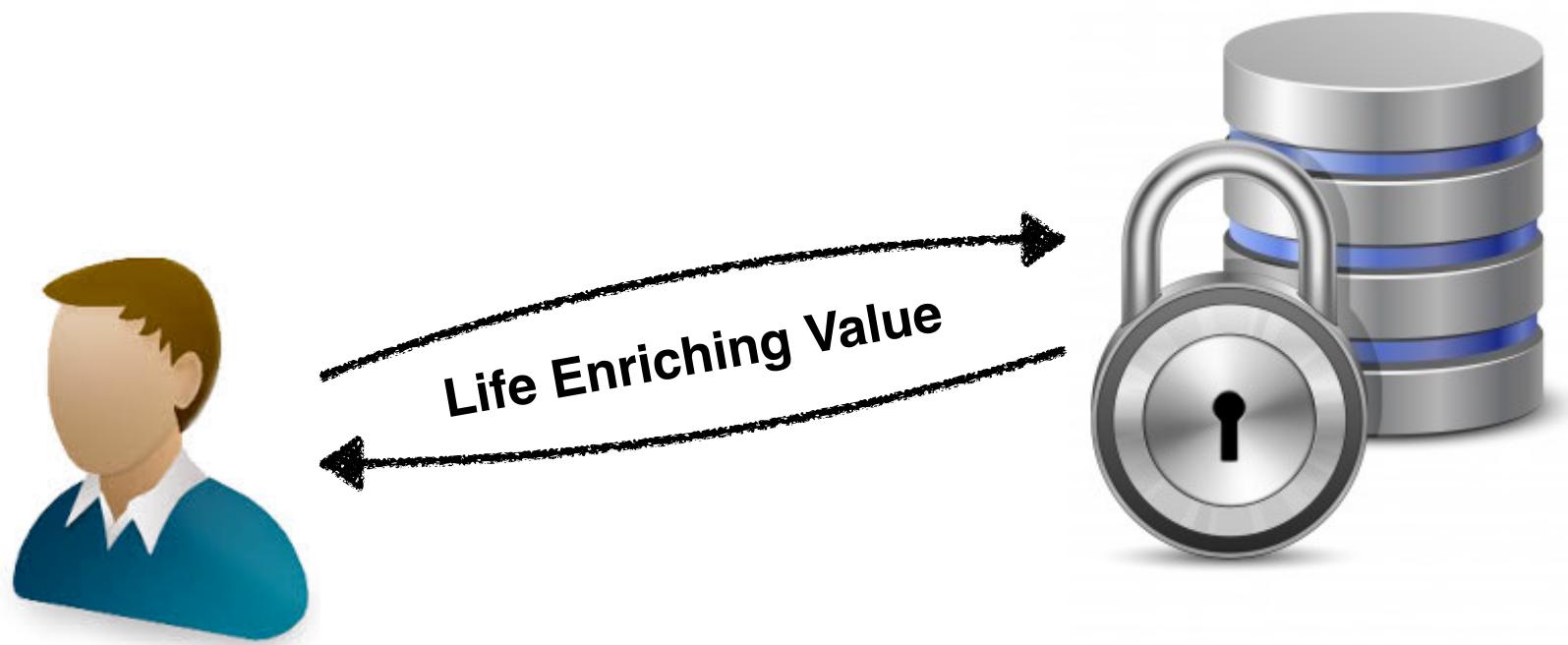
Using mobile/wearable devices and information loggers to **automatically** record everything you see, hear, learn and experience. Creates a **complete and accurate record of an individual** - a Lifelog.

First generation devices are on the market now and people have begun to do this.



