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Employing ISO9001 to improve water information quality in New South Wales

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What is DQ/IQ?

- Tom Redman
 - *Data that's fit for use*
 - *Free of defects*
 - *Possess desired features*
 - *Customers are ultimate arbiters*

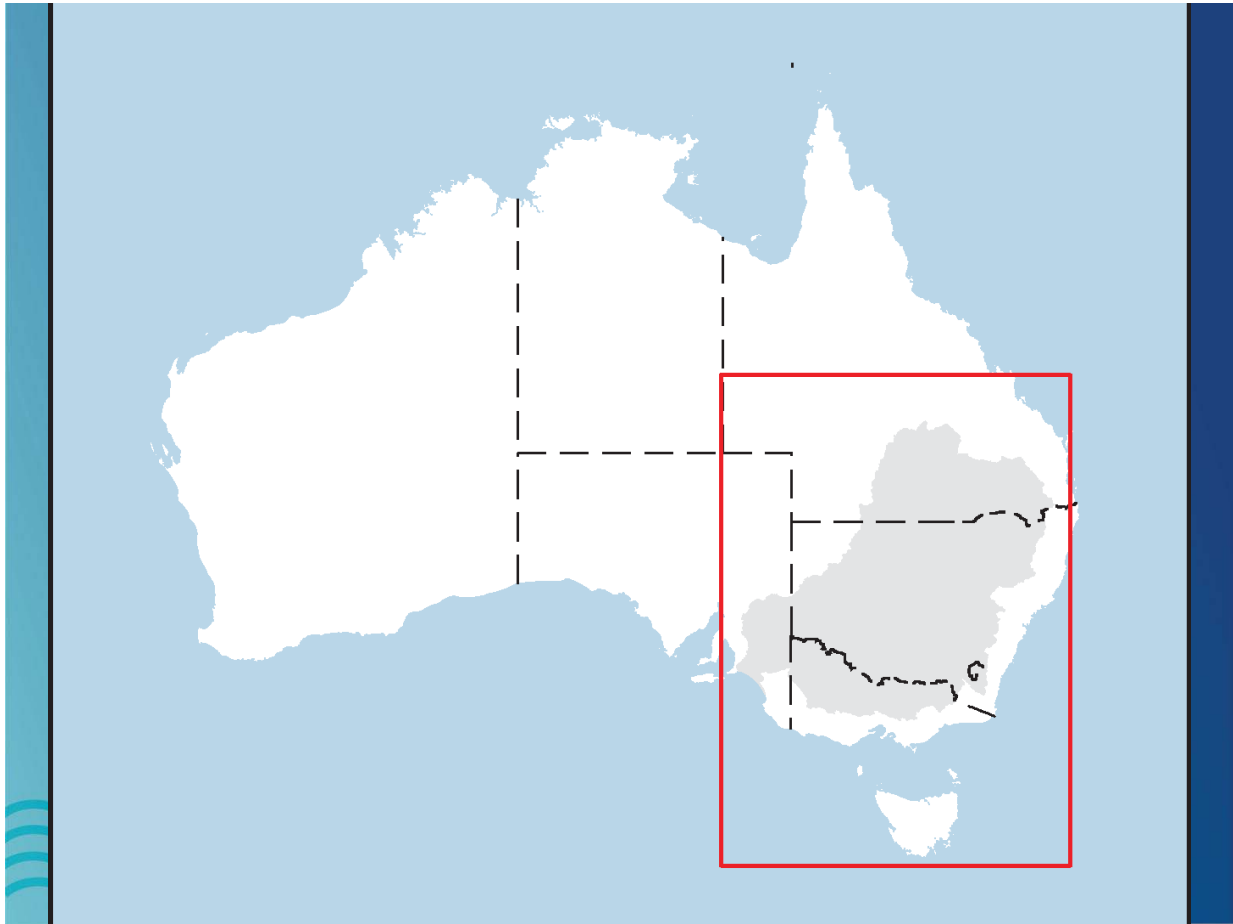


What is DQ/IQ?

- Larry English:
 - Quality is not fitness for purpose.
Quality is fitness for **ALL** purposes
made of the data, including likely future
uses



