

# Operations Excellence

through an Australasian Organic Approach to

## TPM & Lean

13 November 2014

## Setting Performance Targets to support Operations Excellence



Presentation by:  
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President CTPM



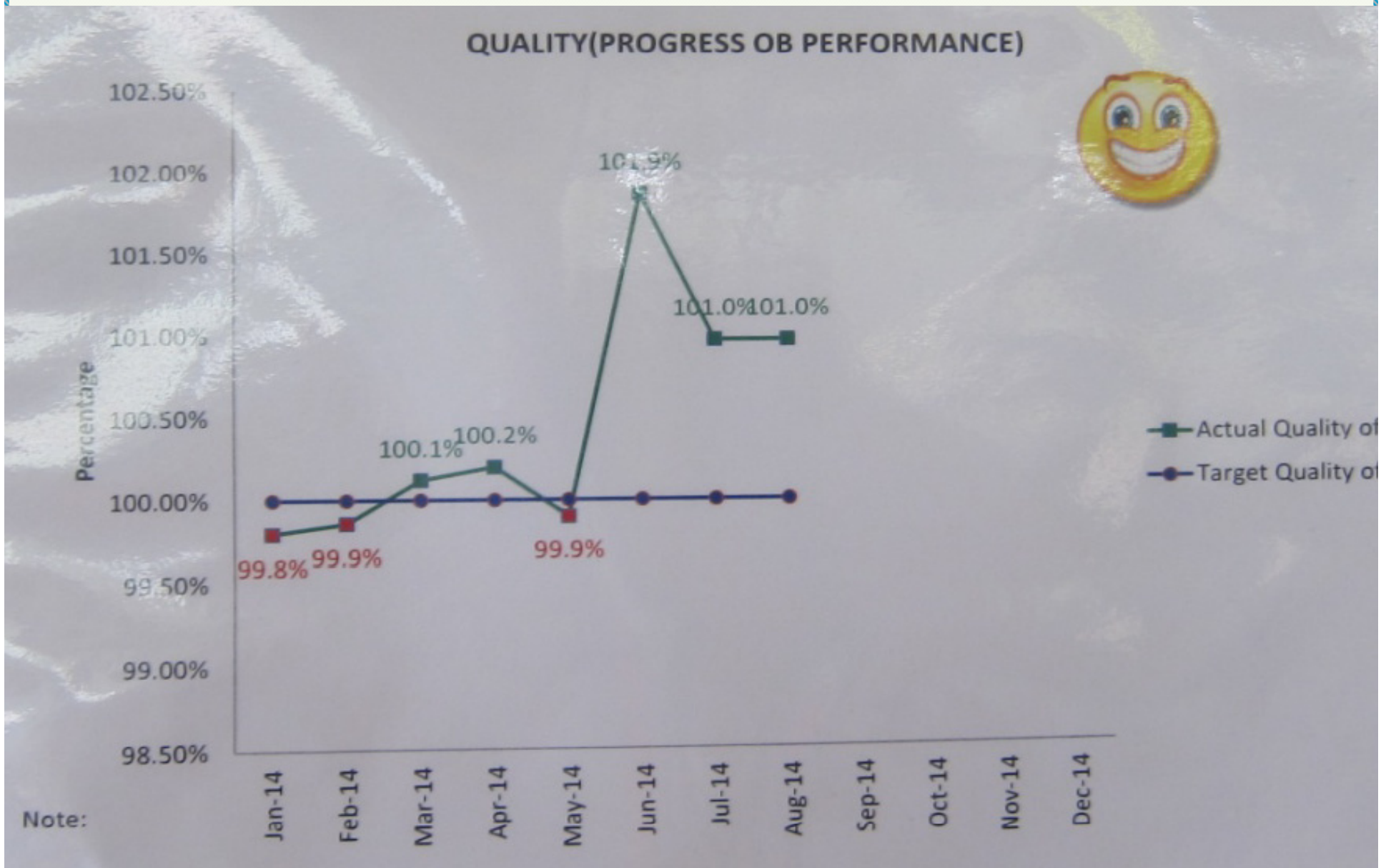
# Outline of Presentation

## Setting Performance Targets to support Operations Excellence

1. Why this topic
2. The need for both Reactive and Pro-active Improvement Targets
3. Setting Reactive Improvement Targets
4. Setting Pro-active Improvement Targets
5. Displaying your Targets
6. Summary