SIGNIFICANT POTENTIAL

Private Archive
The Internet of Me

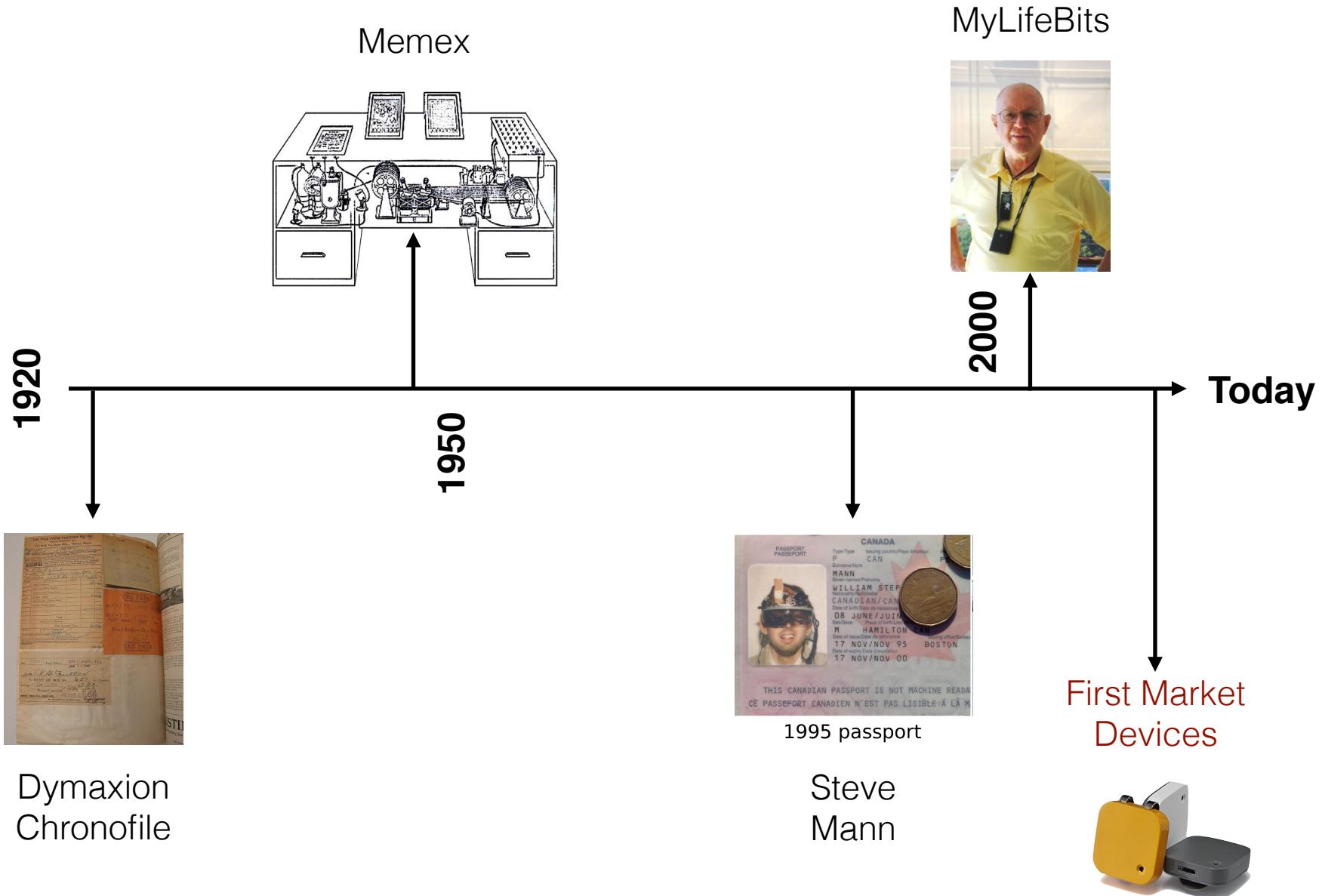


A personal search engine
for life experience

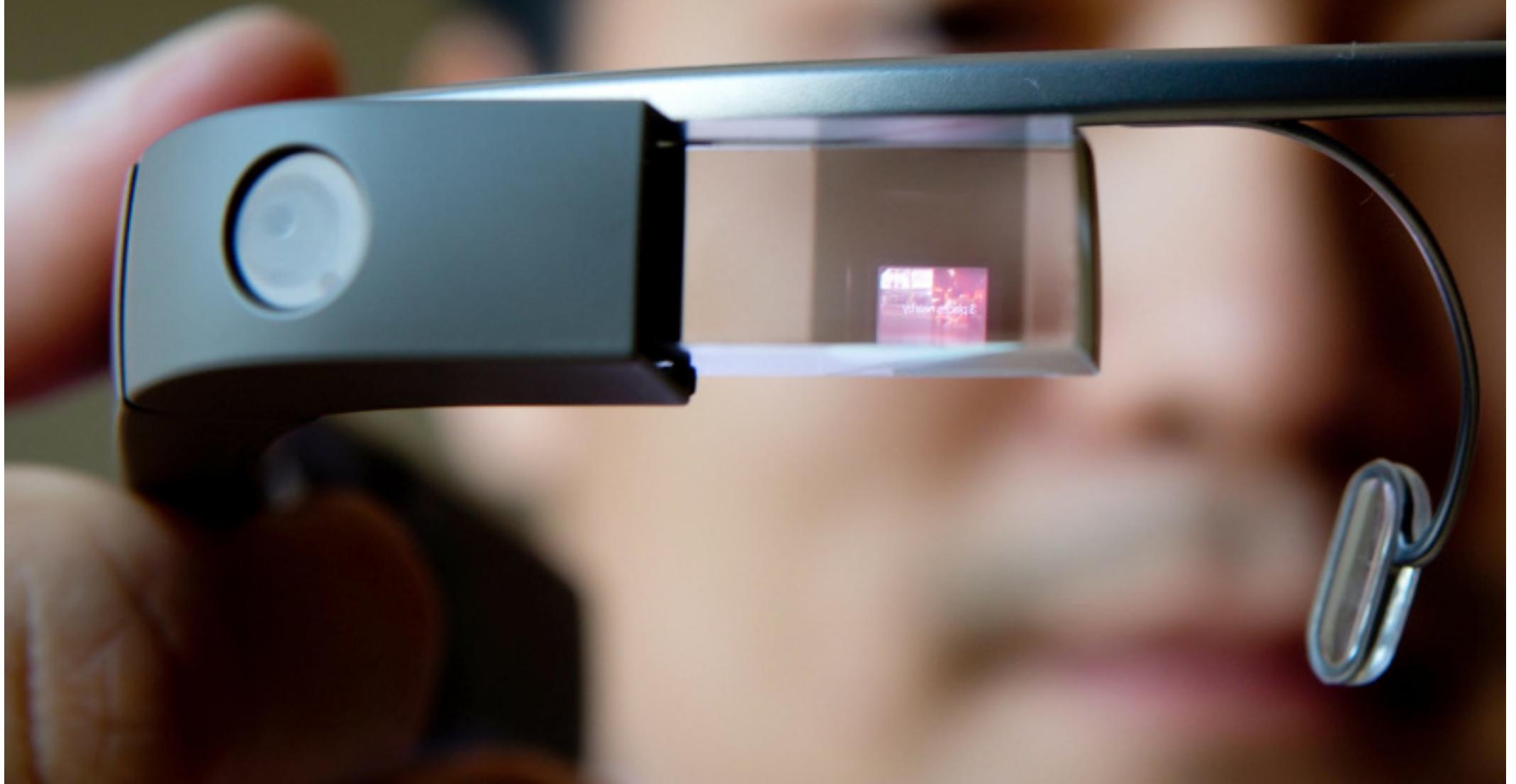


Long-term, my goal is to develop a **surrogate memory**. A private digital archive that operates in synergy with your own memory is always available to assist you.

Lifelogging has been around for decades.



HARDWARE & SENSORS



Ideally we need a sensor that can record everything
experience, in many dimensions...

VISUAL LOGGING



Easy to do audio logging also,
but people don't like it...

What about touch, taste, smell?

OMG Autographer
(2000+ per day)



Vicon Revue
(4500+ per day)



Google Glass
(400 per day)



Narrative Clip
(2000+ per day)



not for sale

HOW MUCH DATA?

Content Type	Num (16 hours/day)	Size / year
HD Video	5,840 hours	32,768 GB
Autographer Camera	1.1 million images	479.6 GB
Audio (mono - 22KHz)	5,840 hours	227.8 GB
Microsoft SenseCam	1.65 million images	30.2 GB
Accelerometer (1 Hz)	21 million readings at 1 Hz	0.05 GB
Locations (0.2 Hz)	3.9 million	0.01 GB
Bluetooth Interactions	150,000 (estimated)	2 GB+
Reading Log	User dependent	1 GB +

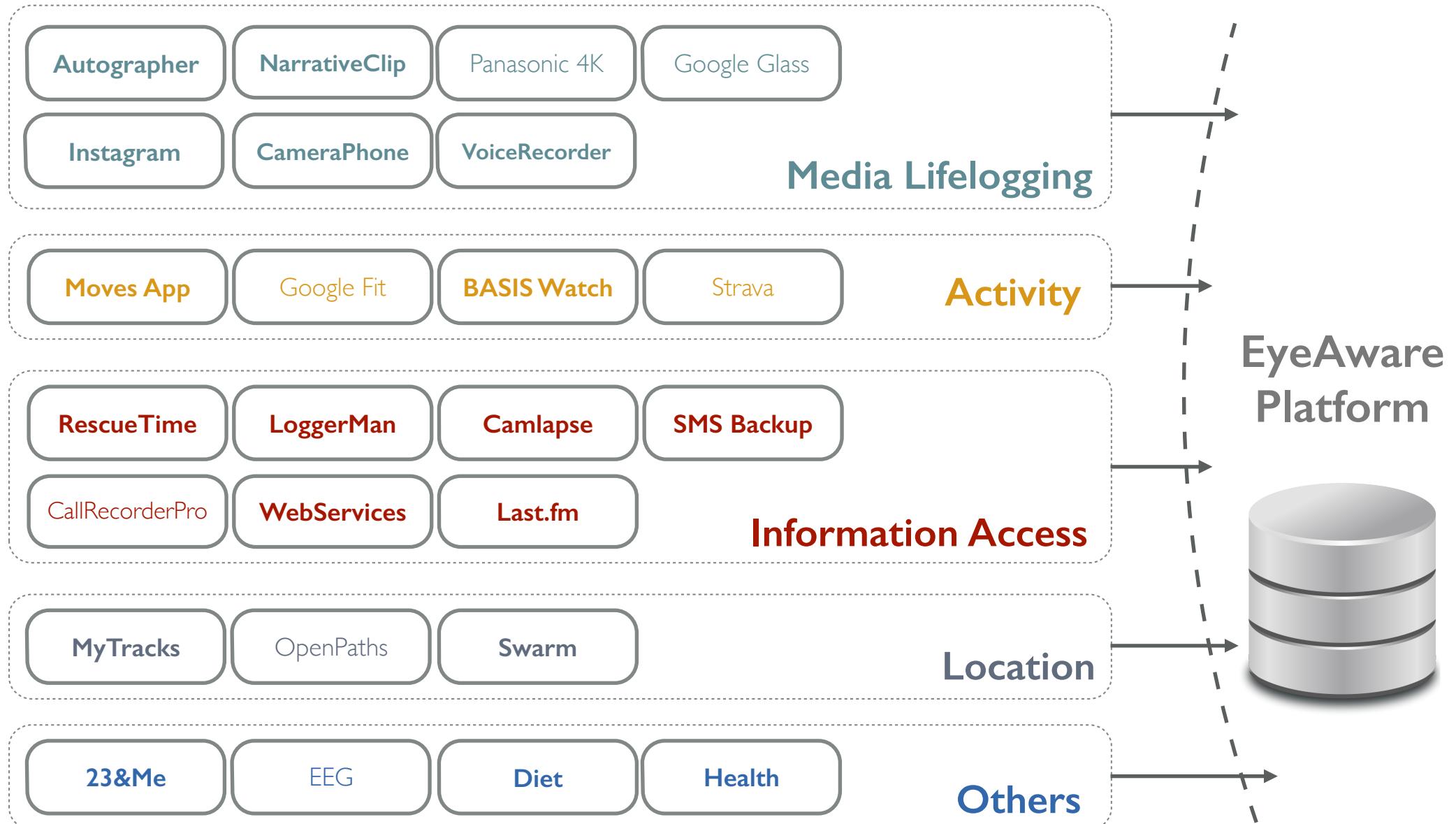
Table 2.1 An Illustration of the data quantities and data sizes of a year of a selection of lifelog data.