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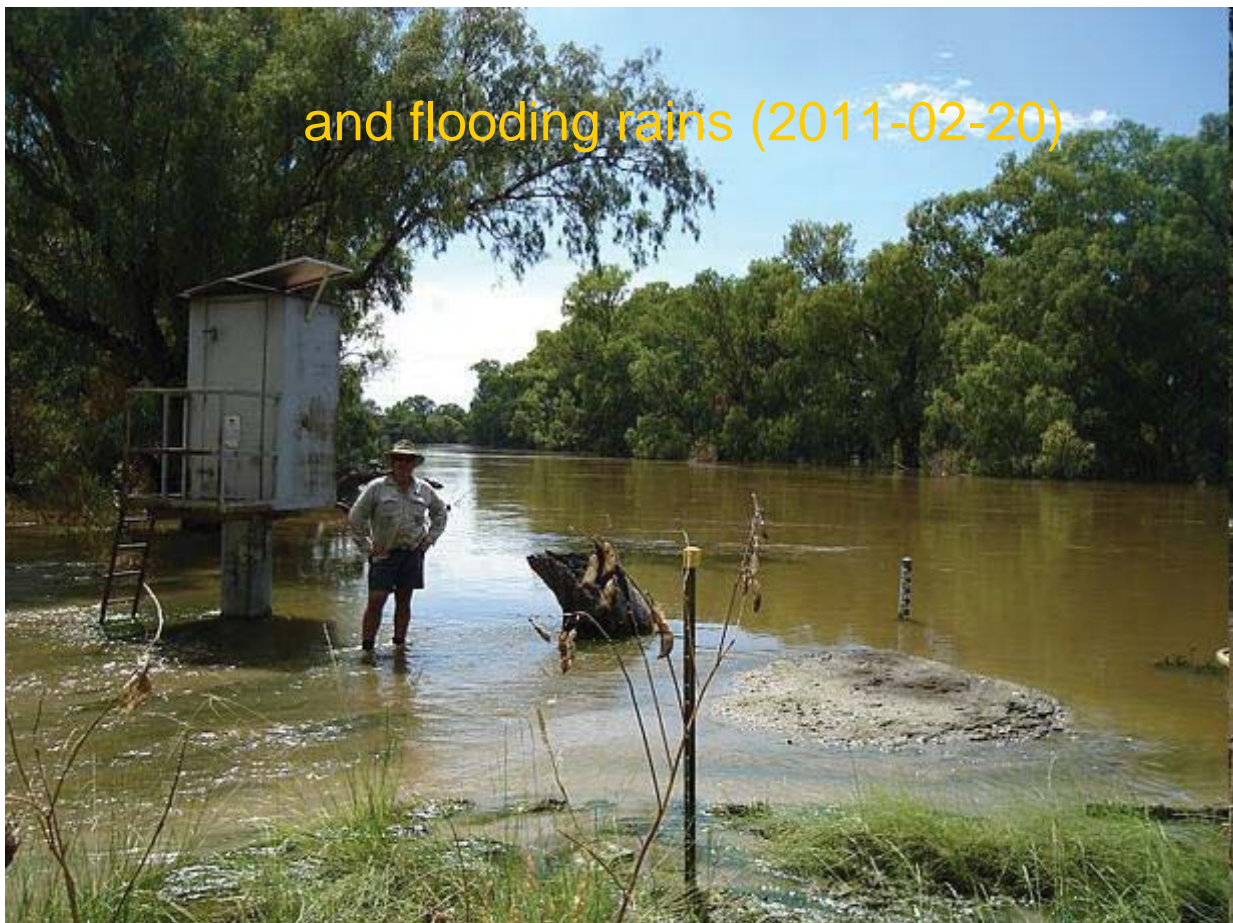
