

**GAIA RESOURCES**

# Hand held mobile data collection devices

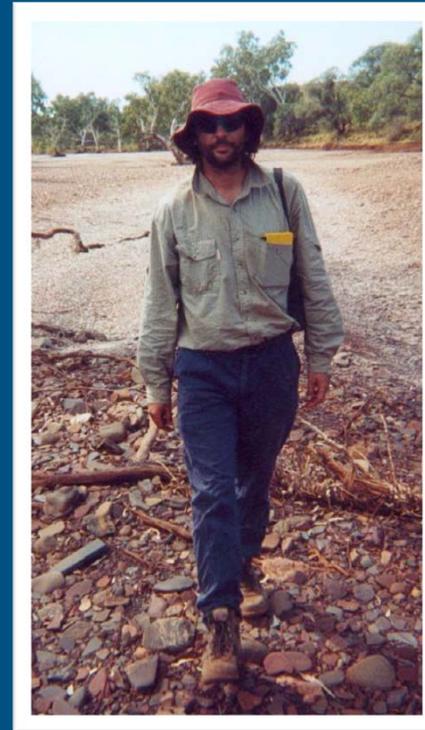


Piers Higgs  
**Gaia Resources**



# HAND HELD DATA COLLECTION

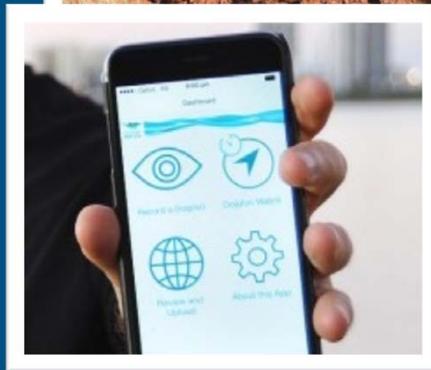
*Technology is not a magic bullet and is no substitute for experience*





# HAND HELD DATA COLLECTION

*How many people have used hand held mobile data collections devices?*





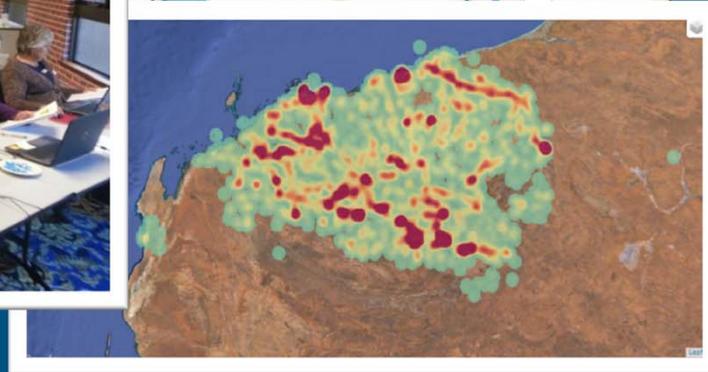
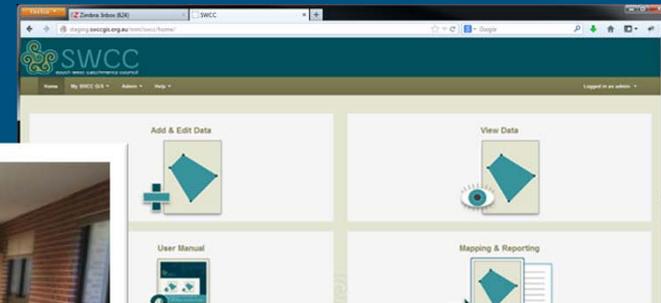


# HAND HELD DATA COLLECTION

## Introduction

[www.gaiaresources.com.au](http://www.gaiaresources.com.au)

*Gaia Resources is a consultancy that responsibly delivers sustainable technology solutions to companies that work with the environment.*