\$50 per year without video

Lifelogging -
Personal Big
Data... from the
Foundation and
Trends in Information
Retrieval series. Free
download, ask
Google.

PART OF A LIFELOG - MY LIFELOG



SOFTWARE

Ideally one integrated platform, but there is none.

Relationships

Reporting on the reporters.

FIGURE 3. RELATIONSHIPS REPORTED



SHORTEST RELATIONSHIP

5 Mins

ERIC, MAY 15

LONGEST RELATIONSHIP

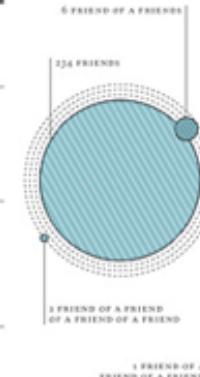
Forever

KELLY, JAN 7

AVERAGE RELATIONSHIP DURATION



FIGURE 4. DEGREES OF FRIENDSHIP



QUESTION 1: WHAT IS YOUR RELATIONSHIP TO NICHOLAS?

Friend / esteemed colleague.

KELLY, JANUARY 12

Internet buddy.

NOAH, FEBRUARY 18

Grill master.

WARREN, MARCH 10

Drinking buddy.

HANA, JUNE 12

Double-digit sociability.

OLGA, SEPTEMBER 17

Ex-wife.

NICK B., OCTOBER 19

Statistic.

KEVIN, DECEMBER 28

Dentist.

JOHN S., DECEMBER 23

QUESTION 2: HOW LONG HAVE YOU KNOWN NICHOLAS?

A year, come February 22.

KELLY, JANUARY 26

Since Summer 2004.

MARGARET, FEBRUARY 9

17 days at the time of recording.

JAN, MARCH 14

About three hours

ACE JET 120, APRIL 2

5 years, my whole life.

JULIAN, APRIL 12

Sixty four days.

JESSICA B., APRIL 19

Since birth.

CAROL, MAY 15

Since I was a teenager? Could that be?

MARIANA, SEPTEMBER 1

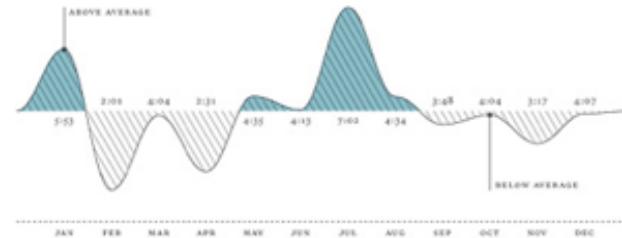
Years... I'm bad with time.

MELISSA, NOVEMBER 20

Activities

The length and habits of an encounter.

FIGURE 5. AVERAGE LENGTH OF AN ENCOUNTER



QUESTION 3: APPROXIMATELY HOW LONG WAS YOUR ENCOUNTER?

A total of about 60 minutes.

LOLA, JANUARY 7

Estimate - right on 02/26/09.

REBECCA, MARCH 26

900 seconds.

CHRISTOPHER T., APRIL 2

3 hours (they always seem to be 3 hours!)

BONNIE, JUNE 19

Personal - 7 mins;

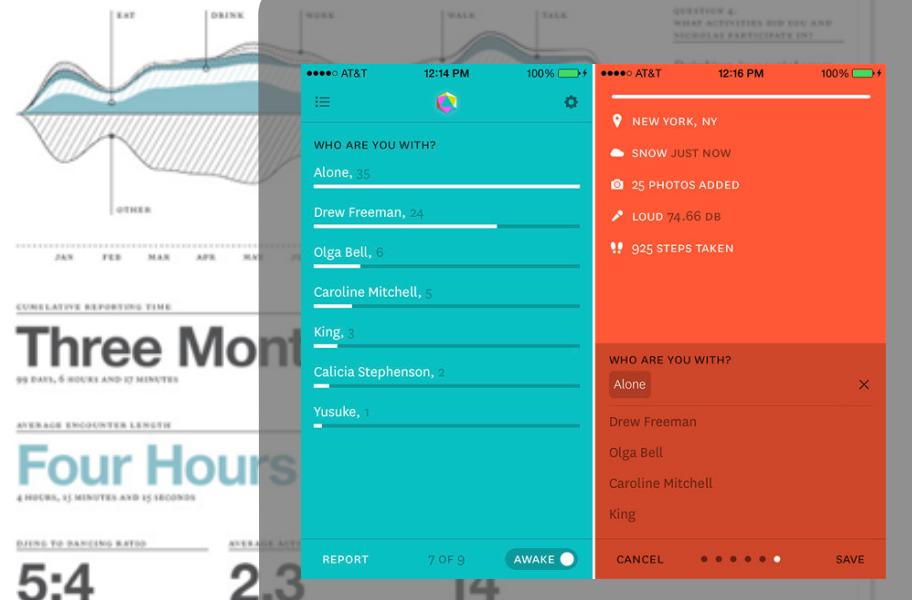
Impersonal - 35 mins.

ANDREW K., AUGUST 10

7 hours 30 minutes.

