

Software Quality

And Human Behaviour



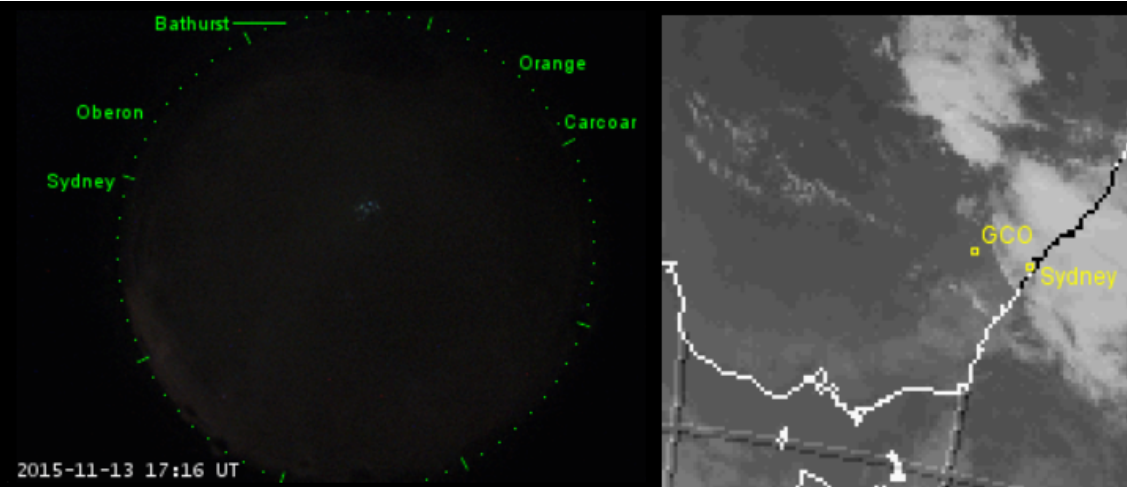
My Training

- Mathematics
 - Applied, Quantum Mechanics
 - A long time ago
- Meteorology
- Astronomy
- = Computation
 - The more the merrier



My Night Job

Status	Your Time	Universal Time	GCO Local Time	GCO LST				
OFFLINE	2015-11-14 06:00:45.1	2015-11-13 19:00:45.1	2015-11-14 06:00:45.1	08:28:31.1				
Comms	Wind (kn)		Temperature (°C)		RH	Pressure	Rain Rate	
	Avg	Gust	Dir'n	Ambient	Dew Point	(%)	(mm/hr)	
UP	3.5	2.3	ENE	12.7	10.9	89	909	0
Sky	Temperature (°C)			Wet	Heater %	Threshold (°C)		
	Sky-Ambient	Ambient	Sensor			Cloudy	V.Cloudy	
CLOUDY	-10.3	13.0	16.9	N	8.7	-30.0	-10.0	
Light	Az	Alt	RA		Dec			
Moon	126.1°	-17.1°	16 51 01.8		-17 39 36			
Sun	111.5°	0.7°	15 14 36.5		-18 01 37			



User:
administrator
2015-11-10 04:55:33

Telescope is idle
The roof has been closed because: *** THE SUN IS (COMING) UP ***