# HAND HELD DATA COLLECTION

## Experience in this area



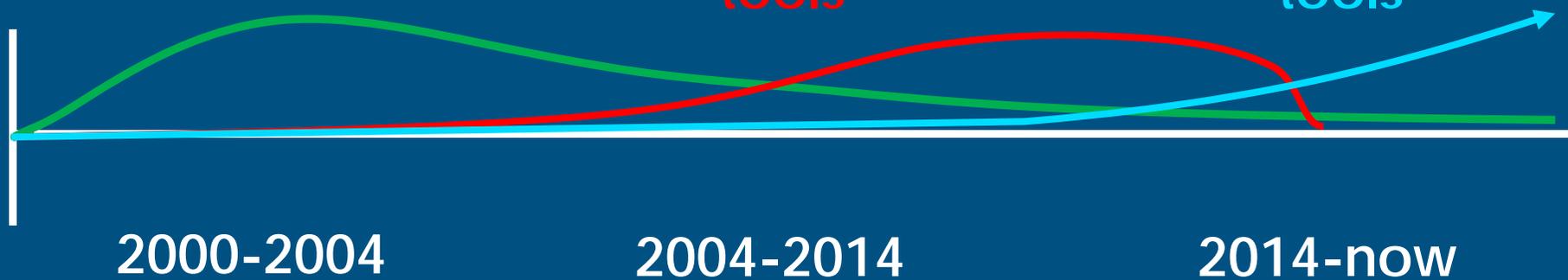
GPS



Survey mobile tools



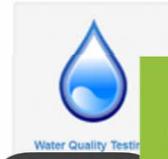
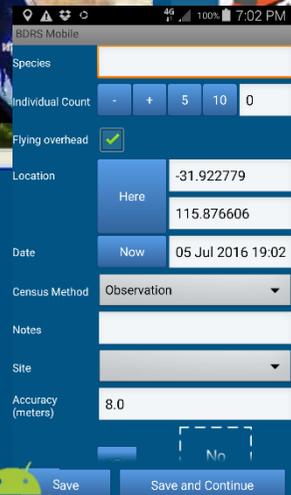
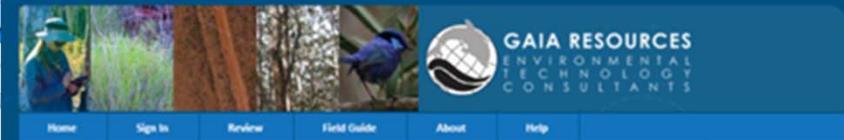
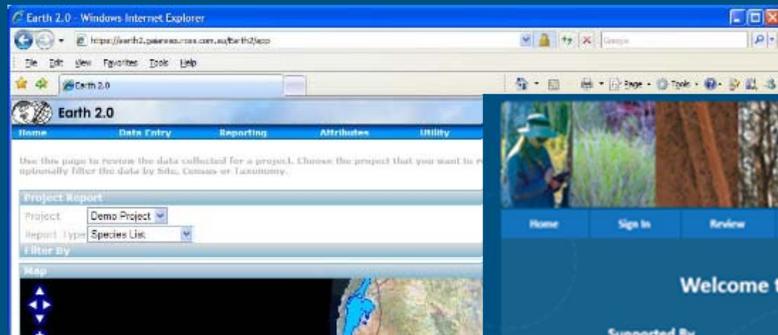
Citizen science tools





# HAND HELD DATA COLLECTION

## Experience in this area



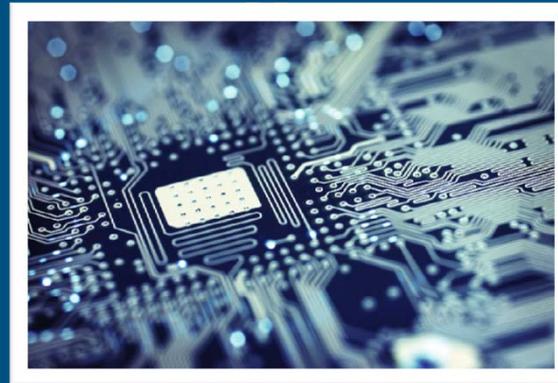


# HAND HELD DATA COLLECTION

## Directions



Business



Technology



Data



# HAND HELD DATA COLLECTION

## Directions - Business



What is happening to the environmental consulting industry?