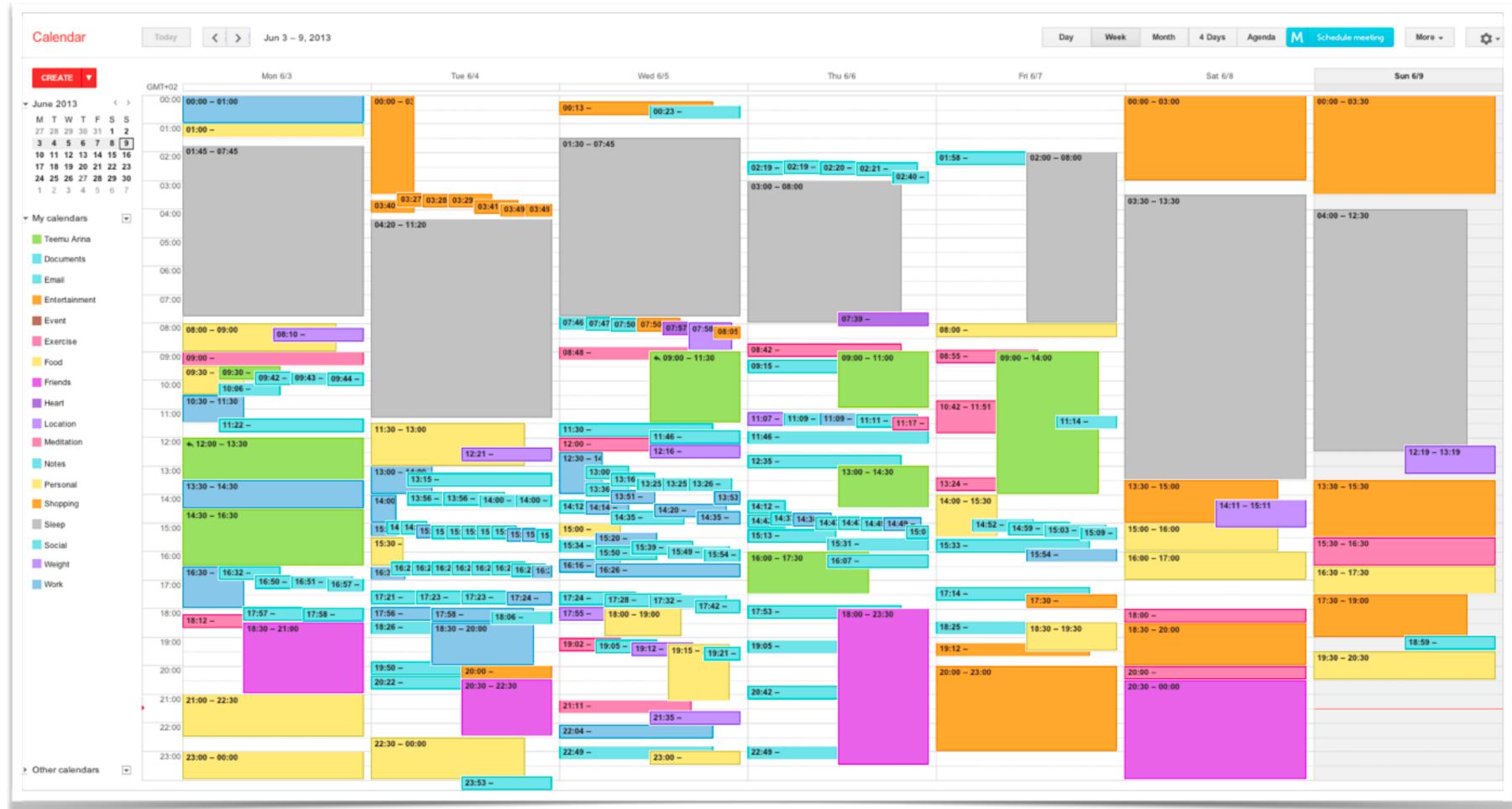
MARINA P., DECEMBER 24

FIGURE 6. FREQUENTLY REPORTED ACTIVITIES

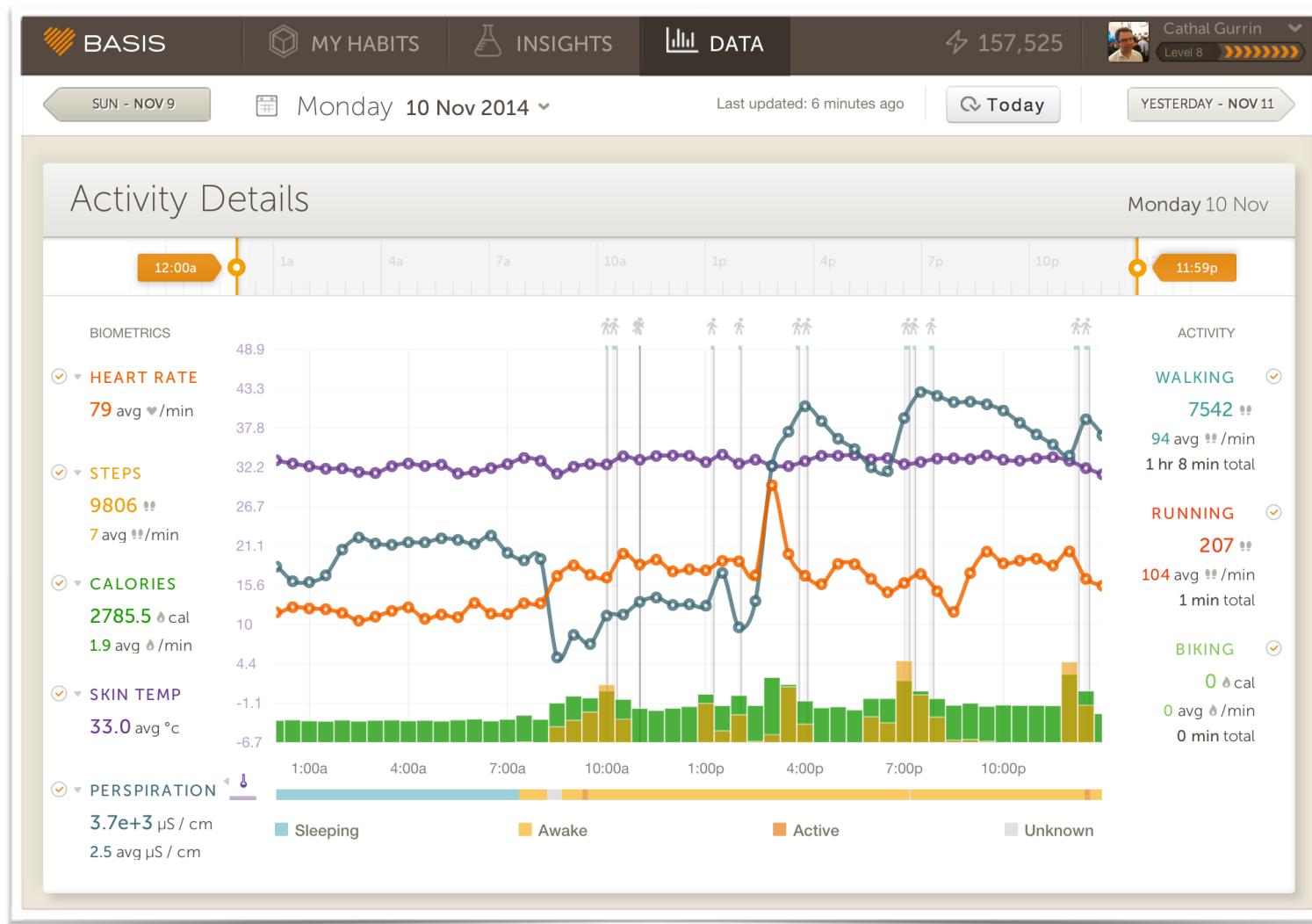


Reporter App

Reporter & The Annual Reports
Nick Feltron



Teemu Arina - Lifelog using Google Calendar



Conventional QS style lifelog

Autographer - Calendar

Search > All cameras Sign in

VIEW Stream Cinema Calendar

ACTION Import

APPLICATION Settings Help

FILTER Favourite Sequence

2015

May 2015

Sat 2nd (1157) Sun 3rd (1421) Mon 4th (1962) Tue 5th (2421) Wed 6th (1105) Thu 7th (1022)

