



Apps, Asset Tracking & the Wind Industry

MAKING LIFE EASIER

JACOBS SKM

Introduction

- Today I am talking about apps, data tracking and our industry

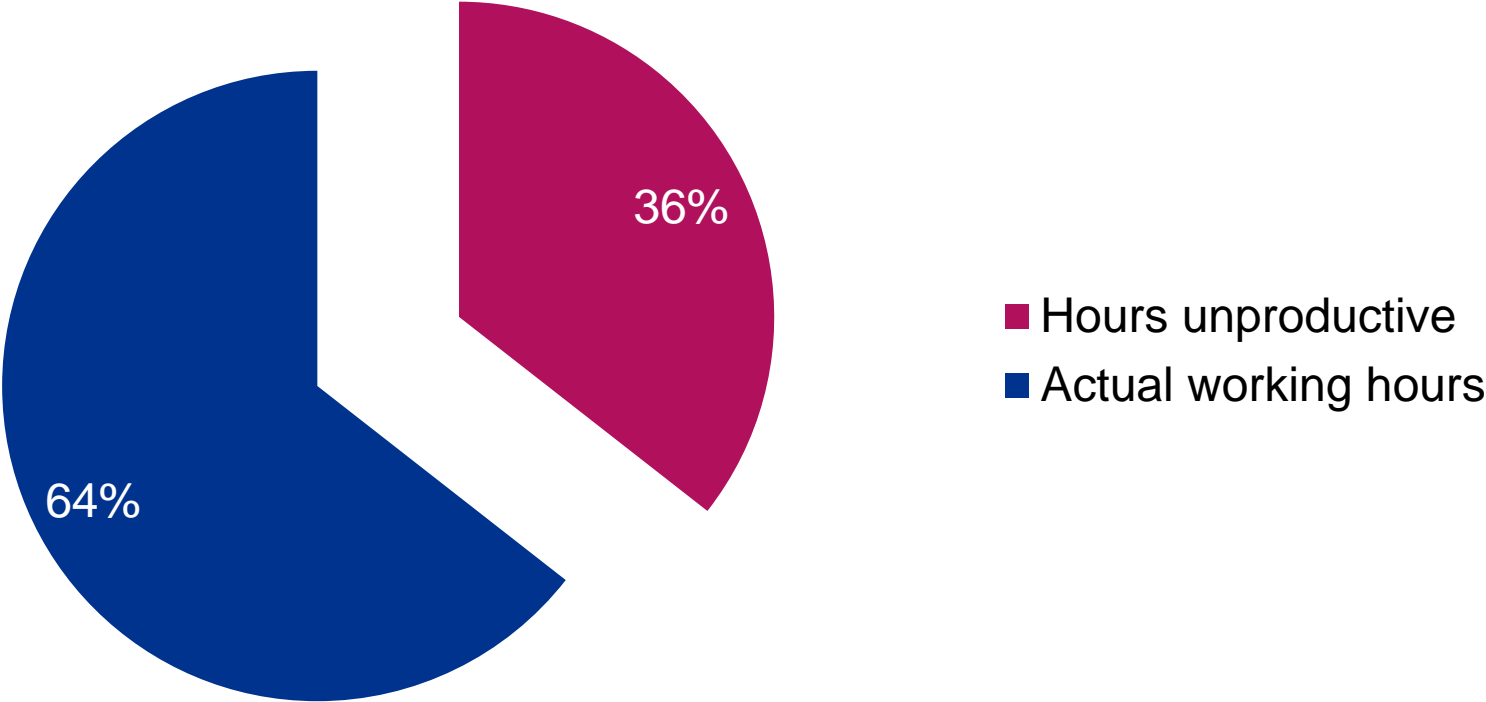
Here are 2 scenarios

- One is of an office based worker
- One is of a hands on field based consultant

Scenario 1 - I have to turn up to work again?