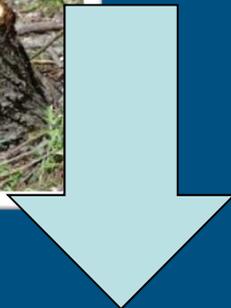


# HAND HELD DATA COLLECTION

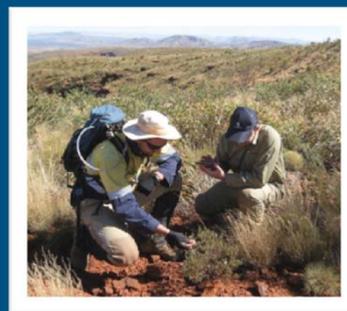
## Directions - Business



What is the business model for environmental consulting?



Price squeeze



"Fun bit"



Quality...

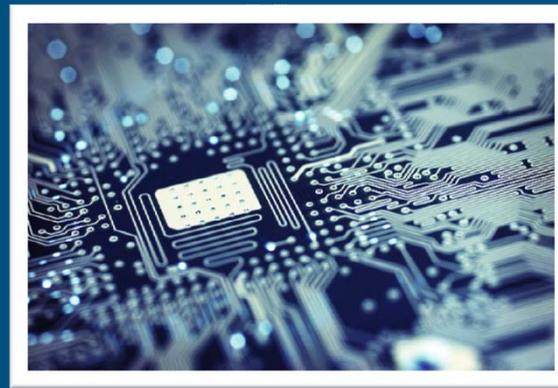


# HAND HELD DATA COLLECTION

## Directions



Business



Technology



Data

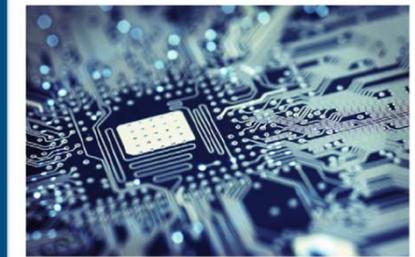


# HAND HELD DATA COLLECTION

## Directions - Technology

Deloitte's 2016 technology trends include:

- Blockchain
- Right-speed IT
- Augmented & virtual reality go to work
- Internet of Things: From sensing to doing
- Reimagining core systems
- Autonomic platforms
- Industrialised analytics
- Social impact of exponential technologies