Fri 8th (1477) Sat 9th (1201) Sun 10th (1335) Mon 11th (1425) Tue 12th (1855) Wed 13th (1496)

Thu 14th (1170) Fri 15th (1538) Sat 16th (1654) Sun 17th (865) Mon 18th (1557) Tue 19th (1552)

Wed 20th (1577) Thu 21st (2668) Fri 22nd (1446) Sat 23rd (1726) Sun 24th (1689) Mon 25th (1599)

Tue 26th (1597) Wed 27th (1733) Thu 28th (1591) Fri 29th (1680) Sat 30th (1616) Sun 31st (1836)

June 2015 Mon 1st (1504) Tue 2nd (1671) Wed 3rd (1609) Thu 4th (1682) Fri 5th (1679) Sat 6th (1721)

OMG AutographerViewer software

Autographer - Stream

Search > All cameras 18 June 2015 Sign in

VIEW Stream Cinema Calendar

ACTION Import

APPLICATION Settings Help

FILTER Favourite Sequence

18 June 2015

11:04 TAGS

MAP

No internet connection, cannot display map.

© 2015 Microsoft Corporation. All rights reserved. SIC © 2015 HEDE

	GPS off		-0.1,-1.0,0.1
	0.153		-0.0,0.0,0.1
	Motion		21°C

1 image
11:23 18 June 2015

OMG Autographer Viewer software

Narrative Clip

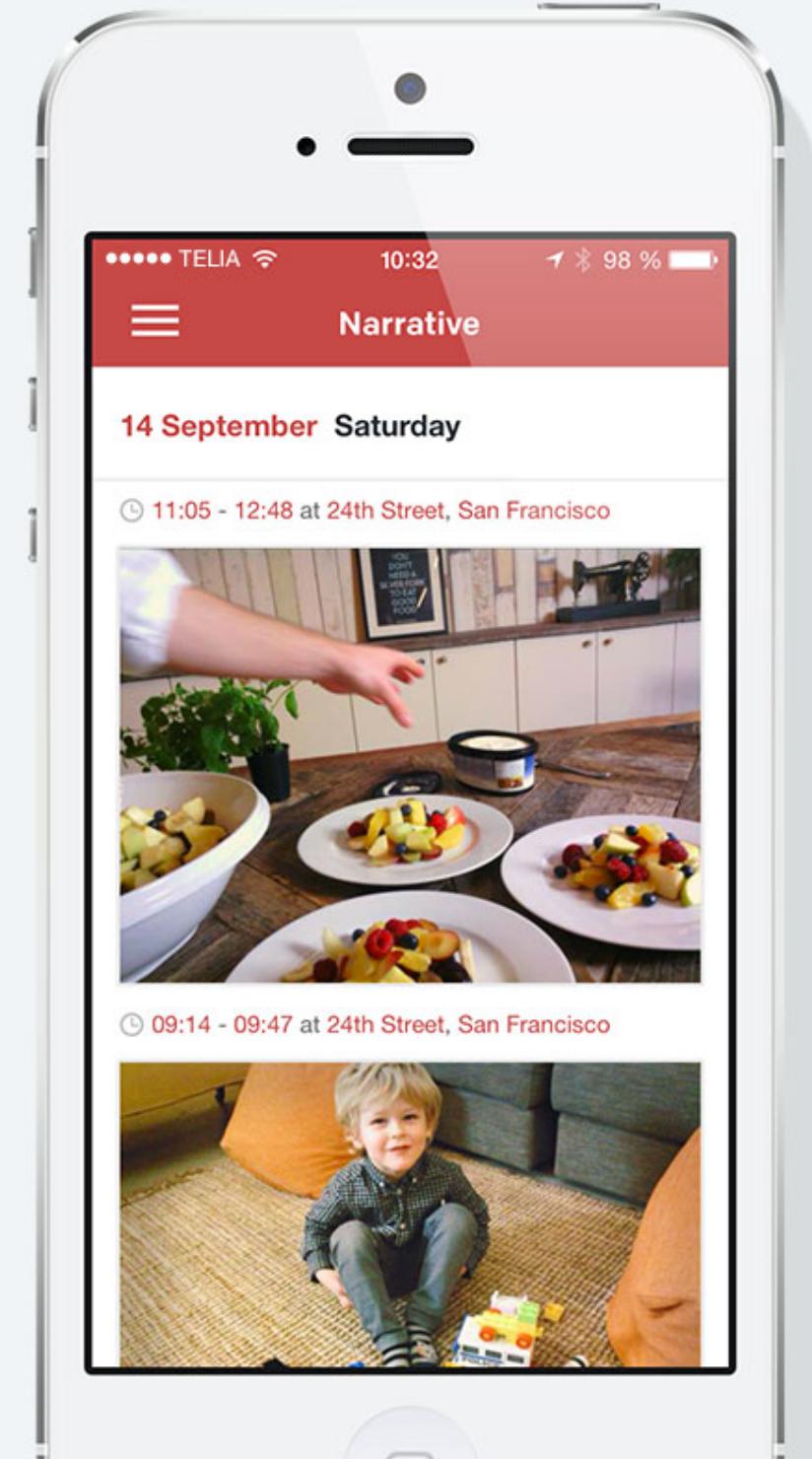
Event Detection

Sharing

Search

API coming in the
next few months

Your Timeline



EYEWARE PLATFORM

 EyeAware

[events](#) [BPM](#) [GSR](#) [light](#) [logout](#)



Name: Cathal Gurrin
Height: 180 cm
Weight: 70 kg
Birthday: 01/06/2015

Lifelogger: Cathal Gurrin ▾ Events: Show All ▾ Concepts: Show All ▾

Date / Time	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
Tue, 10 Feb 2015																									
Wed, 11 Feb 2015																									
Thu, 12 Feb 2015																									
Fri, 13 Feb 2015																									
Sat, 14 Feb 2015																									
Sun, 15 Feb 2015																									
Mon, 16 Feb 2015																									
Tue, 17 Feb 2015																									
Wed, 18 Feb 2015																									
Thu, 19 Feb 2015																									

Cathal's Calender

◀ February, 2015 ▶

Wk	Mo	Tu	We	Th	Fr	Sa	Su
5	26	27	28	29	30	31	1
6	2	3	4	5	6	7	8
7	9	10	11	12	13	14	15
8	16	17	18	19	20	21	22
9	23	24	25	26	27	28	1
10	2	3	4	5	6	7	8