of droughts

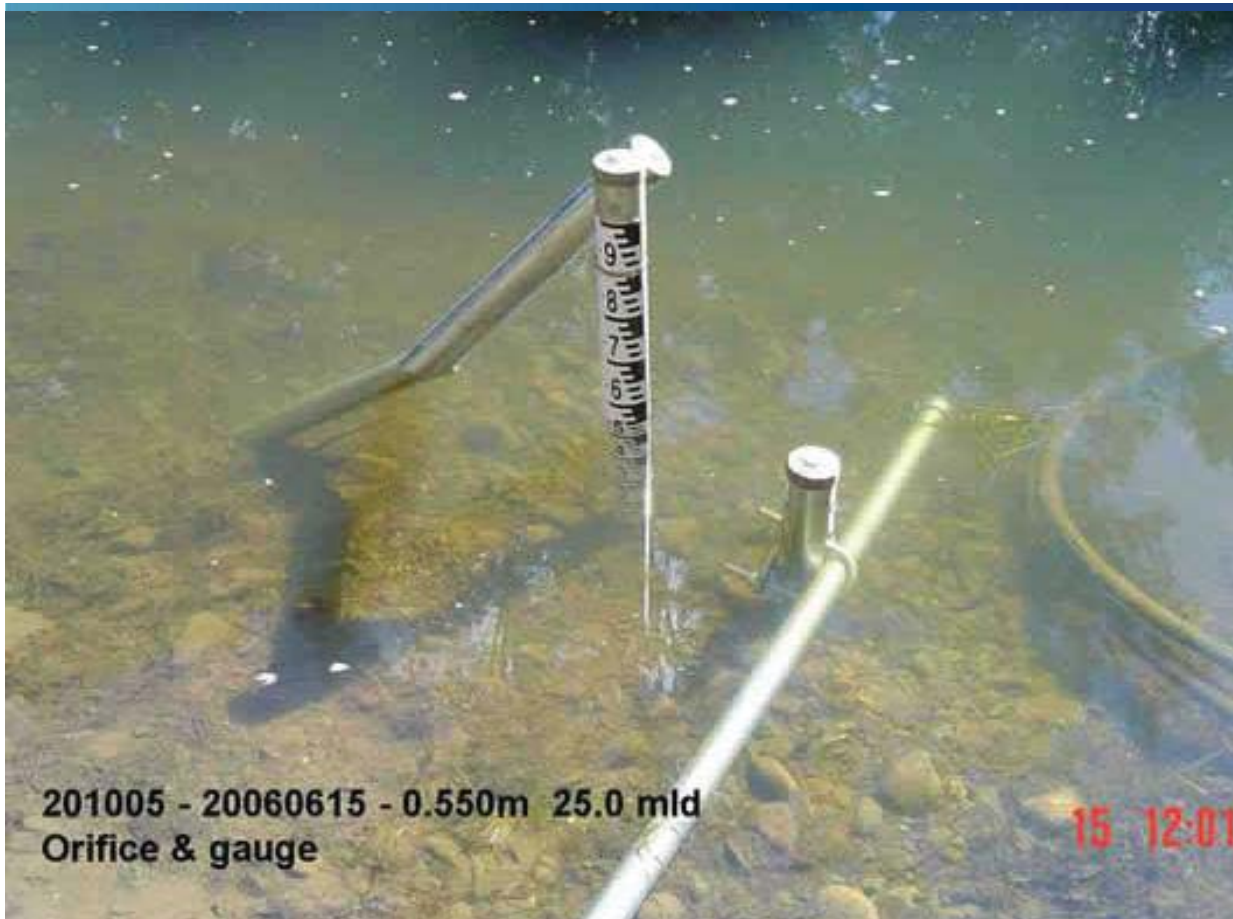
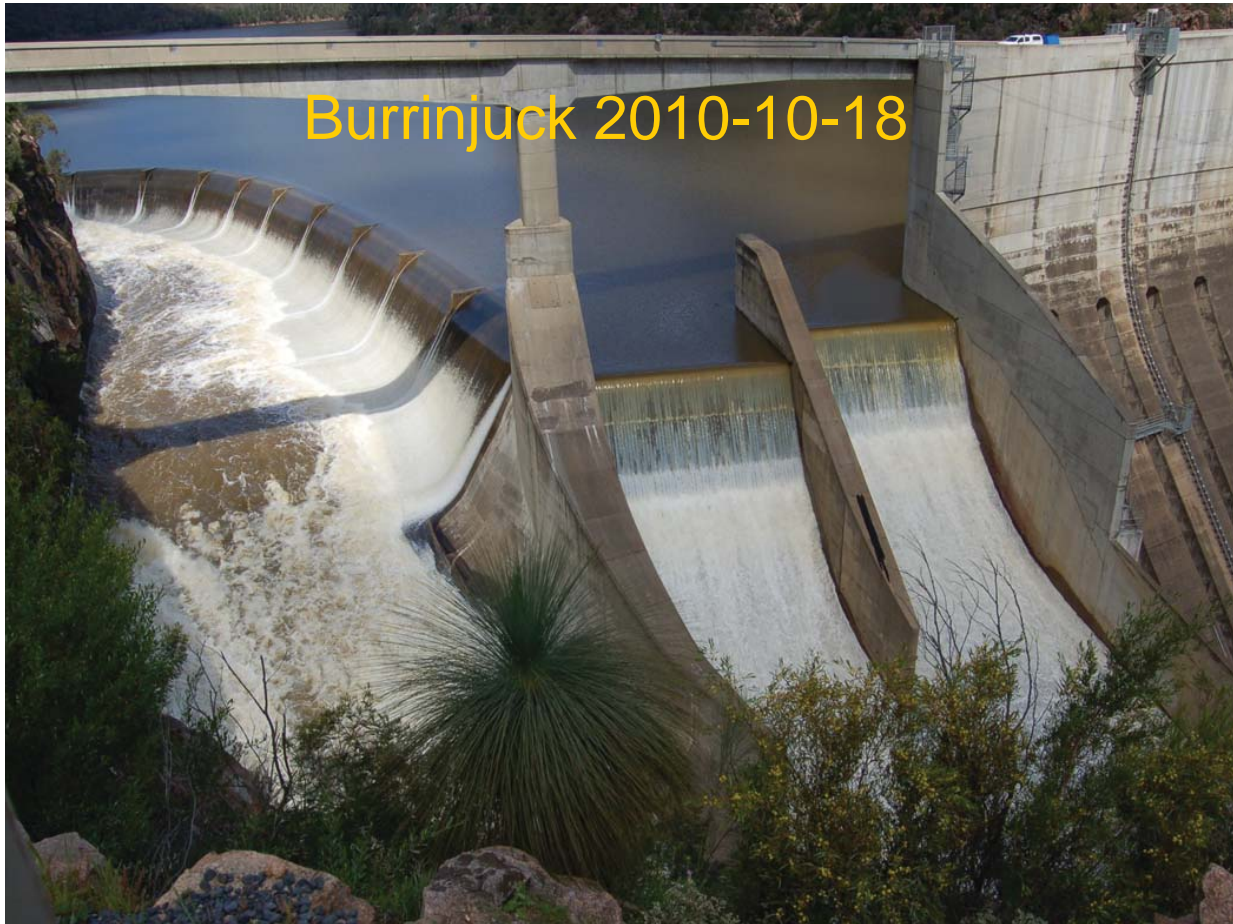