# 1. Why this topic

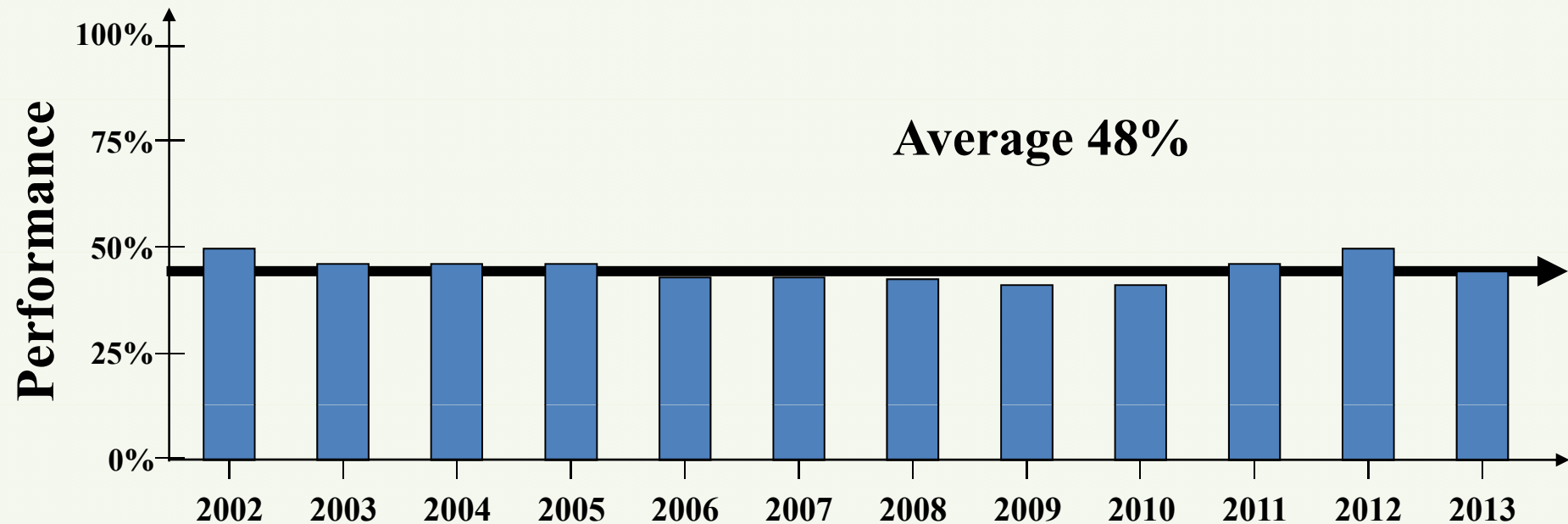


# 1. Why this topic (cont)

## Operations Capability of Australian Industry

### 12 Year Summary of Results 2002 – 2013

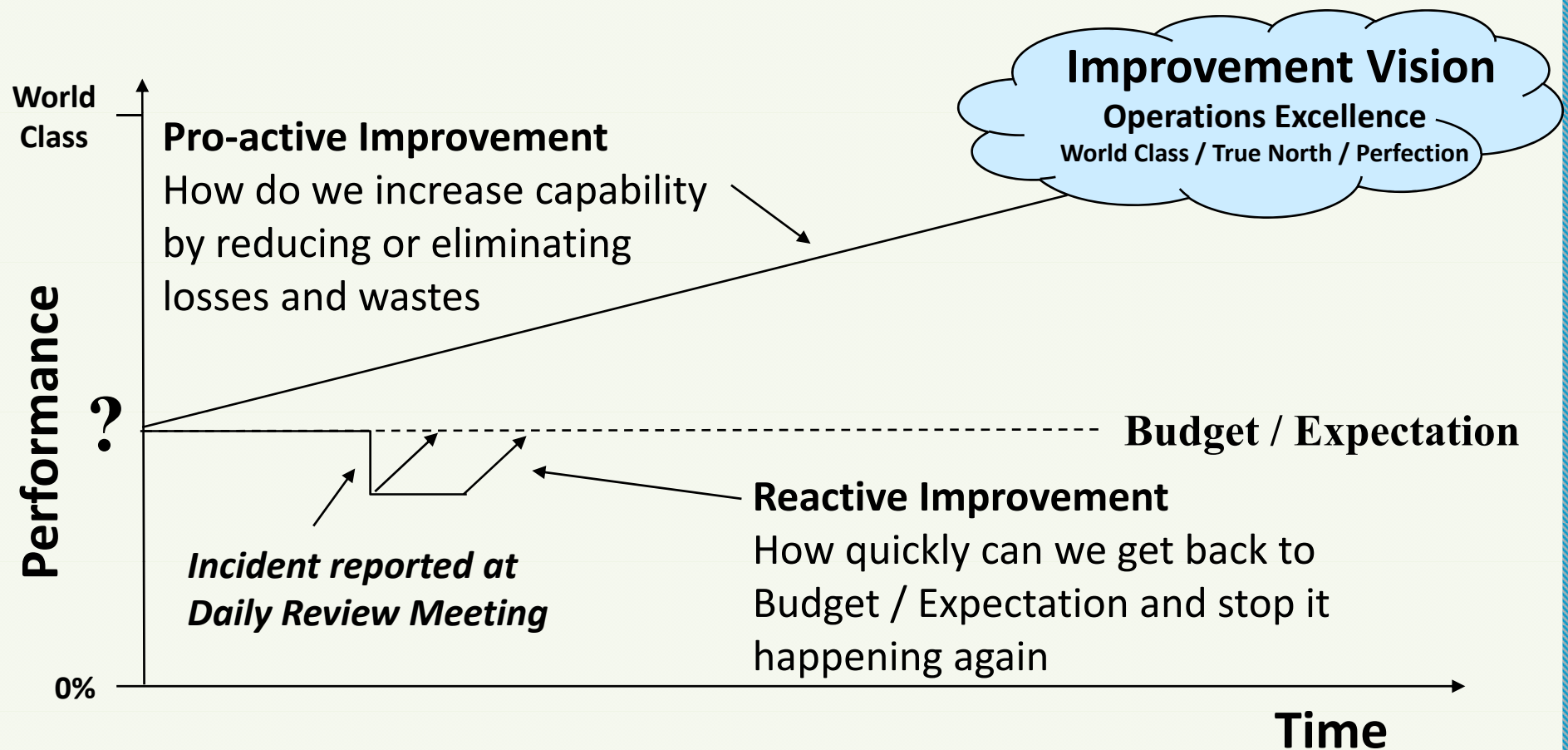
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Companies	42	43	47	36	33	27	63	21	21	23	15	20
Respondents	102	162	186	126	108	81	178	72	78	67	45	72
Rating	50%	49%	49%	49%	47%	47%	46%	45%	45%	49%	50%	48%