[Clear](#) [Apply](#)

Event Segmentation - Concept Filtering

CONCEPT FILTERING

VISUAL INSIGHTS USING AI (DEEP LEARNING)

```
Image
--- 0.140525 mouse, computer mouse
--- 0.126532 laptop, laptop computer
--- 0.047876 desktop computer
--- 0.043066 desk
--- 0.032453 space bar
--- 0.016106 monitor
--- 0.014830 typewriter keyboard
--- 0.007064 screen, CRT screen
>>>>>=====n=e=x=t=====>>>>>

image quality: 0.909002
Top classes :
--- 0.265477 desktop computer
--- 0.261316 monitor
--- 0.198308 screen, CRT screen
--- 0.118786 desk
--- 0.064211 notebook, notebook computer
--- 0.026199 mouse, computer mouse
--- 0.017706 laptop, laptop computer
--- 0.011744 printer
--- 0.006966 web site, website, internet site, site
--- 0.005328 television, television system
[]
```



EYEWARE PLATFORM

 EyeAware

colour BPM GSR light google glass logout

Name: Cathal Gurrin
Height: 180 cm
Weight: 70 kg
Birthday: 01/06/1975

Cathal's Calender

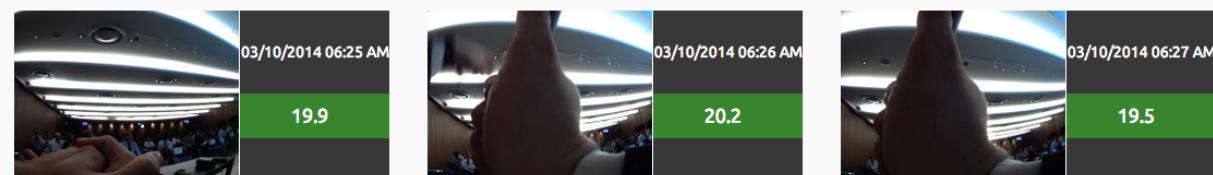
◀ October, 2014 ▶

Wk	Mo	Tu	We	Th	Fr	Sa	Su
40	29	30	1	2	3	4	5
41	6	7	8	9	10	11	12
42	13	14	15	16	17	18	19
43	20	21	22	23	24	25	26
44	27	28	29	30	31	1	2
45	3	4	5	6	7	8	9

Clear **Apply**

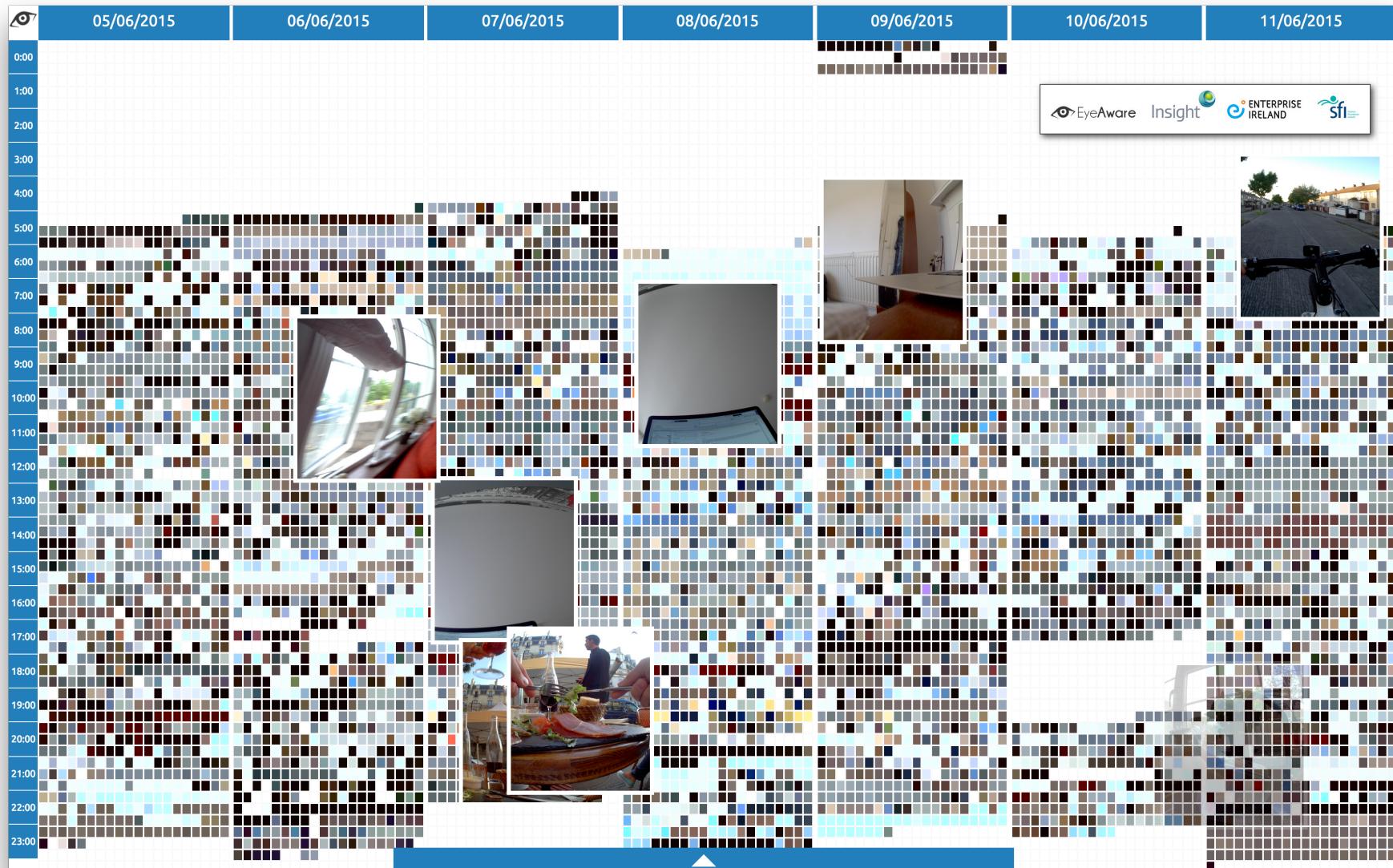
Lifelogger: Cathal Gurrin

Date / Time	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
Fri, 03 Oct 2014	green	white	green																					
Sat, 04 Oct 2014																								
Sun, 05 Oct 2014	green	green	green					green																
Mon, 06 Oct 2014		green	green	green	green	green																		
Tue, 07 Oct 2014		green																						
Wed, 08 Oct 2014	green																							
Thu, 09 Oct 2014																								
Fri, 10 Oct 2014																								
Sat, 11 Oct 2014																								
Sun, 12 Oct 2014								green																



Multi-sensor mapping for insights

EYEWARE VISUALISATIONS



EXTERNAL MEMORY

NEVER FORGET AGAIN / ALZHEIMER'S SUPPORT

My VISUAL DIARY WITH SENSECAM

Mee 70,830 photos (26 days)