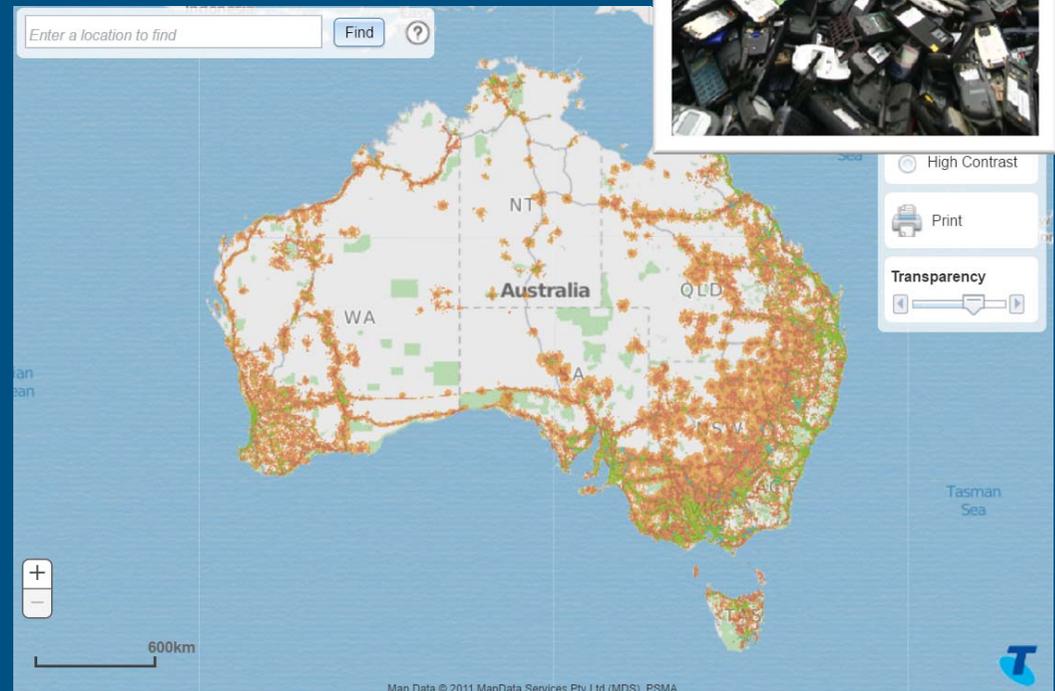




# HAND HELD DATA COLLECTION

## Directions – Technology

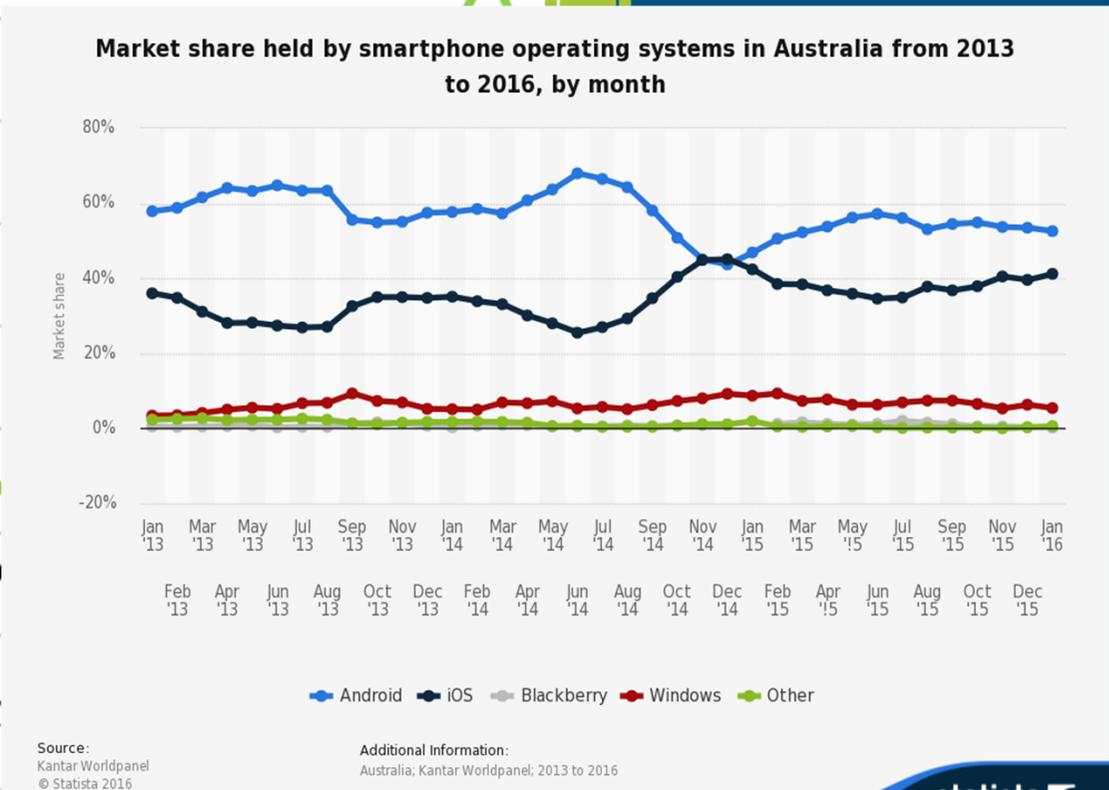
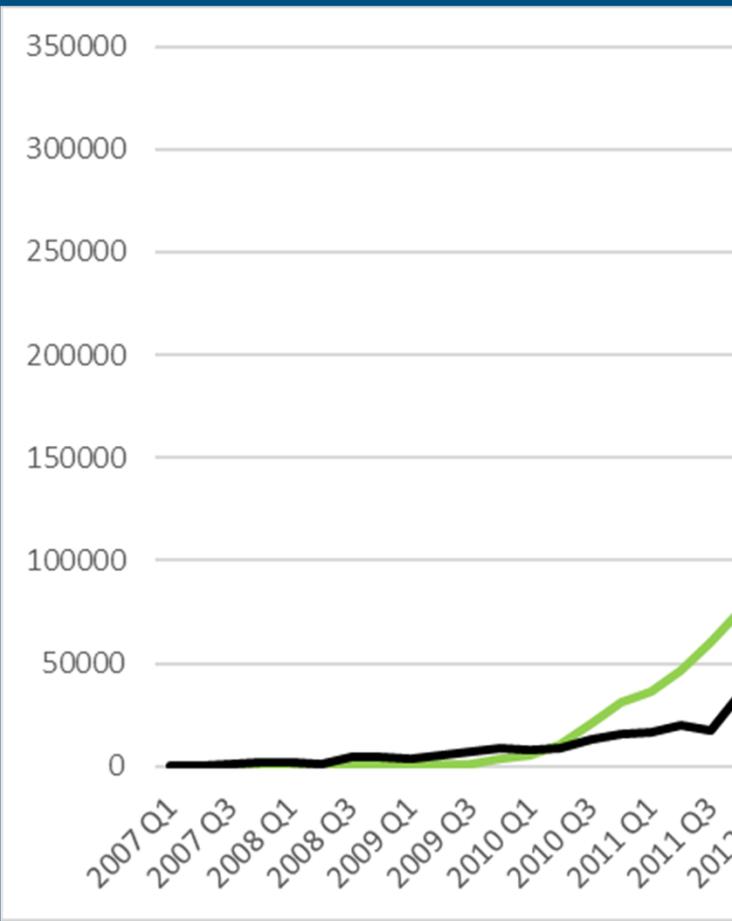
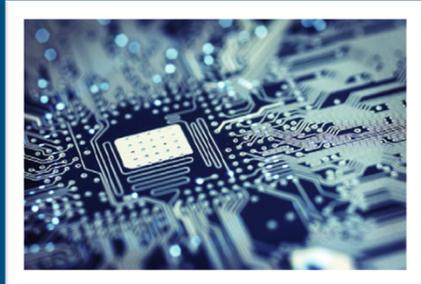
- In October, 2014 mobile phones outnumbered people in the world
- Mobile phones are breeding 5 times faster than humans
- Infrastructure that it relies upon still has some way to go