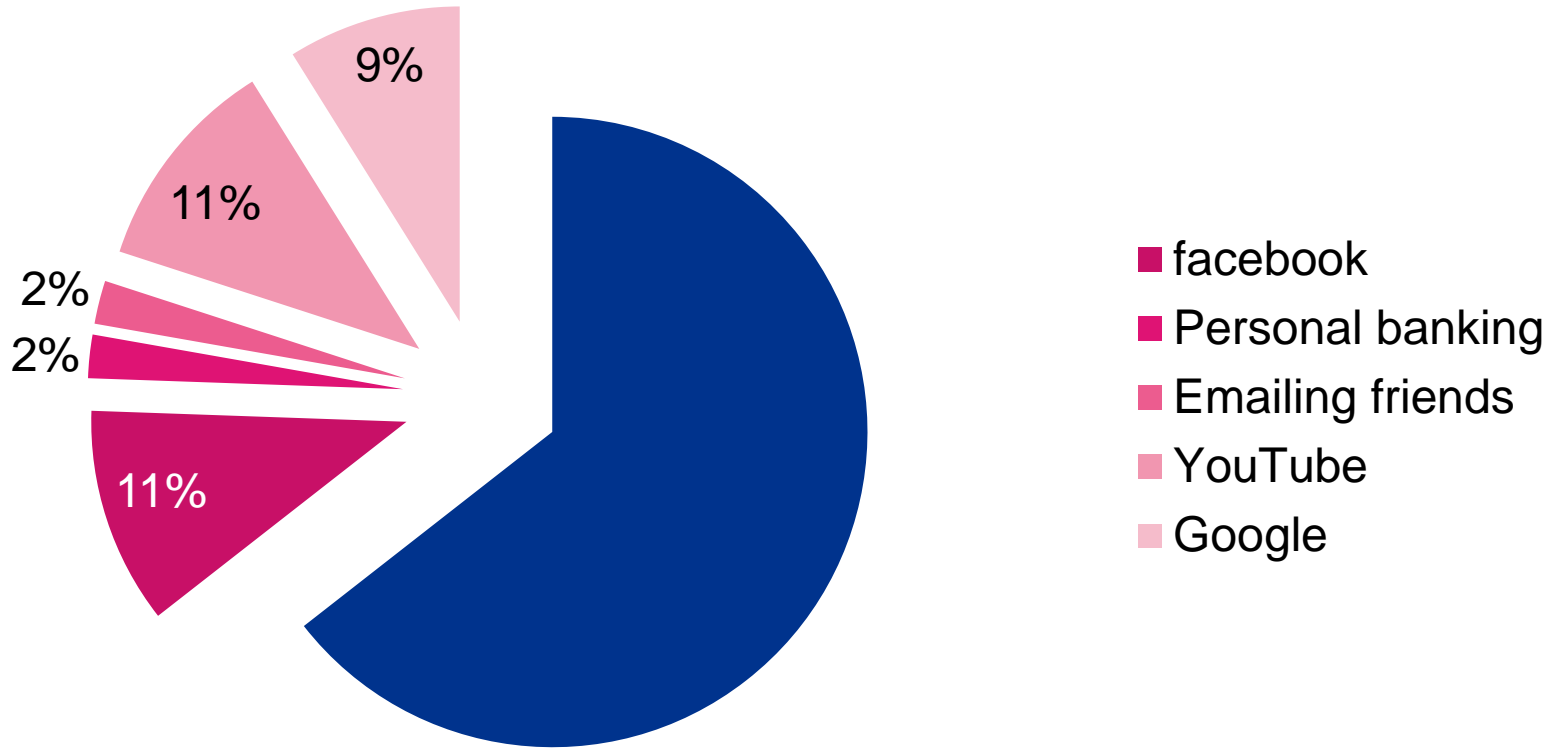
Our time at work



What does this chart mean?

- This chart is based on a 45 hour work week
- 36% of a 45 hour week is 16 hours
- That leaves 29 hours of hard graft a week
- So, what do we get up to?