422028
Barwon at Beemery
15.11.06
looking downstream

of droughts (2006-11-15)

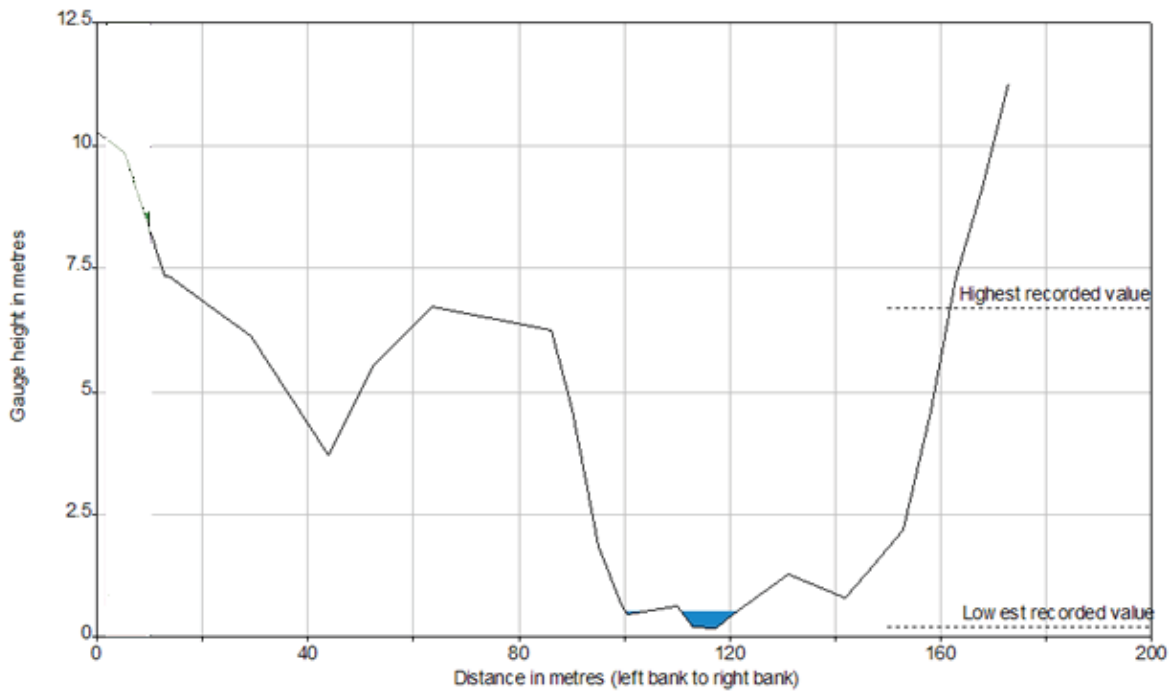








Survey cross section





Macquarie River 2001-09-12



Murray red gum 2010-09-23



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On quality systems

There's heaps of them out there!