# HAND HELD DATA COLLECTION

## Directions - Technology



Source:  
Kantar Worldpanel  
© Statista 2016

Additional Information:  
Australia; Kantar Worldpanel; 2013 to 2016



# HAND HELD DATA COLLECTION

## Directions



Business



Technology



Data

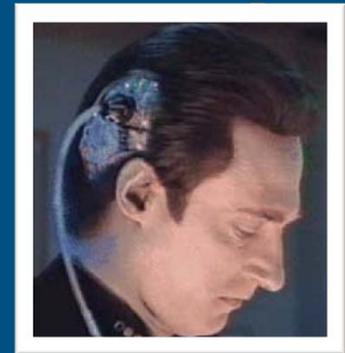


# HAND HELD DATA COLLECTION

## Directions - Data

“Open Data” definitely a trends to consider.

- More data is becoming freely available
- More expectations that data will become “open”
- Everyone has access to this data!



biocache.ala.org.au/explore/your-area#-21.733805548139014|122.20441379042973|12|ALL\_SPECIES

Atlas Of Living Australia ALA Apps ALA Info Search the Atlas Search User settings

Home → Locations → Your Area

### Explore Your Area

Enter your location or address:

telfer   E.g. a street address, place name, postcode or GPS coordinates (as lat, long)