## 2. The need for both Reactive and Pro-active Improvement Targets

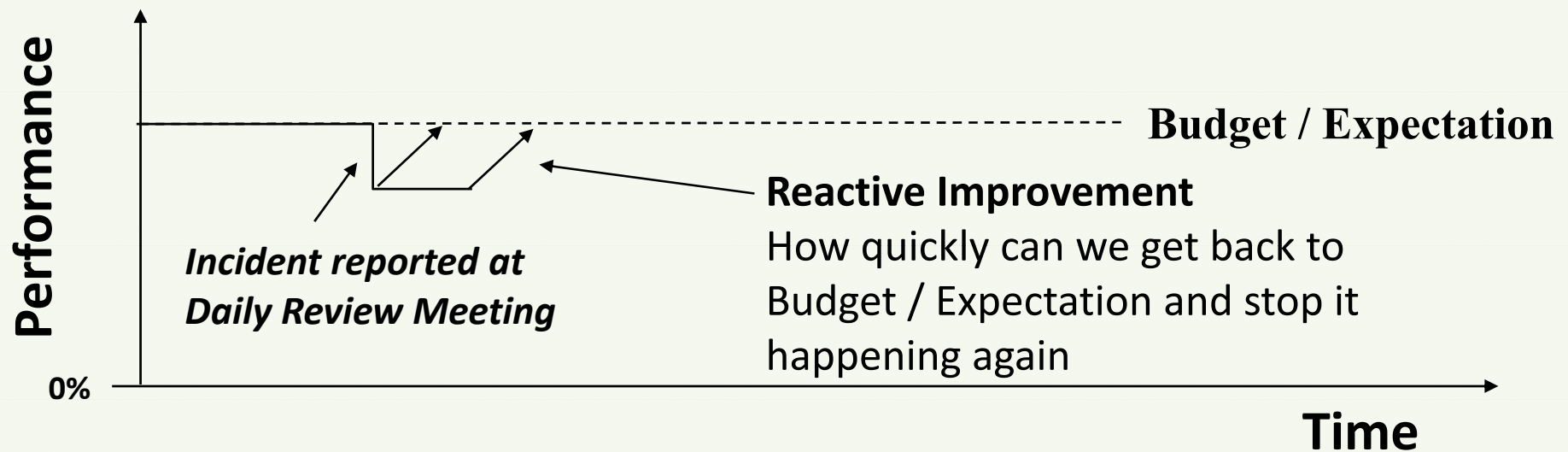
**Reactive** – ensure you achieve Budget / Expectation