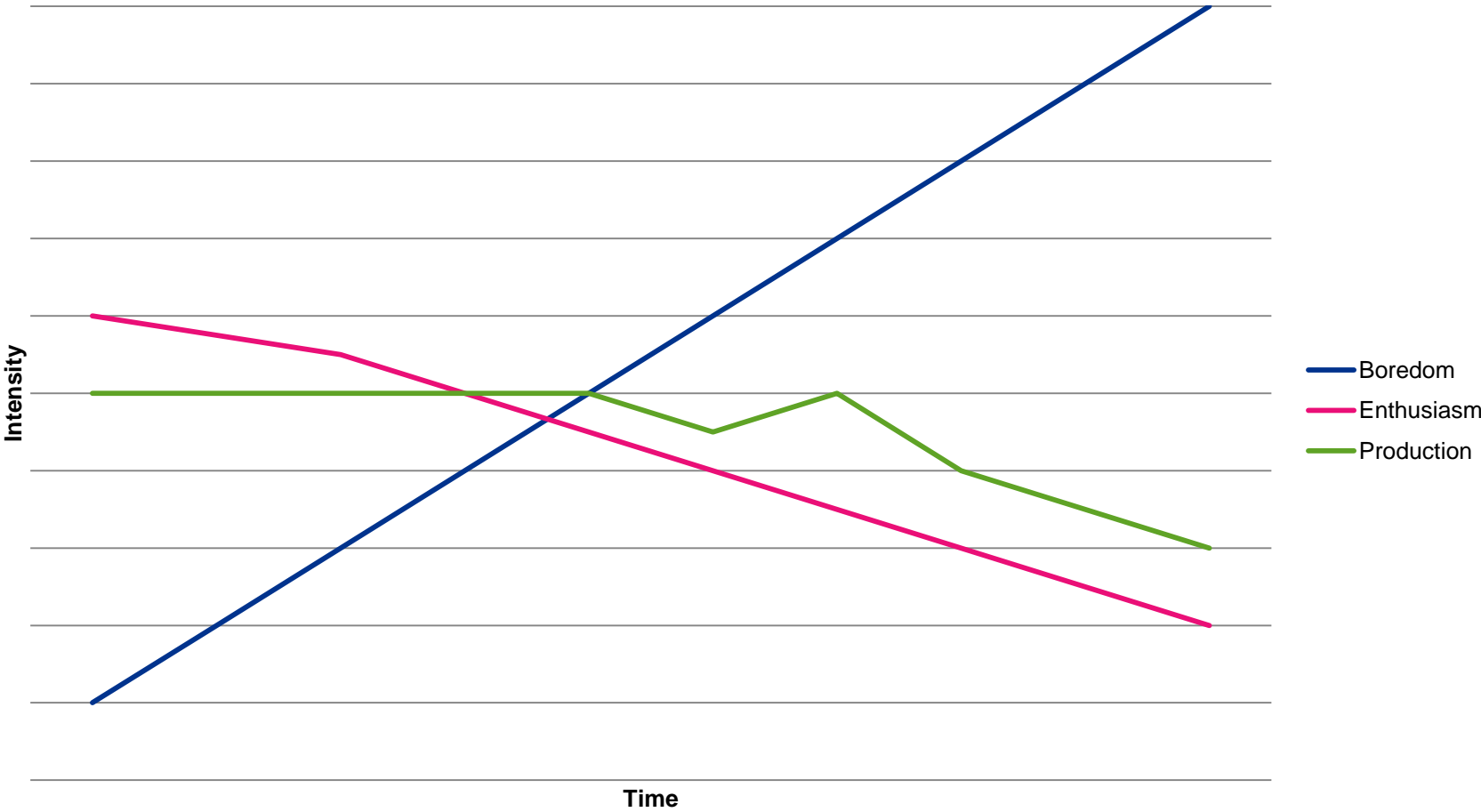
Why are people unproductive?



Why is this the case?

- General lack of enthusiasm
- Boring task(s)
- Tedious processes
- You don't feel as though you are realising your potential
- You feel that you are on a road to nowhere

Boredom over time



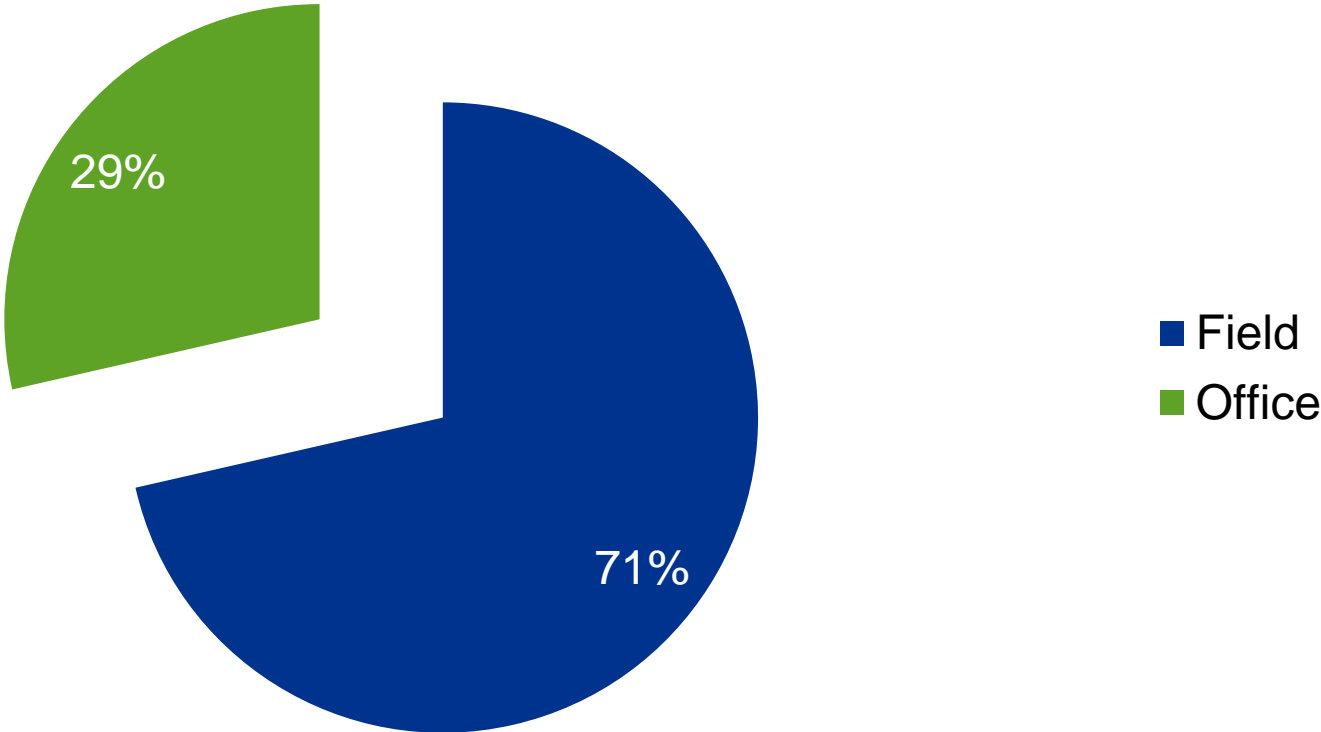
Scenario 2 - A day away from work, is a day wasted