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Quality Systems...

- Deming's 14 Points
- Feigenbaum's Total Quality Control
- Kaizen
- Juran's Quality Plan, Control & Improvement
- Crosby's Zero Defects / 14 Steps
- Ishikawa's Quality Control
- Shewhart's Quality Control
- Genichi Taguchi's Quality Engineering
- Baldrige Quality Award
- Quality Function Deployment
- European Foundation Quality Award Program
- ISO9000
- Six Sigma

The ISO9000 series

- **AS/NZS ISO 9000:2006**
Quality management systems -
Fundamentals and vocabulary
- **AS/NZS ISO 9001:2008**
Quality management systems -
Requirements
- **AS/NZS ISO 9004:2000**
Quality management systems –
Guidelines for performance improvements

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ISO9000 quality mgt principles

These eight principles are:

- Customer focussed organization
- Leadership
- Involvement of people
- Process approach
- System approach to management
- Continual improvement
- Factual approach to decision making
- Mutually beneficial supplier relationship

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History of ISO9001

- After WWII
 - W Edwards Deming, Dr Juran in Japan
 - stopped relying on inspection
 - manufacture quality into the product
 - QA management systems focus on prevention



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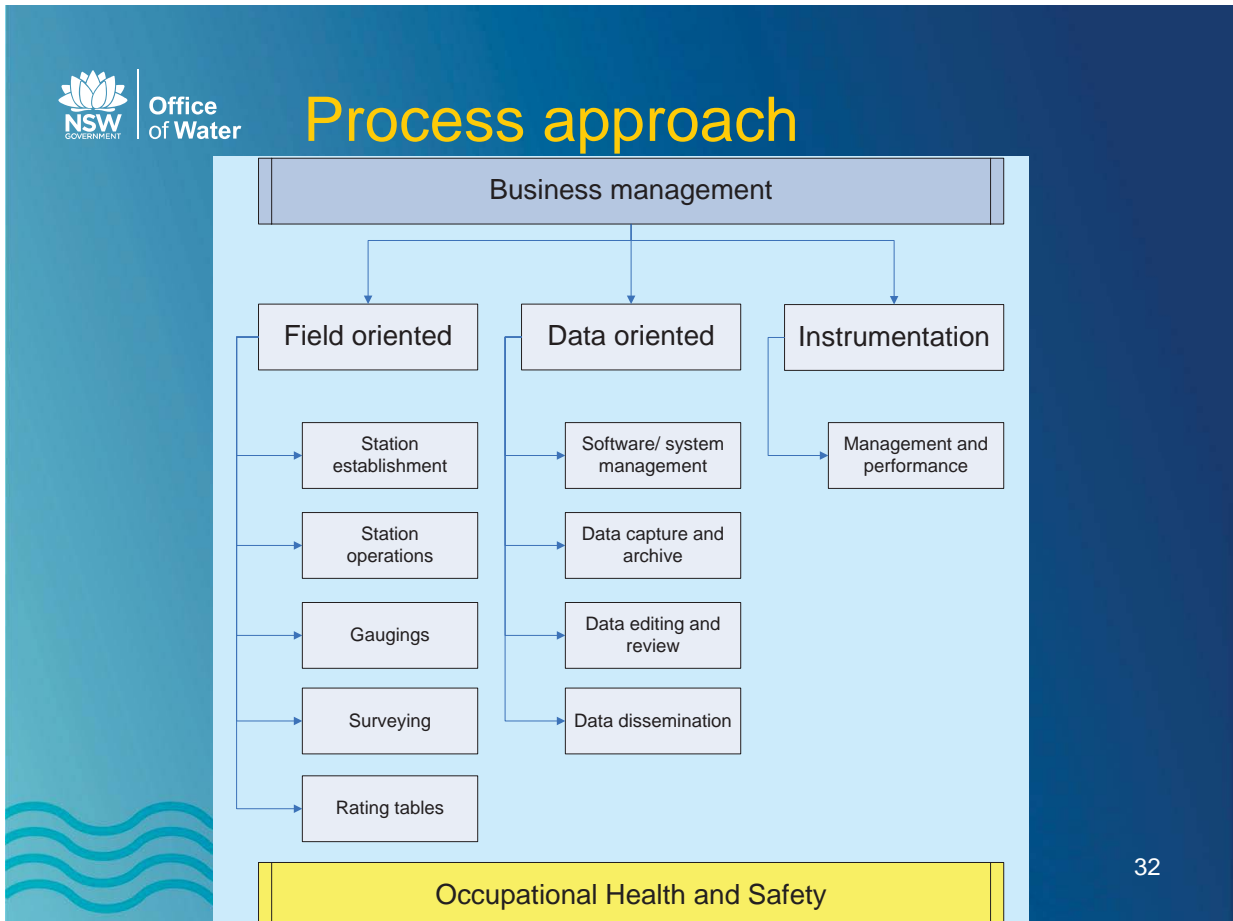
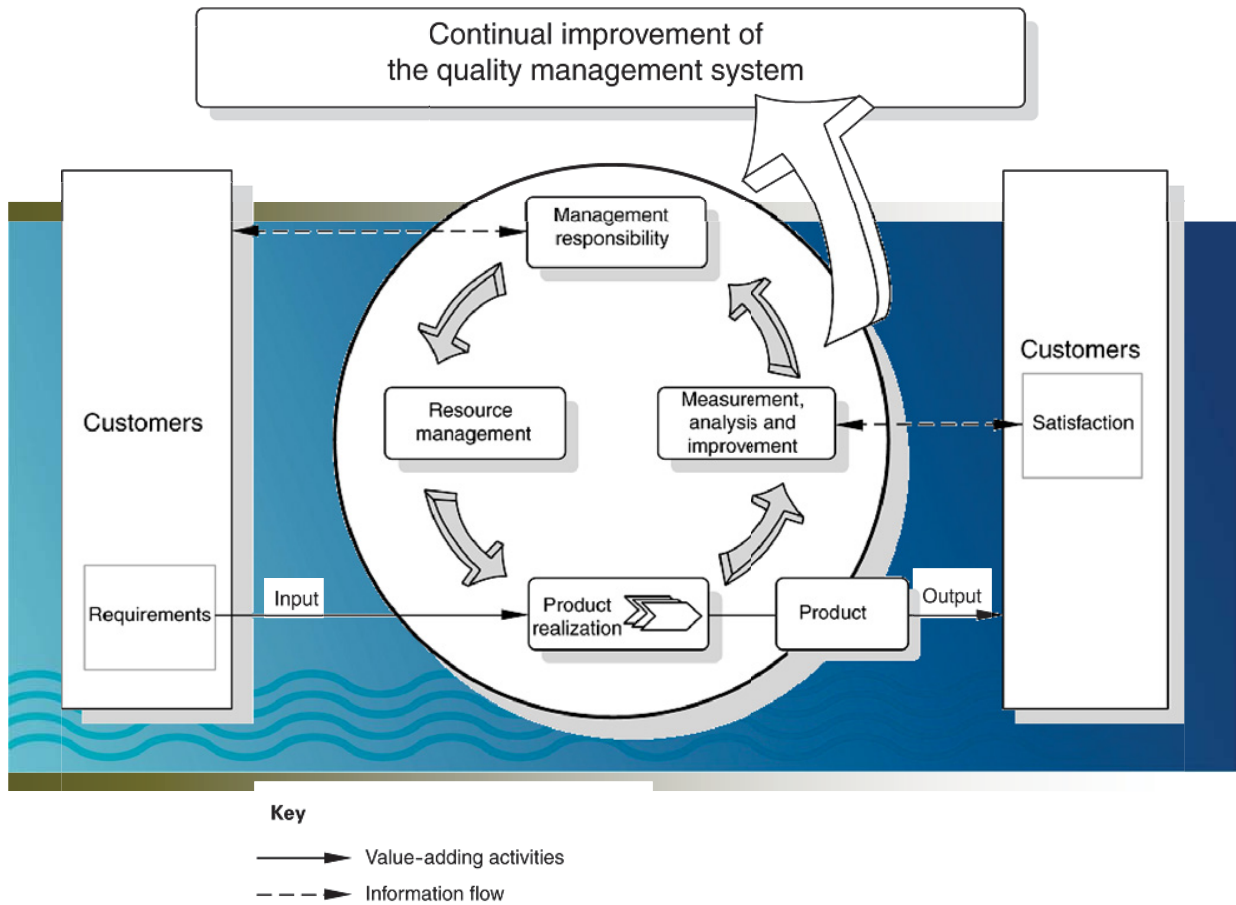
4 Quality management system