**Pro-active** – take you above current Budget / Expectation

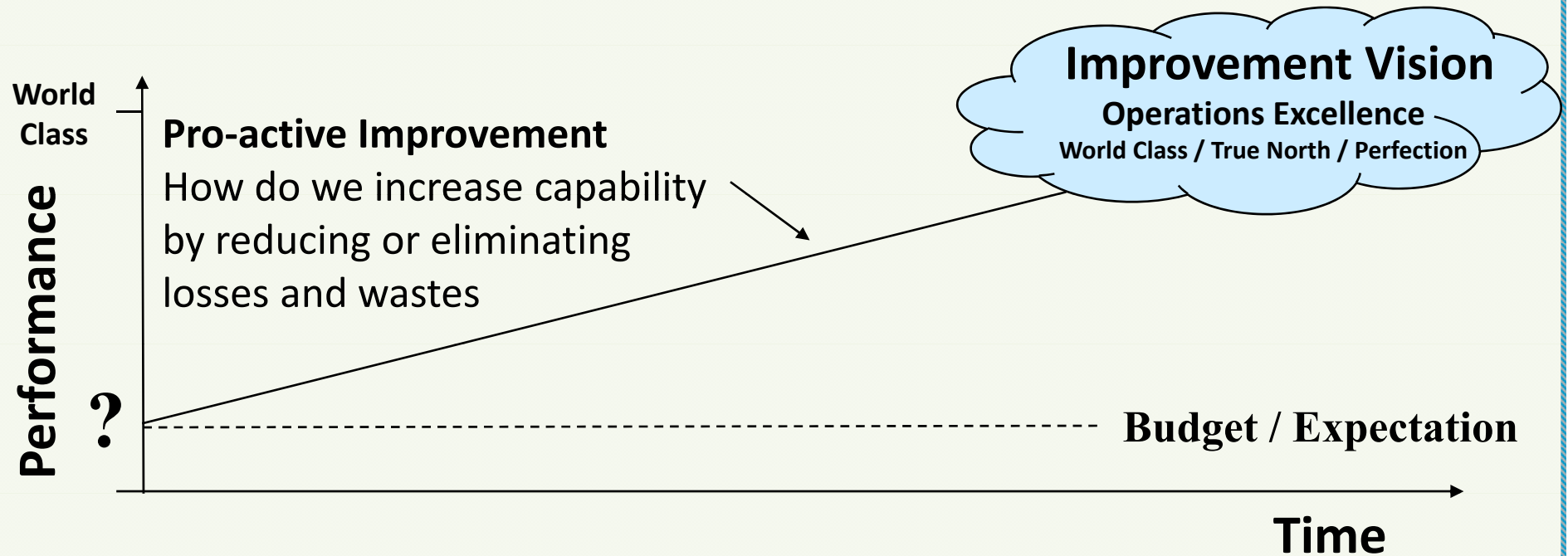


### 3. Setting Reactive Improvement Targets

- Reactive Improvement is typically driven by the targets set in the annual budget.
- These targets may be slightly greater than last year
- The aim is to encourage behaviours of always meeting or exceeding these targets



## 4. Setting Pro-active Improvement Targets



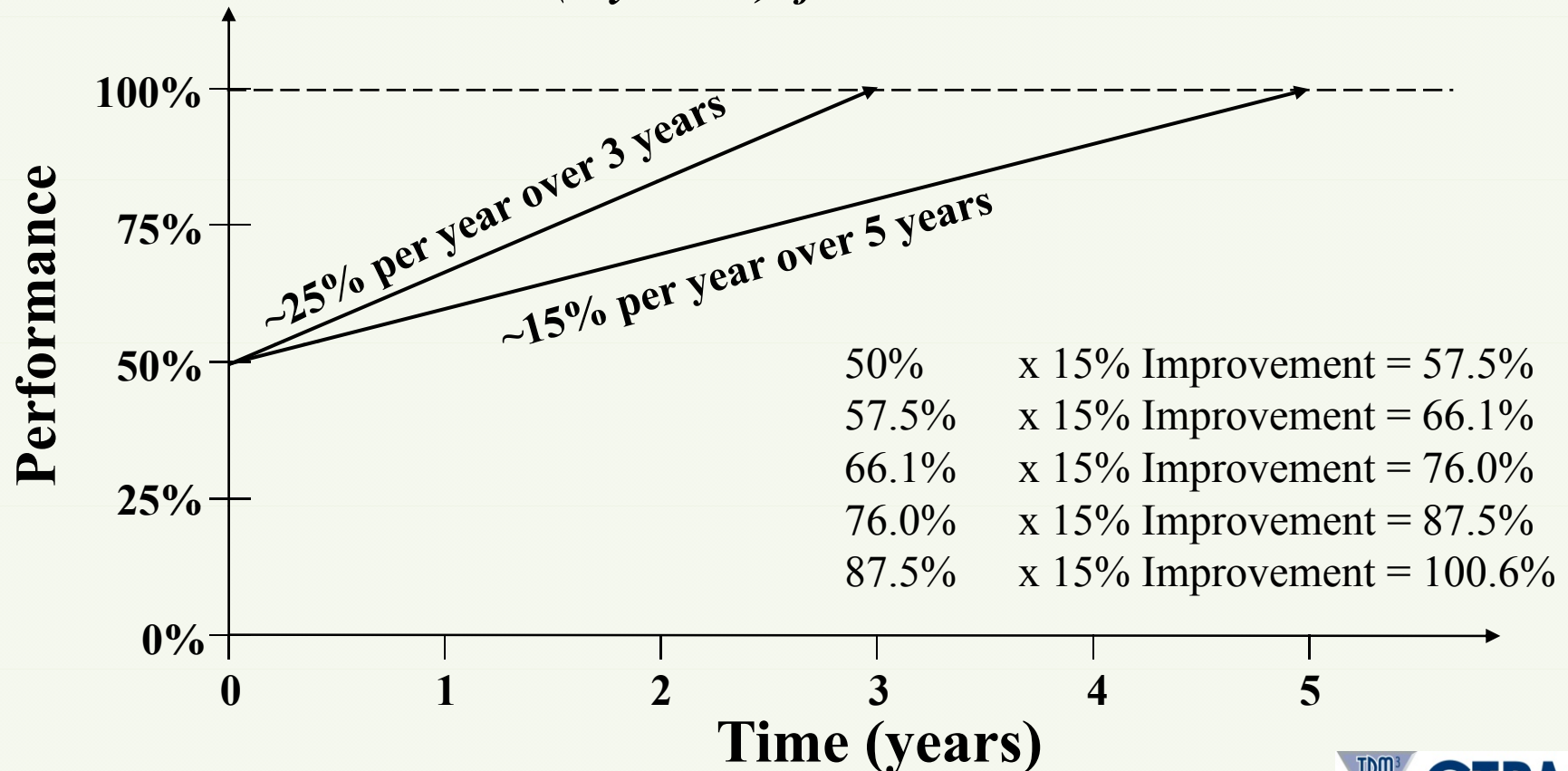
- Pro-active Improvement is typically driven by perfection or world class targets.
- These targets are quite different from those submitted to senior management for evaluating performance
- The aim is to encourage behaviours of always striving for these targets