This will only take 3 days.



Yeah right.

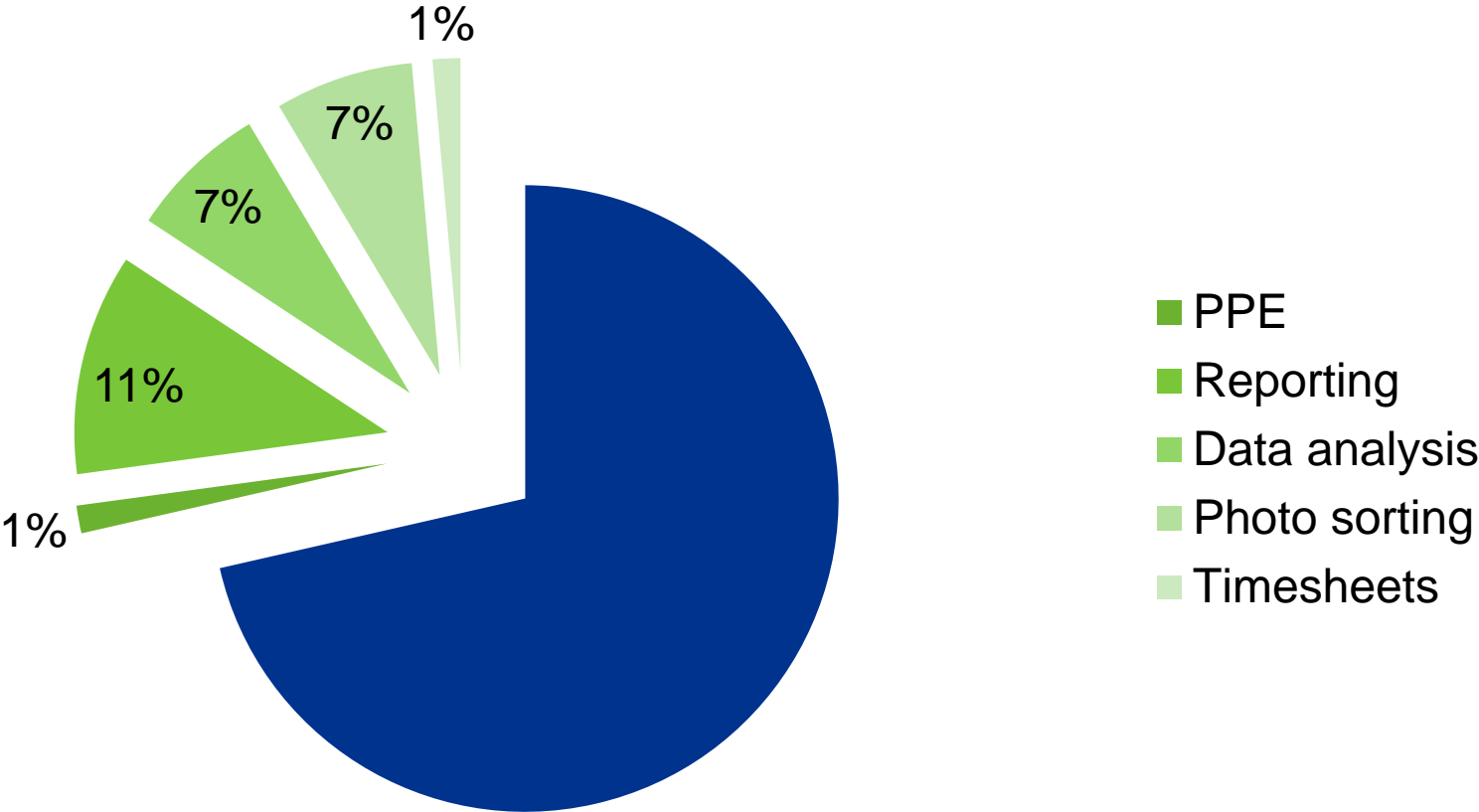
Our time at work



What does this chart mean?

- This chart is based on a 70 hour work week
- The scenario is modelled on a site based consultant