Showing records for: **Unnamed Road, Telfer WA 6762, Australia**

Display records in a  km radius

Group	Species	Species : Common Name	Records
<b>All Species</b>	<b>203</b>		
Animals	177	1. <i>Acacia colei</i> var. <i>colei</i> - Cole's Wattle	1
Mammals	8	2. <i>Acacia eriopoda</i> - Broomie Pindan Wattle	2
Birds	93	3. <i>Acacia ligulata</i> - Dore Wattle	1
Reptiles	17	4. <i>Acacia monticola</i> - Red Wattle	2
Amphibians	1	5. <i>Acacia salsubosa</i>	2
Fish	0	6. <i>Acacia seneciphylla</i> - Cork-bark Wattle	1
Molluscs	0	7. <i>Acacia spheroactactya</i>	2
Arthropods	8	8. <i>Acacia stipularia</i>	1
Crustaceans	0	9. <i>Acacia tumida</i> var. <i>pilbarensis</i> - Pilbara Pindan Wattle (preferred common name)	2
Insects	2	10. <i>Acacia wanya</i> - Silver-leaf Midge	1
Plants	76	11. <i>Acanthagenys rufopulvris</i> - Spiny-cheeked Honeyeater	3
Bryophytes	0	12. <i>Accipiter (Luscoptza) fasciatus</i> - Brown Goshawk	3
Synmammalia	0	13. <i>Accipiter (Paraphaps) lineocephalus</i> - Gillman's Sparrowhawk	1
Ferns&allies	0	14. <i>Actitis hypoleucos</i> - Common Sandpiper	3
Angiosperms	76	15. <i>Agapotheres (Agapotheres) cristatus</i> - Australian Owl-nightjar	1
Monocots	2	16. <i>Aluta masonneuvot</i>	1
Ukolas	74	17. <i>Amphipogon canorus</i> var. <i>canorus</i> - Long Grey-beard Grass	1
Fungi	0	18. <i>Anas (Nettion) gracilis</i> - Grey Teal	4
Chromista	0	19. <i>Anthus (Reithus) newzealandicus</i> - Australasian Pipit	34
Protoczoa	0	20. <i>Apus (Apus) pacificus</i> - Fork-tailed Swift	7
Bacteria	0	21. <i>Artico (Artico) pacifica</i> - White-necked I Leron	5
Algae	0	22. <i>Ardea (Casmerodius) modesta</i> - Eastern Green Egret	3

Satellite

Google Maps data ©2018 Imagery ©2018 Text/Media ©2018 Terms of Use | Privacy & Settings

Records: 1 3 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200

Tips: you can fine-tune the location of the area by dragging the red marker icon



# HAND HELD DATA COLLECTION

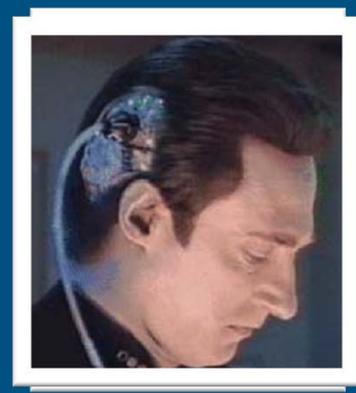
## Directions



Business



Technology



Data



# HAND HELD DATA COLLECTION

## So what?

- Business models indicate per-project fees and squeezing prices mean that **price sensitivity** is key
- How do you ensure your investment helps deliver **quality**?
- Mobile phones are **outnumbering** us – cheaper, faster
- Data is being driven to be more “**open**” – how can you participate or make use of this trend?





# HAND HELD DATA COLLECTION

## Pricing



- It's all about the price... and not just for you!
- Not bespoke systems, instead looking at simple form builders (\$10-\$300/m) and free apps

	Gruntify	Fulcrum	Form.com	FormStack
Customisable interface	Yes	Yes	Yes	Yes
Mobile OS	iOS, Android	iOS, Android	iOS, Android	iOS, Android, Windows
Export formats	CSV, Shapefile, KML, Tab, DXF	Excel, CSV, Google Earth, Shapefile	Excel, CSV, SPSS, PDF	CSV, RTF (Word), Excel
API access	Yes	Yes	Yes	Yes