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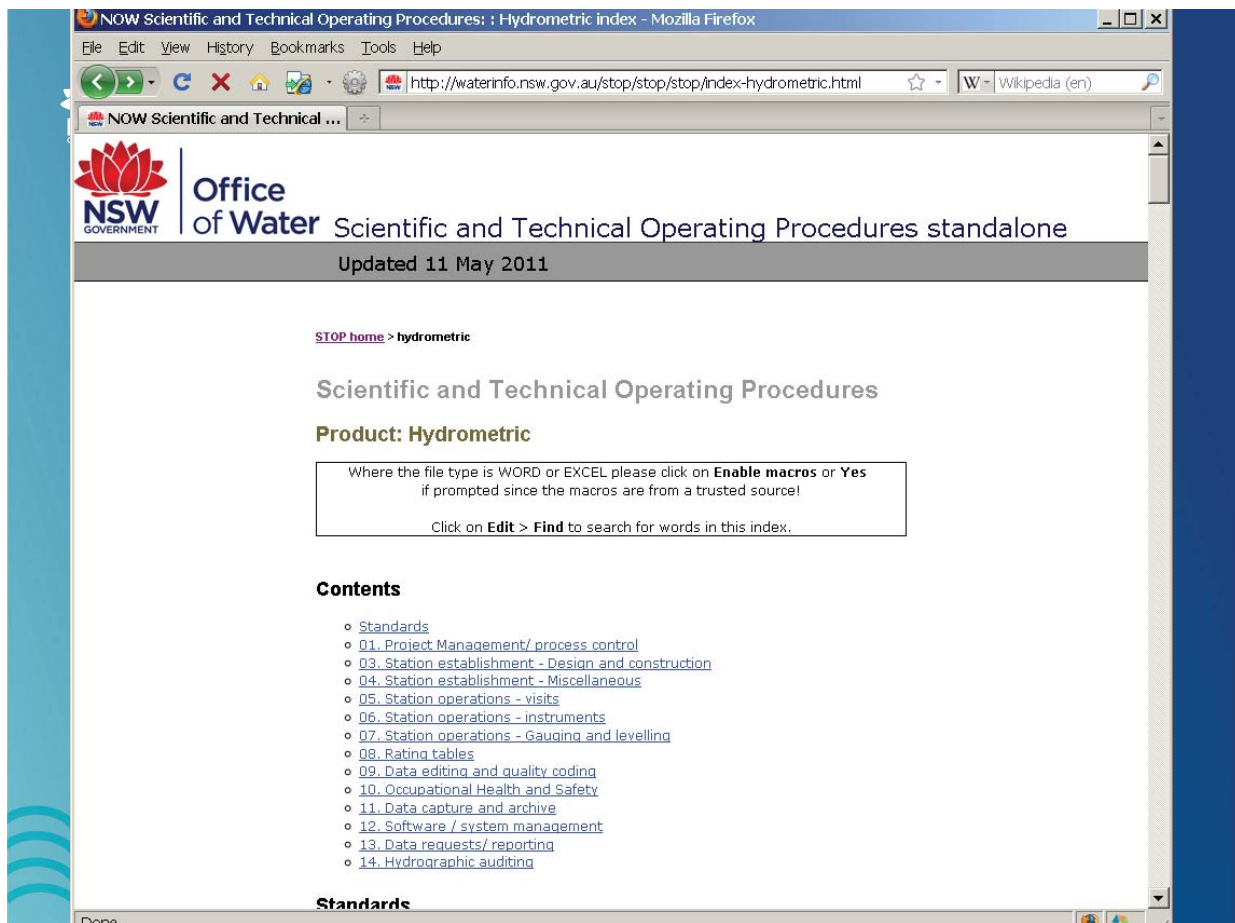
The organisation shall...