- 29% of a 70 hour week is 20 hours
- That leaves 50 hours of hard graft a week
- So, what do we get up to in the office after site?

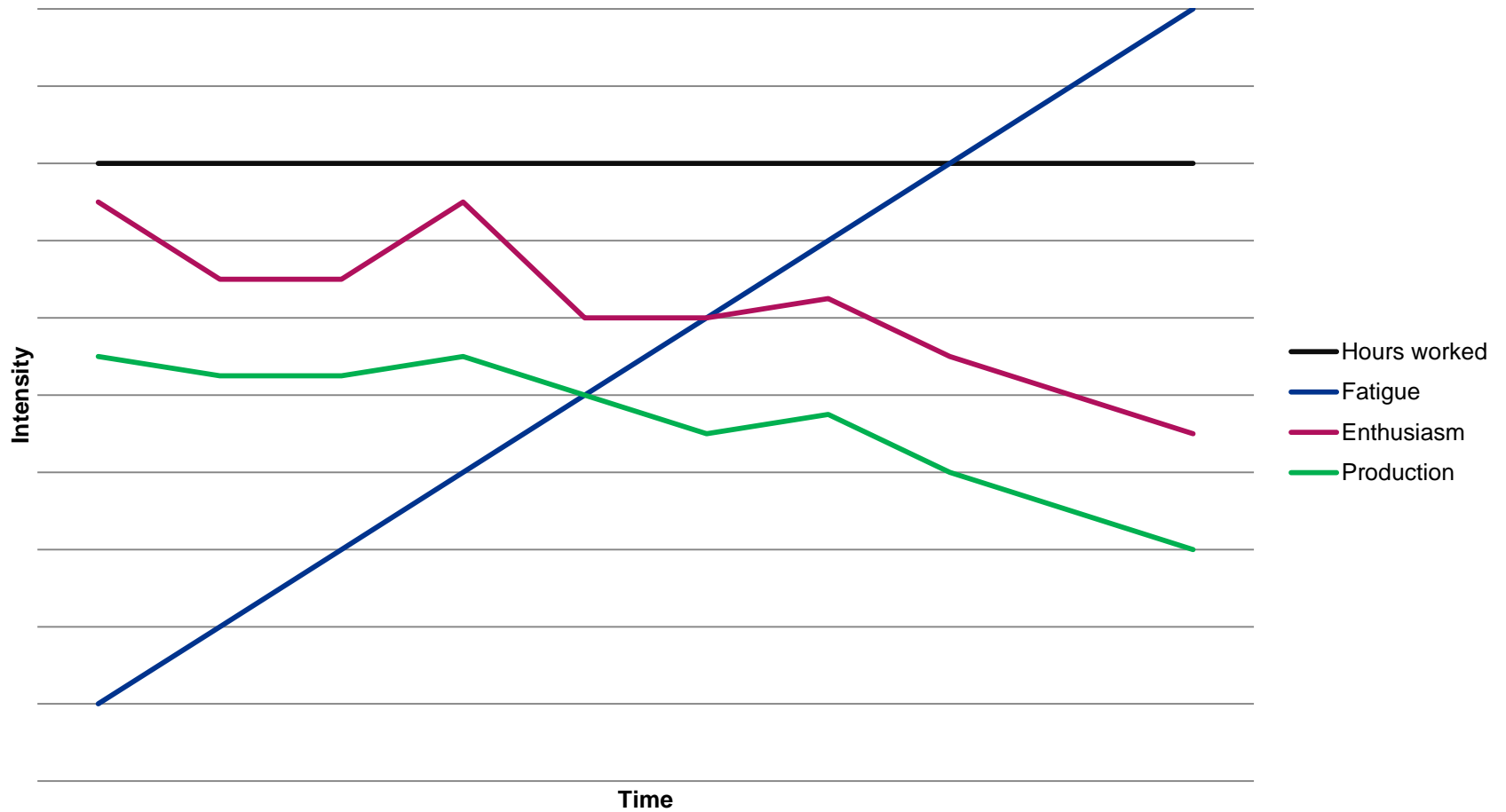
Why so many hours?