## 4. Setting Pro-active Improvement Targets (cont)

### 1. When do you want to achieve World Class / Ops Excellence?

#### Operations Capability of Australian Industry (Typical 50%)

*What rate of improvement per year is required to achieve Operational Excellence (say 100%) if we start at 50%?*



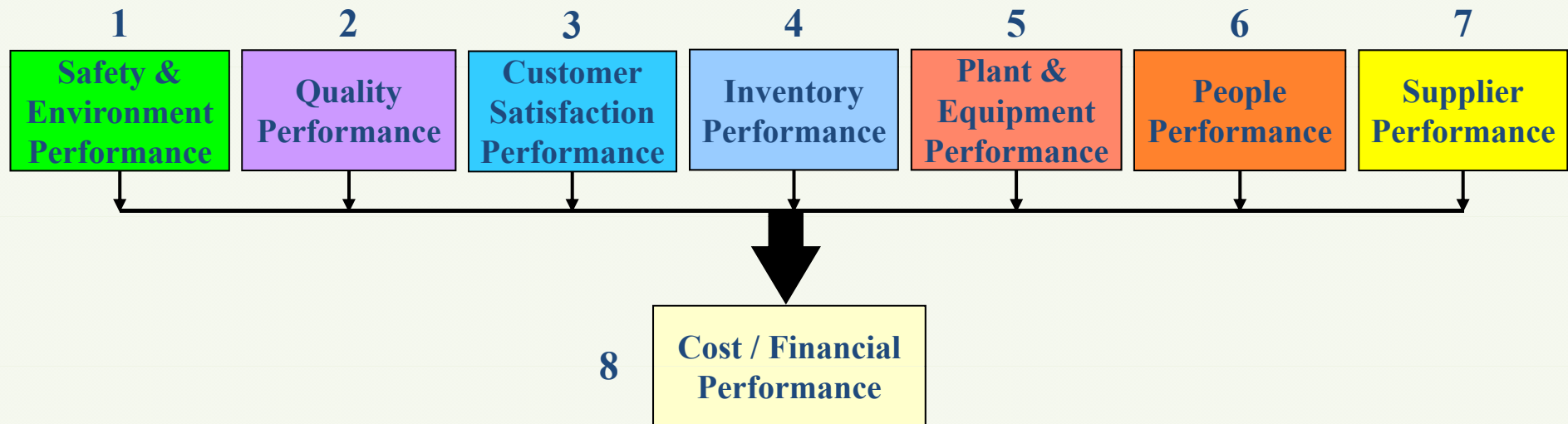
## 4. Setting Pro-active Improvement Targets (cont)

### 2. What should be your World Class / Ops Excellence target?

- A. Establish Key Success Factors for Operations
- B. Establish relevant Performance Measures linked to the Key Success Factors
- C. Baseline Current Performance
- D. Establish World Class Timeframe
- E. Establish World Class Targets for your Timeframe
- F. Establish Yearly Targets by Extrapolating
- G. Establish Cycle or 4 monthly Targets by Extrapolating

## A. Establish Key Success Factors for Operations

### *‘Cause’ Key Success Factors*



### *‘Effect’ Key Success Factor*

## B. Establish relevant Performance Measures linked to the Key Success Factors

Key Success Factors	Performance Measuring	Definitions			
Safety & Environment	Lost Time Injury Freq Rate	Per million man hrs			
	Med Treat Injury Freq Rate	Per million man hrs			
	Environmental Incidents	Incidents per year			
Quality	Scrap	% of Total Processed			
	Rework	% Hrs / wk			
	Yield	% Recovery			
Customer Satisfaction	Delivery to Customer	DIFOTQ			
	Customer Complaints (Ext)	Complaints - ppm			
	Achievement of Prod Plan	% Achieved			
Plant & Equipment	OEE (if applicable)	HLOEE Equation			
	Capacity	Output / Week			
People	Productivity	Good Output / Emp Hrs			
	Unplanned Absenteeism	% hrs worked			
	On-going CI Time	% hrs / worked hrs			
Inventory / Working Capital	Raw Materials Inventory	Days of Sales			
	Work In Progress Inventory	Days of Sales			
	Finished Goods Inventory	Days of Sales			
Supplier Performance	On Time Delivery	% Avg All Items			
	Quality Issues	% of Items Purchased			
Costs	Maint Cost	\$ / tonne			
	Energy Cost	\$ / tonne			
	Total Cost / Output	\$ / tonne			

## C. Baseline Current Performance

Key Success Factors	Performance Measuring	Definitions	Baseline Measures		
Safety & Environment	Lost Time Injury Freq Rate	Per million man hrs	18		
	Med Treat Injury Freq Rate	Per million man hrs	100		
	Environmental Incidents	Incidents per year	5		
Quality	Scrap	% of Total Processed	20%		
	Rework	% Hrs / wk	8%		
	Yield	% Recovery	90%		
Customer Satisfaction	Delivery to Customer	DIFOTQ	98%		
	Customer Complaints (Ext)	Complaints - ppm	50		
	Achievement of Prod Plan	% Achieved	89%		
Plant & Equipment	OEE (if applicable)	HLOEE Equation	60%		
	Capacity	Output / Week	160kt		
People	Productivity	Good Output / Emp Hrs	20		
	Unplanned Absenteeism	% hrs worked	5%		
	On-going CI Time	% hrs / worked hrs	1%		
Inventory / Working Capital	Raw Materials Inventory	Days of Sales	14		
	Work In Progress Inventory	Days of Sales	21		
	Finished Goods Inventory	Days of Sales	14		
Supplier Performance	On Time Delivery	% Avg All Items	75%		
	Quality Issues	% of Items Purchased	5%		
Costs	Maint Cost	\$ / tonne	\$0.60		
	Energy Cost	\$ / tonne	\$0.70		
	Total Cost / Output	\$ / tonne	\$9.50		