MY ACCOUNT | SIGN OUT | ABOUT

FAVOURITES

SIMILAR EVENTS

92 Similar Events have been found. Click on the photo to replay all photos within the Event.

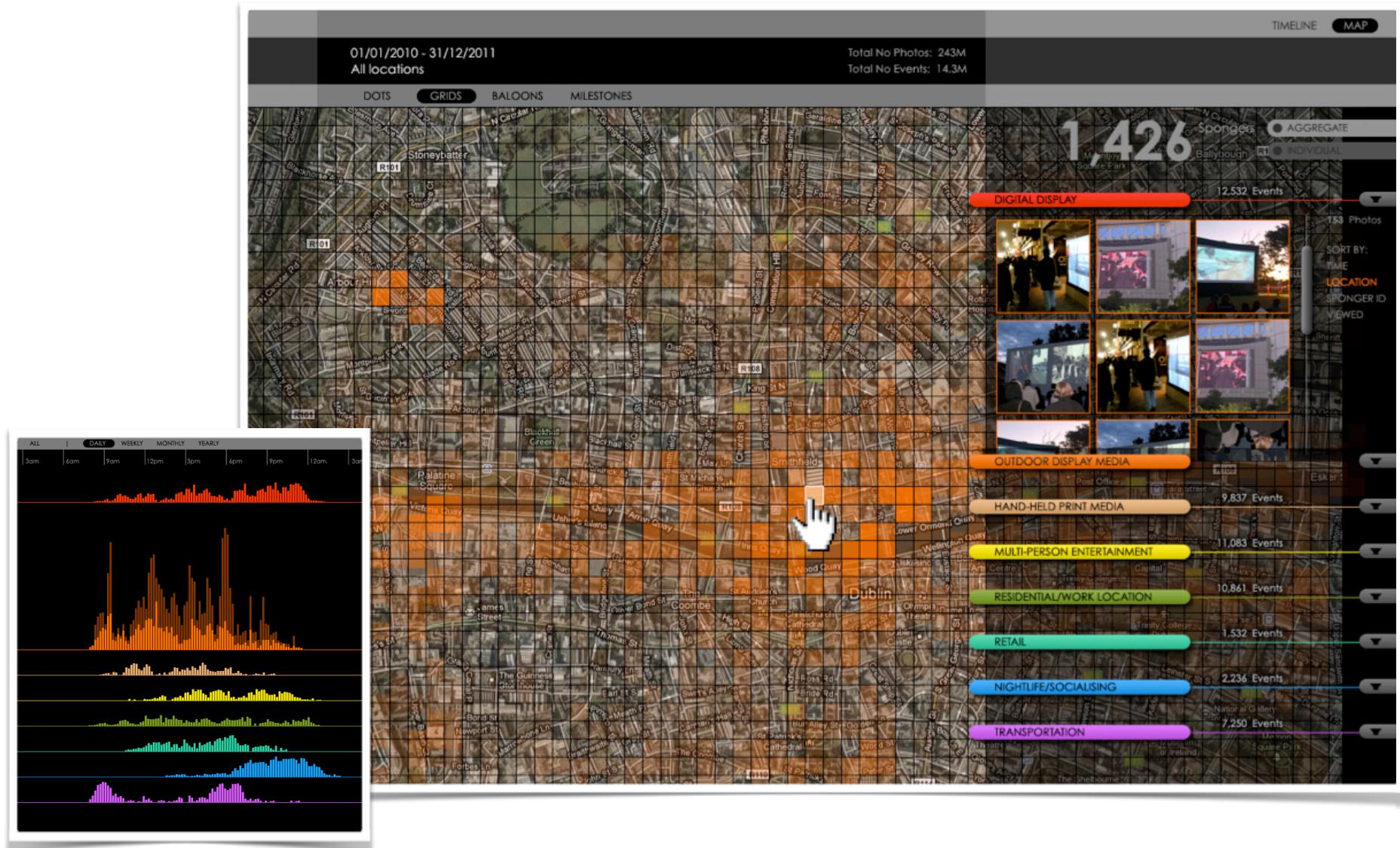
1 | 2 | 3 | 4 | 5 | 6 |

Sort by: TIME | SIMILARITY | #PEOPLE

The screenshot displays the 'My VISUAL DIARY WITH SENSECAM' application. At the top, there's a navigation bar with 'MY ACCOUNT', 'SIGN OUT', and 'ABOUT'. Below it is a 'FAVOURITES' section. The main area shows a 'SIMILAR EVENTS' list with 92 items, each with a thumbnail, duration, and date. The sidebar on the left includes a 'CALENDAR' for May 2006, a 'CAPTION SEARCH' field, and a 'WEEKLY SUMMARY' section. A large central area shows a timeline of events with video thumbnails and a caption about chatting with Gareth in July.

POPULATION RESEARCH

POPULATION-WIDE ANALYTICS - LOOK FOR LOGOS, OBJECTS.