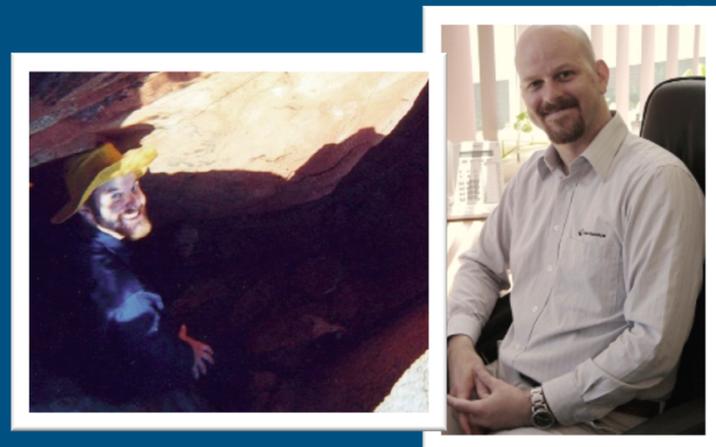
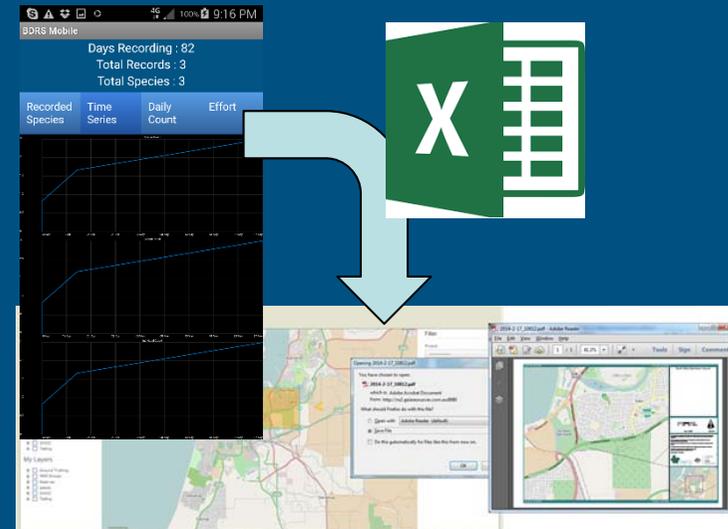
- This will only get you so far... e.g. taxonomic lookups



# HAND HELD DATA COLLECTION

## Quality

- Any mobile field systems need to be able to deliver outputs that you can use to improve the quality of outputs and give you a competitive advantage
- Make sure that your staff are doing what they are good at, and what you hired them for... don't get distracted!