## D. Establish World Class Timeframe

Key Success Factors	Performance Measuring	Definitions	Baseline Measures		Year 5 Target
Safety & Environment	Lost Time Injury Freq Rate	Per million man hrs	18		
	Med Treat Injury Freq Rate	Per million man hrs	100		
	Environmental Incidents	Incidents per year	5		
Quality	Scrap	% of Total Processed	20%		
	Rework	% Hrs / wk	8%		
	Yield	% Recovery	90%		
Customer Satisfaction	Delivery to Customer	DIFOTQ	98%		
	Customer Complaints (Ext)	Complaints - ppm	50		
	Achievement of Prod Plan	% Achieved	89%		
Plant & Equipment	OEE (if applicable)	HLOEE Equation	60%		
	Capacity	Output / Week	160kt		
People	Productivity	Good Output / Emp Hrs	20		
	Unplanned Absenteeism	% hrs worked	5%		
	On-going CI Time	% hrs / worked hrs	1%		
Inventory / Working Capital	Raw Materials Inventory	Days of Sales	14		
	Work In Progress Inventory	Days of Sales	21		
	Finished Goods Inventory	Days of Sales	14		
Supplier Performance	On Time Delivery	% Avg All Items	75%		
	Quality Issues	% of Items Purchased	5%		
Costs	Maint Cost	\$ / tonne	\$0.60		
	Energy Cost	\$ / tonne	\$0.70		
	Total Cost / Output	\$ / tonne	\$9.50		

## **E. Establish World Class Targets for your Timeframe**

### **The 4 Methods of Setting your Targets**

1. Absolute Approach
2. Loss Analysis Approach
3. Benchmarking Best Practice
4. SPC Approach

## E. Establish World Class Targets for your Timeframe (cont)

### 1. Absolute Approach

Key Success Factors	Performance Measuring	Definitions	Baseline Measures		Year 5 Target
Safety & Environment	<b>Lost Time Injury Freq Rate</b>	Per million man hrs	18		0
	<b>Med Treat Injury Freq Rate</b>	Per million man hrs	100		0
	<b>Environmental Incidents</b>	Incidents per year	5		0
Quality	<b>Scrap</b>	% of Total Processed	20%		
	<b>Rework</b>	% Hrs / wk	8%		0%
	<b>Yield</b>	% Recovery	90%		
Customer Satisfaction	<b>Delivery to Customer</b>	DIFOTQ	98%		100%
	<b>Customer Complaints (Ext)</b>	Complaints - ppm	50		0
	<b>Achievement of Prod Plan</b>	% Achieved	89%		100%
Plant & Equipment	<b>OEE (if applicable)</b>	HLOEE Equation	60%		
	<b>Capacity</b>	Output / Week	160kt		
People	<b>Productivity</b>	Good Output / Emp Hrs	20		
	<b>Unplanned Absenteeism</b>	% hrs worked	5%		
	<b>On-going CI Time</b>	% hrs / worked hrs	1%		
Inventory / Working Capital	<b>Raw Materials Inventory</b>	Days of Sales	14		
	<b>Work In Progress Inventory</b>	Days of Sales	21		
	<b>Finished Goods Inventory</b>	Days of Sales	14		
Supplier Performance	<b>On Time Delivery</b>	% Avg All Items	75%		99.9%
	<b>Quality Issues</b>	% of Items Purchased	5%		0.1%
Costs	<b>Maint Cost</b>	\$ / tonne	\$0.60		
	<b>Energy Cost</b>	\$ / tonne	\$0.70		
	<b>Total Cost / Output</b>	\$ / tonne	\$9.50		

## E. Establish World Class Targets for your Timeframe (cont)

### 2. Loss Analysis Approach

Key Success Factors	Performance Measuring	Definitions	Baseline Measures		Year 5 Target
Safety & Environment	<b>Lost Time Injury Freq Rate</b>	Per million man hrs	18		0
	<b>Med Treat Injury Freq Rate</b>	Per million man hrs	100		0
	<b>Environmental Incidents</b>	Incidents per year	5		0
Quality	<b>Scrap</b>	% of Total Processed	20%		
	<b>Rework</b>	% Hrs / wk	8%		0%
	<b>Yield</b>	% Recovery	90%		
Customer Satisfaction	<b>Delivery to Customer</b>	DIFOTQ	98%		100%
	<b>Customer Complaints (Ext)</b>	Complaints - ppm	50		0
	<b>Achievement of Prod Plan</b>	% Achieved	89%		100%
Plant & Equipment	<b>OEE (if applicable)</b>	HLOEE Equation	60%		87%
	<b>Capacity</b>	Output / Week	160kt		230kt
People	<b>Productivity</b>	Good Output / Emp Hrs	20		
	<b>Unplanned Absenteeism</b>	% hrs worked	5%		
	<b>On-going CI Time</b>	% hrs / worked hrs	1%		
Inventory / Working Capital	<b>Raw Materials Inventory</b>	Days of Sales	14		
	<b>Work In Progress Inventory</b>	Days of Sales	21		
	<b>Finished Goods Inventory</b>	Days of Sales	14		
Supplier Performance	<b>On Time Delivery</b>	% Avg All Items	75%		99.9%
	<b>Quality Issues</b>	% of Items Purchased	5%		0.1%
Costs	<b>Maint Cost</b>	\$ / tonne	\$0.60		
	<b>Energy Cost</b>	\$ / tonne	\$0.70		
	<b>Total Cost / Output</b>	\$ / tonne	\$9.50		