Why is this the case?

- Short project timeframes
- Client pressure to meet Financier demands
- Weather limitations and windows
- Trying to keep equipment costs low
- Loss of wind farm revenue
- Working with multiple work teams on different schedules

High workload over time



What can we learn from this?

- We are engineers, technicians, scientists and specialists
- Like a dog, we need to be exercised to prevent mischief and boredom
- In a nurtured creative environment people are happy
- With less monotony and data processing we can focus on fun aspects of our work
- Lessening our hours by removing unnecessary tasks means we can focus on the parts we enjoy and balance our work to life ratio

Let me tell you a story

- I have been on a 2 year journey
- This journey has brought me to a place where I am fully charged again
- I love the wind industry more now than ever
- My eyes are open to the opportunities our industry has to offer
- My thoughts are well outside the box

The graft

- 2011, Cathedral Rocks Wind Farm, South Australia
- 33 wind turbines, 99 blades
- 4 weeks, 3 people
- 320m of 11mm Low Stretch Kernmantel Marlow rope
- 100kg of kit
- High turbulences and unfavourable weather regimes
- 12 hour days, plus
- Unbreakable morale

Site outputs?

- 4,000+ photos to compile in to a report
- Multiple source report and photo input (multi-camera)

Reporting tasks

- Reviewing photos to gather info
- Writing the report and including photos
- Reviewing the report
- Issue the report

What was the problem?

- The report took 4 weeks to write
- High costs to the Client
- Long wait time for reports
- The Client didn't know what to do with the report after

Review of the outcome

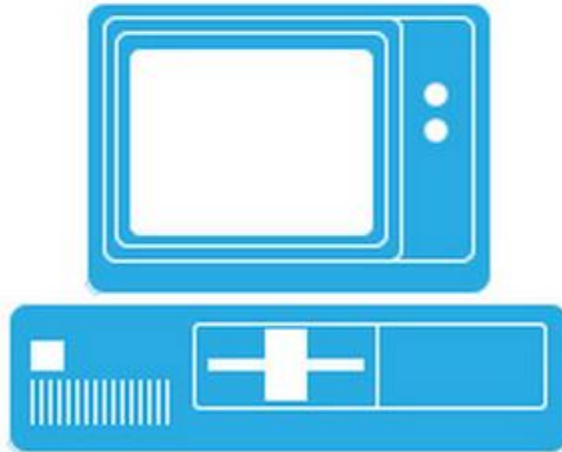
- The office based work (reporting) was similar to site work in time
- The blade was assessed and then the photo was analysed
- The client is paying for you to look at the blade twice
- The report was provided in a clunky format
- You cannot search the reports or data wholly

How can we make this better

- Assess the blade once
- Input data as you go and say what you see
- Attach data to the image
- Send data as you go; someone or something could process it

Look in your pocket

30 YEARS LATER...
an Unfair Comparison between an
IBM PC & **APPLE iPhone 4**



RELEASED AUG 12, 1981



RELEASED JUNE 2010

CPU

8088



CORTEX-A8

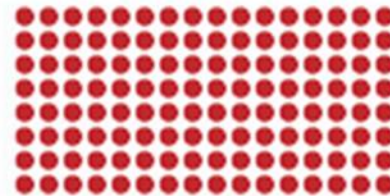


CPU CLOCK SPEED



PROCESSOR INSTRUCTION SIZE

16
BITS



128
BITS

STORAGE CAPACITY

160
KB
FLOPPY DRIVE,
OPTIONAL

16
GB
BASE MODEL

INSTALLED MEMORY (RAM)