- identify the processes
- monitor, measure and analyse
- implement actions necessary
 - achieve planned results
 - continual improvement



Top management shall...

- provide evidence of commitment to QMS
 - customer requirements
 - quality policy
 - quality objectives
 - conduct management reviews
 - ensure resources




NOW Scientific and Technical Operating Procedures: : Hydrometric index - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://waterinfo.nsw.gov.au/stop/stop/stop/index-hydrometric.html W - Wikipedia (en)

NOW Scientific and Technical ...

 **Office of Water** Scientific and Technical Operating Procedures standalone

Updated 11 May 2011

[STOP home](#) > **hydrometric**

Scientific and Technical Operating Procedures

Product: Hydrometric

Where the file type is WORD or EXCEL please click on **Enable macros** or **Yes** if prompted since the macros are from a trusted source!

Click on **Edit** > **Find** to search for words in this index.

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Standards

Done



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5 Management responsibility

The collage displays three overlapping documents from the Office of Water:

- Water Monitoring Management**: A document with the NSW logo and title. It includes a section for "1. Quality Policy for Water Monitoring" and "Water Monitoring Policy Statement".
- Water Monitoring Objectives**: A document with the NSW logo and title. It includes a section for "2. Objectives" and "Water Monitoring Objectives".
- Water Monitoring Management**: A document with the NSW logo and title. It includes a section for "1. Quality Policy for Water Monitoring" and "Water Monitoring Policy Statement".

Document details visible in the collage:

- Document number: 70001
- Issue number: 3
- Issue date: 24-Feb-2011
- Page 2 of 10
- Page 6 of 10
- Page 3 of 10

Top management shall...

- ensure customer requirements
– *non conformance 2011*
- enhance customer satisfaction
– applicable to all organisations

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Customer focussed organization

- Kaizen Concept 6:
The next process is the customer
 - “All work is a series of processes, and each process has its supplier as well as its customer” (Imai, 1997:7). “This axiom—the next process is the customer—refers to two types of customers: internal (within the company) and external (out in the market)” (Imai, 1997:7).

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Customers for water info

- External
 - River manager – how much water to release?
 - Irrigators – when can I pump?
 - Urban water – is there enough?
 - Flood operations – can I minimise impact?
- Internal
 - Water shepherding
 - Planners – are there enough data?

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Management review





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6 Resource management



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The organisation shall...

- Provide resources needed
 - to implement QMS
 - enhance customer satisfaction meeting customer requirements



Competence awareness & training



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7 Product realisation

Product realisation

- Planning
- Design and development
 - *Non conformance 2008*
- Purchasing – ensure suppliers up to scratch
- Control of monitoring / measuring equipment
 - *Non conformance 2009, 2011*

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8 Measurement Analysis Improvement

Demonstrate

- conformity of product
- conformity with QMS
- continually improve



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Monitor customer satisfaction



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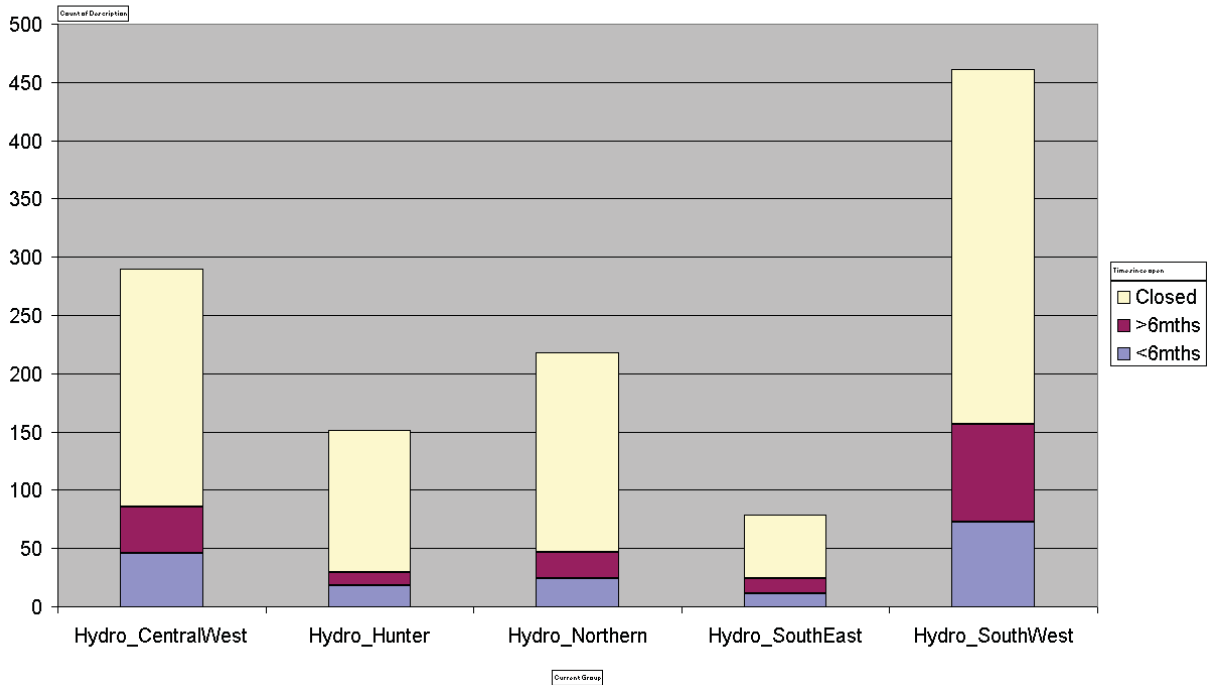
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Internal audit