## **E. Establish World Class Targets for your Timeframe (cont)**

### **3. Benchmarking Best Practice**

#### **Tangible Benefits of TPM<sup>3</sup> (Australasian TPM & Lean)**

Accidents:	Down: 90% - 100%
Customer Complaints:	Down: 50% - 75%
Scrap & Rework:	Down: 70% - 90%
Inventories & Stocks:	Down: 40% - 60%
Capacity / OEE:	Up: 25% - 100%
Productivity:	Up: 50% - 100%
Maintenance Costs:	Down: 25% - 50%
Total Operation Costs:	Down: 20% - 50%

## E. Establish World Class Targets for your Timeframe (cont)

### 3. Benchmarking Best Practice




Key Success Factors	Performance Measuring	Definitions	Baseline Measures		Year 5 Target
Safety & Environment	<b>Lost Time Injury Freq Rate</b>	Per million man hrs	18		0
	<b>Med Treat Injury Freq Rate</b>	Per million man hrs	100		0
	<b>Environmental Incidents</b>	Incidents per year	5		0
Quality	<b>Scrap</b>	% of Total Processed	20%		1%
	<b>Rework</b>	% Hrs / wk	8%		0%
	<b>Yield</b>	% Recovery	90%		
Customer Satisfaction	<b>Delivery to Customer</b>	DIFOTQ	98%		100%
	<b>Customer Complaints (Ext)</b>	Complaints - ppm	50		0
	<b>Achievement of Prod Plan</b>	% Achieved	89%		100%
Plant & Equipment	<b>OEE (if applicable)</b>	HLOEE Equation	60%		87%
	<b>Capacity</b>	Output / Week	160kt		230kt
People	<b>Productivity</b>	Good Output / Emp Hrs	20		40
	<b>Unplanned Absenteeism</b>	% hrs worked	5%		
	<b>On-going CI Time</b>	% hrs / worked hrs	1%		10%
Inventory / Working Capital	<b>Raw Materials Inventory</b>	Days of Sales	14		5
	<b>Work In Progress Inventory</b>	Days of Sales	21		3
	<b>Finished Goods Inventory</b>	Days of Sales	14		3
Supplier Performance	<b>On Time Delivery</b>	% Avg All Items	75%		99.9%
	<b>Quality Issues</b>	% of Items Purchased	5%		0.1%
Costs	<b>Maint Cost</b>	\$ / tonne	\$0.60		\$0.30
	<b>Energy Cost</b>	\$ / tonne	\$0.70		\$0.55
	<b>Total Cost / Output</b>	\$ / tonne	\$9.50		\$6.00

## E. Establish World Class Targets for your Timeframe (cont)

### 4. SPC Approach – Upper Control Limit

Key Success Factors	Performance Measuring	Definitions	Baseline Measures		Year 5 Target
Safety & Environment	<b>Lost Time Injury Freq Rate</b>	Per million man hrs	18		0
	<b>Med Treat Injury Freq Rate</b>	Per million man hrs	100		0
	<b>Environmental Incidents</b>	Incidents per year	5		0
Quality	<b>Scrap</b>	% of Total Processed	20%		1%
	<b>Rework</b>	% Hrs / wk	8%		0%
	<b>Yield</b>	% Recovery	90%		98%
Customer Satisfaction	<b>Delivery to Customer</b>	DIFOTQ	98%		100%
	<b>Customer Complaints (Ext)</b>	Complaints - ppm	50		0
	<b>Achievement of Prod Plan</b>	% Achieved	89%		100%
Plant & Equipment	<b>OEE (if applicable)</b>	HLOEE Equation	60%		87%
	<b>Capacity</b>	Output / Week	160kt		230kt
People	<b>Productivity</b>	Good Output / Emp Hrs	20		40
	<b>Unplanned Absenteeism</b>	% hrs worked	5%		1%
	<b>On-going CI Time</b>	% hrs / worked hrs	1%		10%
Inventory / Working Capital	<b>Raw Materials Inventory</b>	Days of Sales	14		5
	<b>Work In Progress Inventory</b>	Days of Sales	21		3
	<b>Finished Goods Inventory</b>	Days of Sales	14		3
Supplier Performance	<b>On Time Delivery</b>	% Avg All Items	75%		99.9%
	<b>Quality Issues</b>	% of Items Purchased	5%		0.1%
Costs	<b>Maint Cost</b>	\$ / tonne	\$0.60		\$0.30
	<b>Energy Cost</b>	\$ / tonne	\$0.70		\$0.55
	<b>Total Cost / Output</b>	\$ / tonne	\$9.50		\$6.00