64
KB

512
MB

BATTERY CAPACITY

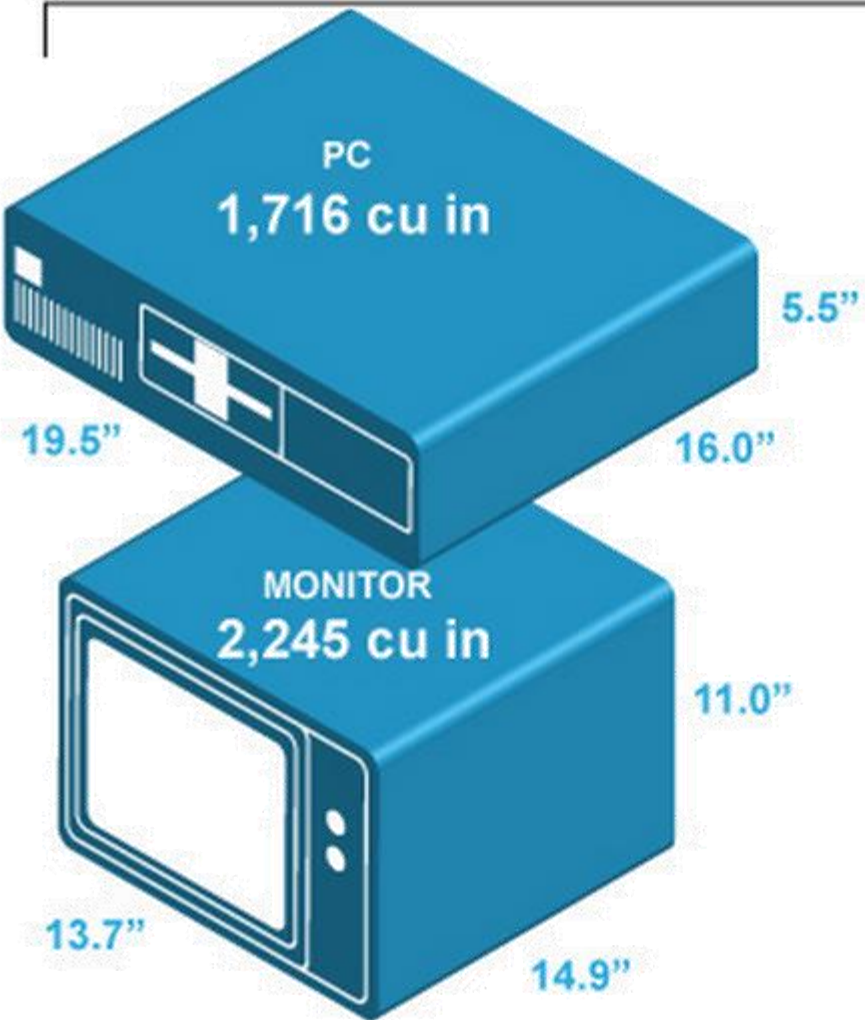


225
mAh



1,420
mAh

DIMENSIONS



TOTAL VOLUME
4.14 cu in

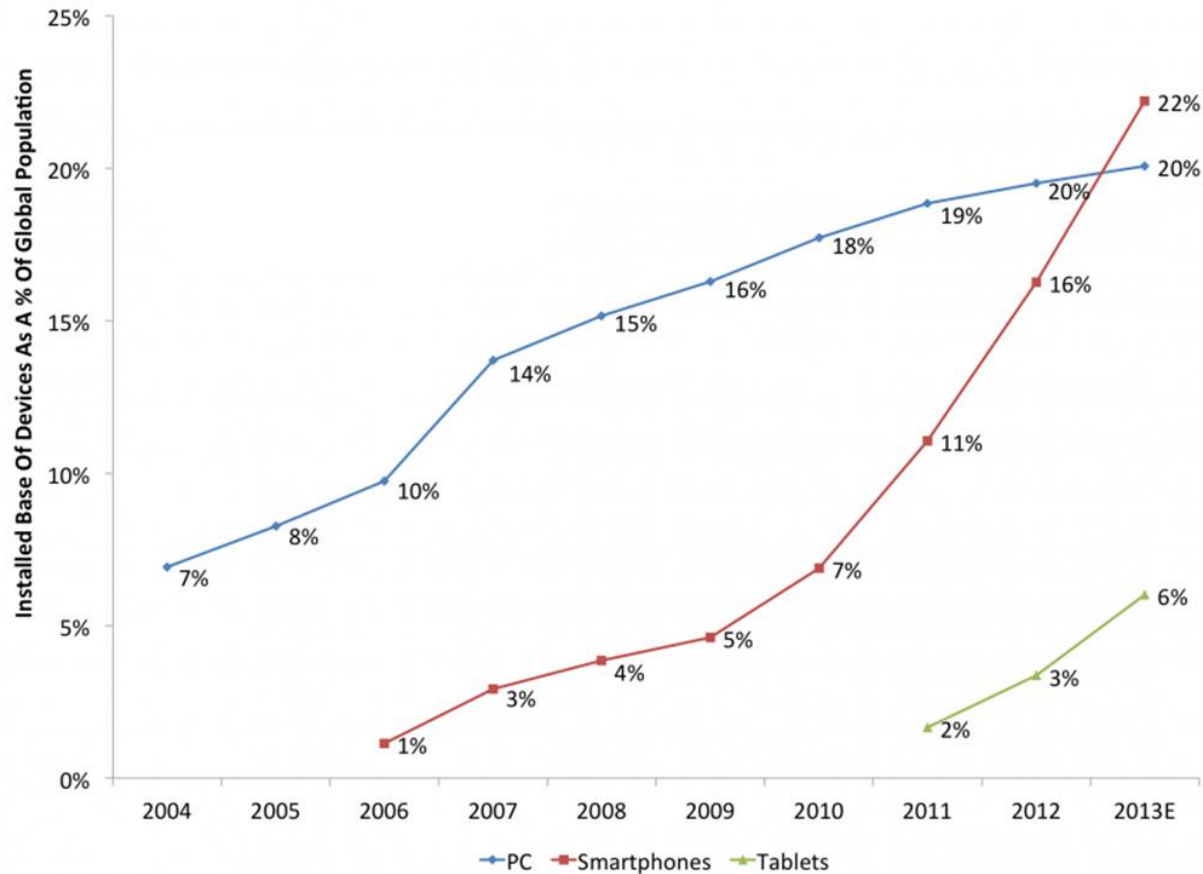


WEIGHT



Smartphones and tablets

Global Device Penetration Per Capita



Source: BII estimates, Gartner, IDC, Strategy Analytics, company filings, World Bank 2013

Software

- A mobile app, short for mobile application, or just app, is application software designed to run on smartphones, tablet computers and other mobile devices.
- These apps can be downloaded and installed within minutes
- You can download software sitting at the top of the wind turbine
- App development is really quite simple

Can I design an app?

- Unleash your inner geek
- Look at what you do, how you do it
- Keep your concept simple to start
- What do you want it to do?
- Where do you want the output to go?
- Will it actually save you time and money?
- Does it provide value to Clients and users?
- Have fun with it!

What happens after the app?

- You can input your app in to pretty much anything
- You can build your own cloud based software
- You can input to existing Computerised Maintenance Management Systems
- You can export data to spreadsheets
- You can synchronise to your DropBox accounts

API

- An API is an Application Programming Interface
- You can use these to talk to other software or components

How hard is all of this?

- You do not need to be a programmer
- You don't need to learn HTML5, native coding, PHP, etc.
- Do what you do best; investigate – check out developers
- Look on E-Lance
- Write out your concept clearly
- Get a Non Disclosure Agreement in place
- Get quotes
- Nominate a Project Manager that isn't too emotionally involved

Our industry

- Our industry is new, fresh and vibrant
- We have complexity from multiple generators
- Our farms can be complex and remote
- There are very few apps in our industry (apart from weather and the odd CMMS)

Why am I telling you this?

- I developed my own app for iOS and I developed a cloud based software
- I am a Neanderthal and I managed to do it

What did I want to achieve?