Job 53807: 29 Amphitrite (PTB) for wheaton



Targets

- Enter Coordinates
- Search

Results

Suggestions

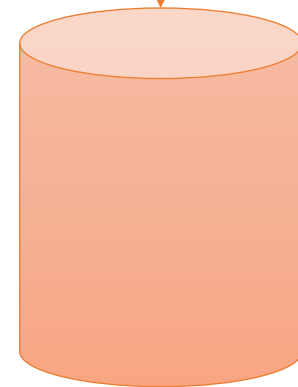
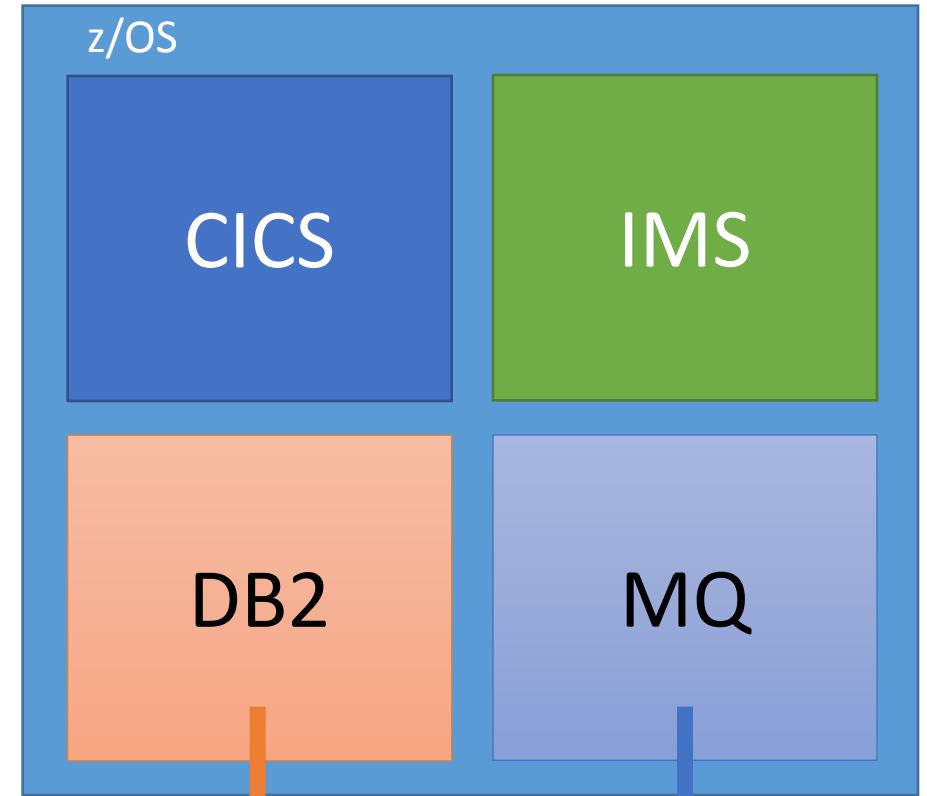
- Solar System
 - Planet
 - Asteroid
 - Comet
- Galactic
- Extra-Galactic
 - Galaxy
 - Hickson Compact Group
 - Blazar

My Night Job

- Optical
- Radio



My Day Job



But I sometimes work with “Big Data”

- Smart Water Meters
 - Measure every hour versus once a quarter
 - Drive behaviour through information
- Vivid Sydney
 - Tracking people movements using their smartphones
- SKA
 - Gathering data at TBps
 - How do you process it?
 - What do you keep?



I work in Pre-Sales, but occasionally...



I get my hands dirty



I walked into a room...

- 40 people
 - Not happy
- More on the phone
- Problem had been running for 3 days
- No one knows where the problem is
 - Or where to look
- Turned out to be a software problem
 - Fixed 3 years ago

Turned out to be a HIPER

- Highly pervasive problem
 - Customers are notified that the problem exists
 - And that a PTF = fix is available
- The HIPER PTF was PE = “fix in error”
- The fix to the fix was also PE
- Are HIPER PTFs more likely to be PE?
- How long should you leave a HIPER PTF before applying it?




Are HIPER PTFs more likely to be PE

- Yes! (confirmed by hypothesis testing)
- Across several products (thousands of PTFs)
 - ~ 10% of regular PTFs are PE
 - ~ 15% of HIPER PTFs are PE
- The QA process is the same for both
- The pressure is not the same!
- The product teams who publish their bugs more openly performed better 😊

How is Software Quality Measured?



Product X Last 6 months view

	Semester in analysis: Jun 2011- Nov 2011	Previous semester: Dec 2010 - May 2011
Total PMR	205 PMR (Decreased 3% in this semester) .v1: 49% .v2: 42% .v3: 3% .Other: 5%	211 PMR
Customer 	118 Customer (decreased 1% in this semester)	119 Customer
Sev 1 PMR 	1 PMR (0.4% of the total) decreased 74% in this semester	4 PMR (1.9% of the total)
PMR/Customer 	1.73 (Decreased 2% in this semester)	1.77

How is Software Quality Measured?

- Number of PMRs
- Time from PMR to APAR
 - Analysis became less complete
- Time from APAR to PTF
 - More PEs
- No special focus on HIPERs or Pes
- Measurement consistently drives behaviour

How long should you leave a HIPER PTF?

- ~ 90% of HIPER PTFs that turn out to be PE are found to be in error within 60 days
- But I can't tell anybody 😊
- So, just do it, otherwise we never find the bugs!

Conclusion

- The “Observer Effect” does act on software quality
- Carefully consider how you measure it
 - Will it drive the right outcomes?
- Process does not guarantee consistency
 - Humans will find ways around it
- Never trust what you read/hear
 - Always check the data