# HAND HELD DATA COLLECTION

## Mobile phones as field data devices



Then



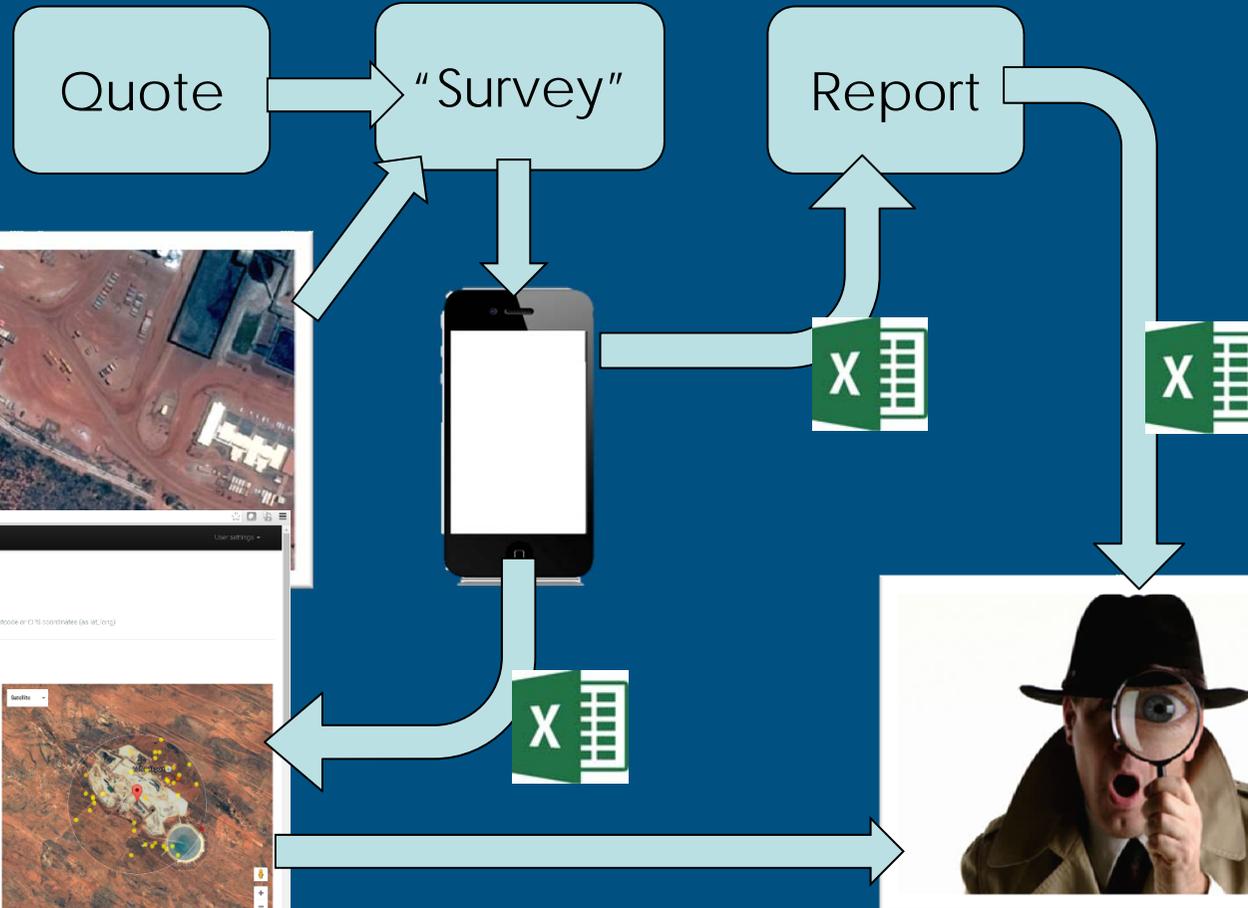
Now





# HAND HELD DATA COLLECTION

## Open Data



Atlas of Living Australia

Explore Your Area

Enter your location or address

leifer Search

Showing records for: Unnamed Road, Telfer WA 6762, Australia

Group	Species	Species : Common Name	Records
All Species	203		
Arachnida	17	1. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	17	2. <i>Arctosa cincta</i> (sic) - Cane Wasp	2
Arachnida	9	3. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	9	4. <i>Arctosa cincta</i> (sic) - Cane Wasp	2
Arachnida	17	5. <i>Arctosa cincta</i> (sic) - Cane Wasp	2
Arachnida	1	6. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	9	7. <i>Arctosa cincta</i> (sic) - Cane Wasp	2
Arachnida	9	8. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	9	9. <i>Arctosa cincta</i> (sic) - Cane Wasp	2
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Arachnida	2	11. <i>Arctosa cincta</i> (sic) - Cane Wasp	2
Arachnida	2	12. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	2	13. <i>Arctosa cincta</i> (sic) - Cane Wasp	2
Arachnida	2	14. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	2	15. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	2	16. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	2	17. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	2	18. <i>Arctosa cincta</i> (sic) - Cane Wasp	1
Arachnida	2	19. <i>Arctosa cincta</i> (sic) - Cane Wasp	34
Arachnida	2	20. <i>Arctosa cincta</i> (sic) - Cane Wasp	7
Arachnida	2	21. <i>Arctosa cincta</i> (sic) - Cane Wasp	5
Arachnida	2	22. <i>Arctosa cincta</i> (sic) - Cane Wasp	1





# HAND HELD DATA COLLECTION

## Where can mobile data collection help?

- No two “surveys” / “assessments for impacts” are the same

Mike's Levels	Description	Can it help?
Level 0.5	Desktop	Nope
Level 1	Desktop and site inspection	Maybe
Level 1.5	Desktop, site inspection, targeted assessment	Maybe
Level 2	Desktop and comprehensive assessment	Probably
Level 2a	Fauna relocation	Maybe
Level 3	Research and monitoring	Maybe

- Depends on the problem you are trying to solve: **Why?**



# TECHNOLOGY IN NRM



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