- My concept was to address the effort required for blade maintenance tracking
- I wanted to speed up reporting for my Clients
- I wanted to reduce the cost of inspections
- I wanted people to have less reporting to do
- I wanted to let people easily search the data
- I wanted to link defect with repair
- I wanted to be able to output into my own cloud based software
- I wanted to be able to export to CMMS'

What did I want to use?

- I wanted it iOS based (sorry, I am an Apple man)
- I wanted to use the camera
- I wanted to use GPS to verify position
- I wanted to use Quick Reference (QR) codes
- I wanted to input in to a CMMS
- I wanted to use 3G and wifi
- I wanted to be able to use 3rd party apps for photo mark-ups

How did you design it?

- I did what engineers do best; I unleashed the whiteboard
- I thought about what I need to track
- I drew frame lines as to how I wanted pages to work
- For each page I thought about what should be on it
- I did flow charts to work out what page linked to what
- Word was my note taker and Excel was my wing man

The output

- I can now undertake an inspection using only an iPhone, iPad or iPod Touch
- I can identify the wind turbine by scanning a QR code
- I can verify the wind turbine is correct through GPS
- I can undertake inspections and add data as I go
- I can send the inspection data (including photo) to my cloud based software
- I can review the data and submit it to the client instantly
- The client can analyse his wind turbines and track project progress

Did it do what I wanted it to achieve?

- I recreated the project at Cathedral Rocks wind farm
- I undertook the inspection marginally quicker (as expected)
- Reporting was carried out in 40 minutes instead of 4 weeks
- The client would have received the report the day after I got home
- The Client would have saved NZ\$20k in project fees
- I would be able to focus on what is next and something I enjoy

In summary

- Put innovation back in your life
- Get excited about processes and look for opportunities
- Take a step back and open your mind

Thank you

ANY QUESTIONS?

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