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Measure processes



Single dimension "Quality codes"

A	best available given tech, etc
B	compromised
C	estimate
E	ability to represent not known.
F	not of release quality / missing data

Measuring our info product

1 Free of error

2 Objectivity

3 Reputation

4 Believability

5 Relevancy

6 Value added

7 Timeliness

8 Completeness

9 Appropriate amount of information

10 Interpretability

11 Understandability

12 Consistent representation

13 Concise representation

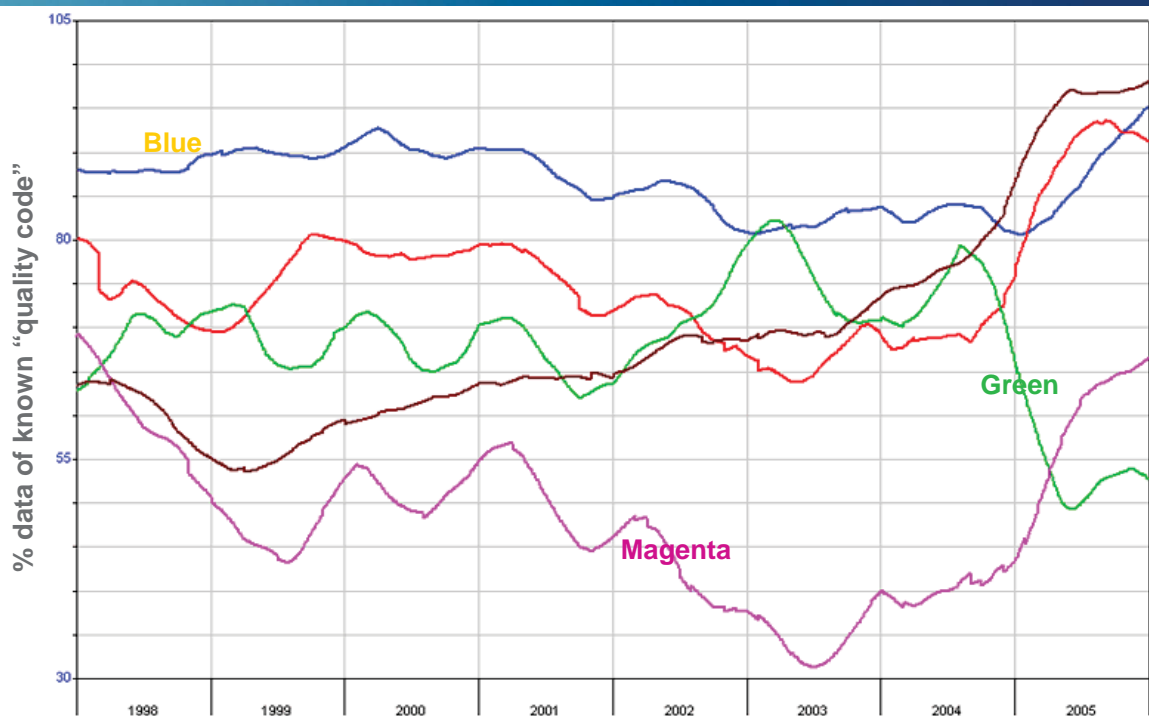
14 Ease of manipulation

15 Accessibility

16 Security

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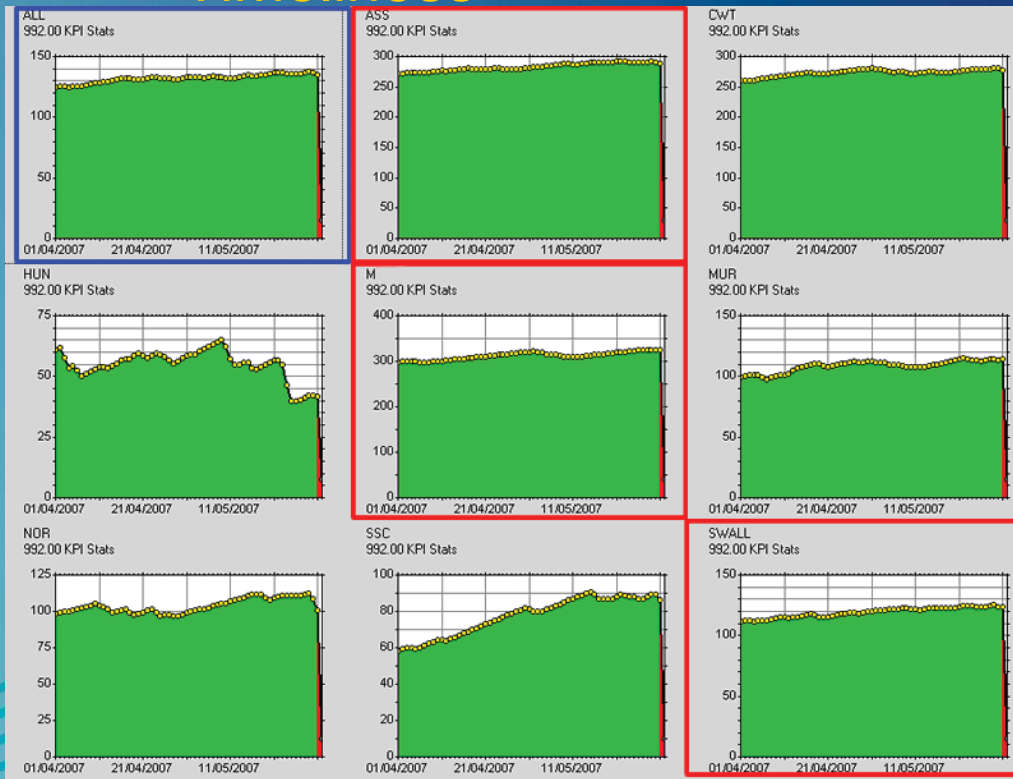
Free of error



Objectivity



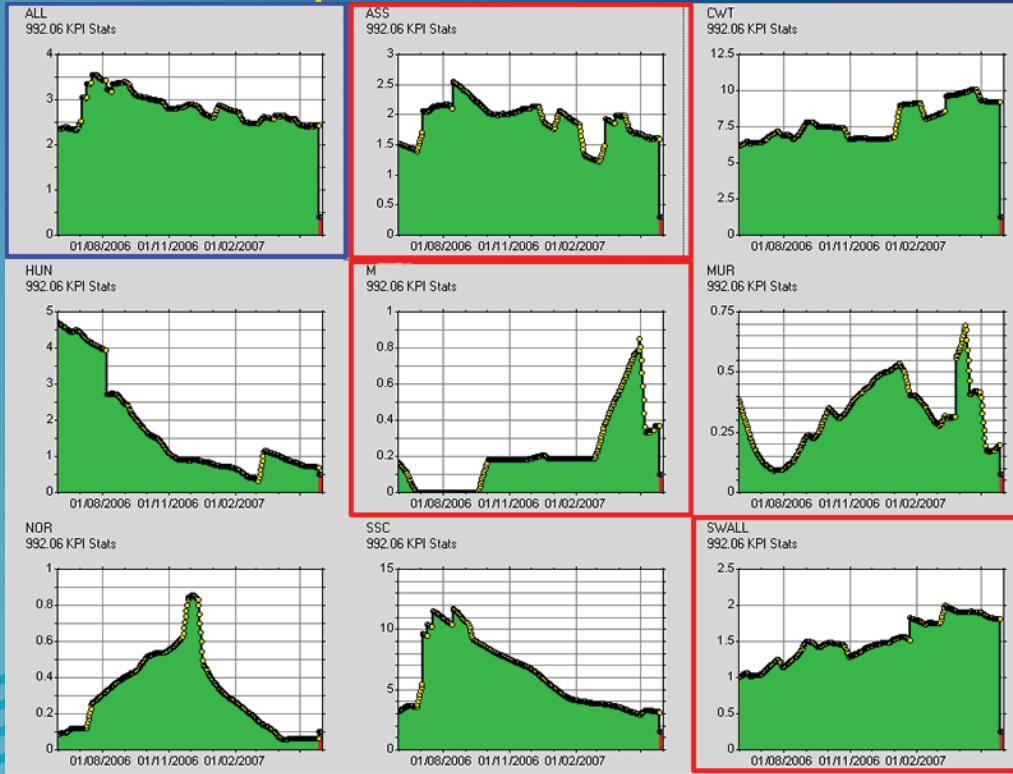
Timeliness





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Completeness



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Scorecard

Example Report Card Period 01/07/2006 - 01/04/2007

Project Description

	Measure	Data	Target	Period result		
Telemetred data	Timeliness	% of daily data uploaded by 9am EST.	37 stations	95%	49.1%	
	Availability	% of days daily data was available in period (i.e. the 9am data plus any post 9am delivery or data available through direct access or other systems).		95%	61.4%	
	Completeness	Sites with more than 5 consecutive days of missing data.	Incidences	0	34	
			Average days	0	36 days/site	
Max days			0	84 days		
Archive data	Timeliness	Timeliness of uploading verified data (backlog to archive).	36 stations 18 stations 18 stations 3 stations 0 stations	90 days	Level EC Temperature Rainfall Turbidity	69 days/site
	Completeness *	% of complete record (data not missing)		95%	Level	78.2%
	Accuracy *	% of total data coded as real in HYDSYS (data not estimated or missing)		90%	Level	75.5%
		% of stations passing the 10% Students T test.	35 stations	80%		91.4%

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Challenges

- What KPIs in SLAs?
- What metrics to meet customer needs?

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Control of non conforming product

- instruments
- data



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Continuous improvement

Water Act 2007 (Cwlth)

Bureau of Meteorology

Modernisation and Enhancement Pgm



Corrective & preventive actions





More resources

- International Association for Information and Data Quality
 - iaidq.org
- Information Quality Certified Professional
 - iqcp.org
- NSW procedures available at
 - <http://waterinfo.nsw.gov.au/stop/stop.shtml>

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Water Information resources

www.waterinfo.nsw.gov.au

www.bom.gov.au/water



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Certified...



Quality System TM

Quality Endorsed Company

ISO 9001
SAI Global

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