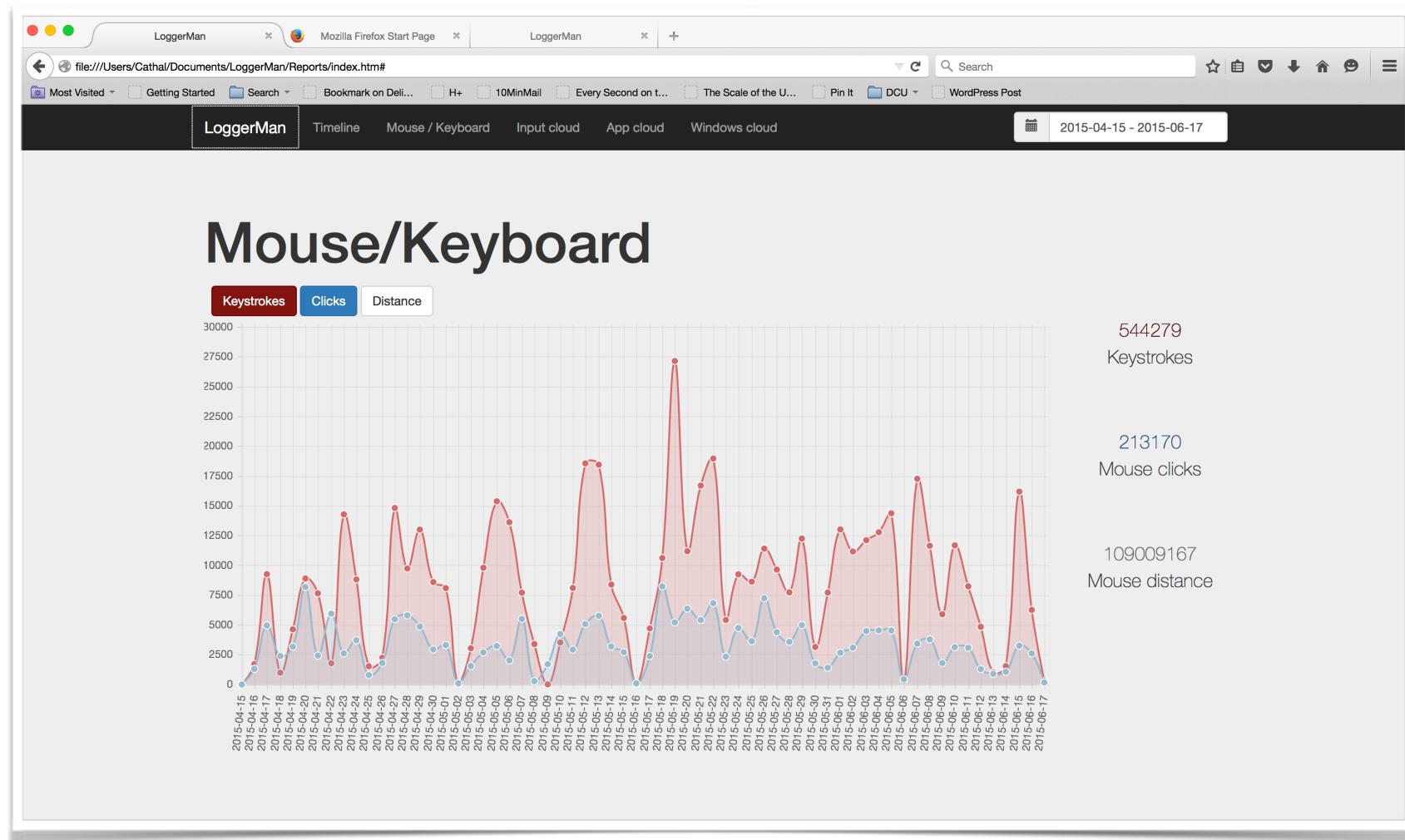


But who do you trust with your data?

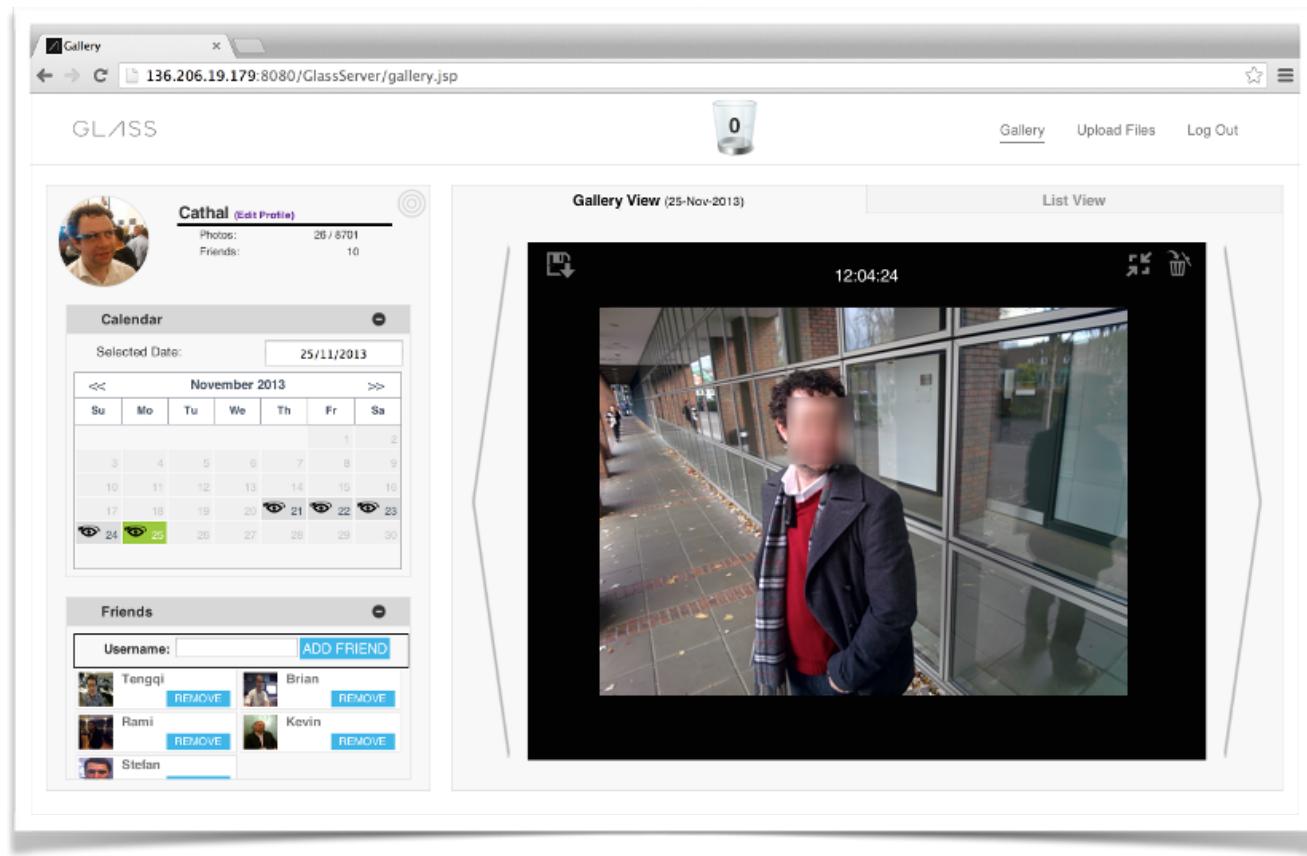
LOGGERMAN

SEMANTIC MEMORIES

The screenshot shows a Mozilla Firefox browser window displaying the homepage of the LoggerMan website. The address bar shows the URL www.loggerman.org. The page features a large, semi-transparent background image of a laptop keyboard and a smartphone on a wooden surface. Overlaid on this image is the word "LOGGERMAN" in large, bold, white capital letters. Below the title, a subtitle reads: "LoggerMan is a tool that helps lifeloggers and researchers to capture many aspects of their computer usage, export them and get insights." A prominent orange button at the bottom center contains the text "FIND OUT MORE". The top navigation bar includes links for DOWNLOAD, ABOUT, SCREENSHOTS, KEYBOARD, MOUSE, CLIPBOARD, APPS, KEYSTROKES, REPORTING, INSTALL/UNINSTALL, and NOTES.



Mouse movements, keystrokes, application windows, applications run, clipboard, etc... all stored locally.



Privacy Awareness - Negative Face Blurring

POTENTIAL

New Opportunities

- **Health** - personalised health, new tailored treatments
- **Productivity** - greater understanding of self, enhanced knowledge access, enhanced productivity
- **Personal** - life search engine <— My Focus
- **Security** - your own security data, self-protection (sousveillance)
- **Societal** - more productive and healthy population, a better understood population
- ... and many more ...

However...

Few devices

Limited software providing rich semantics & effective search

Privacy (lifelogging looks out, QS looks in)

Trust for sharing and storage

EXPERIENCES

An aerial night photograph of the city of Tromsø, Norway. The city is illuminated by streetlights and building lights, forming a grid pattern along the coastline. A bridge spans a fjord in the center. In the background, snow-capped mountains are visible under a dark sky. A vibrant green aurora borealis (Northern Lights) is visible in the upper portion of the image, dancing across the dark blue and black sky.

2006 - 2015

EXPERIENCES

- Get data now, you can not get data retrospectively
- New tools and software will extract value
- Privacy of the data. It will be a target for people
- Storage problems. Where to store it?
- Trust. Who do you trust?
- Few real-world problems
- New insights, more healthy and active lifestyle, less computer time
- Increased social interactions and desire for colour in life wall.

THANK YOU

Cathal Gurrin

@cathal

Any Questions?



Lifelogging - Personal Big Data... from the Foundation and Trends in Information Retrieval series. Free download, ask Google.