## F. Establish Yearly Targets by Extrapolating

Linear	
Rapid Exponential	
Slow Exponential	



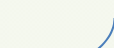
### Rapid Exponential

50%      x **25%** Improvement = 62.5%  
 62.5%    x **20%** Improvement = 75.0%  
 75.0%    x **15%** Improvement = 86.3%  
 86.3%    x **10%** Improvement = 94.9%  
 94.9%    x **05%** Improvement = 99.6%

### Slow Exponential




50%      x **05%** Improvement = 52.5%  
 52.5%    x **10%** Improvement = 57.8%  
 57.8%    x **15%** Improvement = 66.4%  
 66.9%    x **20%** Improvement = 79.9%  
 79.9%    x **25%** Improvement = 99.6%

## F. Establish Yearly Targets by Extrapolating

<b>Linear</b>	
<b>Rapid Exponential</b>	
<b>Slow Exponential</b>	

Key Success Factors	Performance Measuring	Definitions	Baseline Measures	Year 1 Target	Year 2 Target	Year 3 Target	Year 4 Target	Year 5 Target
Safety & Environment	Lost Time Injury Freq Rate	Per million man hrs	18	15	12	9	5	0
	Med Treat Injury Freq Rate	Per million man hrs	100	80	60	40	20	0
	Environmental Incidents	Incidents per year	5	4	3	2	1	0
Quality	Scrap	% of Total Processed	20%	15%	11%	8%	4%	1%
	Rework	% Hrs / wk	8%	6%	4%	2%	1%	0%
	Yield	% Recovery	90%	91%	92%	94%	96%	98%
Customer Satisfaction	Delivery to Customer	DIFOTQ	98%	98%	99%	100%	100%	100%
	Customer Complaints (Ext)	Complaints - ppm	50	40	30	20	10	0
	Achievement of Prod Plan	% Achieved	89%	92%	94%	96%	98%	100%
Plant & Equipment	OEE (if applicable)	HLOEE Equation	60%	70%	75%	80%	85%	87%
	Capacity	Output / Week	160kt	185kt	200kt	210kt	225kt	230kt
People	Productivity	Good Output / Person Hrs	20	23	26	30	35	40
	Unplanned Absenteeism	% hrs worked	5%	4%	3%	2%	1%	1%
	On-going CI Time	% hrs / worked hrs	1%	2%	4%	6%	8%	10%
Inventory / Working Capital	Raw Materials Inventory	Days of Sales	14	13	11	9	7	5
	Work In Progress Inventory	Days of Sales	21	17	13	9	5	3
	Finished Goods Inventory	Days of Sales	14	12	10	8	5	3
Supplier Performance	On Time Delivery	% Avg All Items	75%	80%	85%	90%	95%	99.9%
	Quality Issues	% of Items Purchased	5%	4%	3%	2%	1%	0.1%
Costs	Maint Cost	\$ / tonne	\$0.60	\$0.55	\$0.50	\$0.45	\$0.35	\$0.30
	Energy Cost	\$ / tonne	\$0.70	\$0.68	\$0.65	\$0.60	\$0.58	\$0.55
	Total Cost / Output	\$ / tonne	\$9.50	\$9.00	\$8.00	\$7.00	\$6.50	\$6.00

## G. Establish Cycle or 4 monthly Targets by Extrapolating

Linear	
Rapid Exponential	
Slow Exponential	

Key Success Factors	Performance Measuring	Definitions	Baseline Measures	Cycle 1 Target	Cycle 2 Target	Year 1 Target
Safety & Environment	Lost Time Injury Freq Rate	Per million man hrs	18	17	16	15
	Med Treat Injury Freq Rate	Per million man hrs	100	95	88	80
	Environmental Incidents	Incidents per year	5	4.6	4.3	4
Quality	Scrap	% of Total Processed	20%	18%	16%	15%
	Rework	% Hrs / wk	8%	7.4%	6.7%	6%
	Yield	% Recovery	90%	90.3%	90.7%	91%
Customer Satisfaction	Delivery to Customer	DIFOTQ	98%	98%	98%	98%
	Customer Complaints (Ext)	Complaints - ppm	50	47	43	40
	Achievement of Prod Plan	% Achieved	89%	90%	91%	92%
Plant & Equipment	OEE (if applicable)	HLOEE Equation	60%	63%	67%	70%
	Capacity	Output / Week	160kt	168kt	176kt	185kt
People	Productivity	Good Output / Person Hrs	20	21	22	23
	Unplanned Absenteeism	% hrs worked	5%	4.7%	4.3%	4%
	On-going CI Time	% hrs / worked hrs	1%	1.3%	1.6%	2%
Inventory / Working Capital	Raw Materials Inventory	Days of Sales	14	13.6	13.3	13
	Work In Progress Inventory	Days of Sales	21	20	18.5	17
	Finished Goods Inventory	Days of Sales	14	13.3	12.7	12
Supplier Performance	On Time Delivery	% Avg All Items	75%	77%	79%	80%
	Quality Issues	% of Items Purchased	5%	4.7%	4.3%	4%
Costs	Maint Cost	\$ / tonne	\$0.60	\$0.58	\$0.56	\$0.55
	Energy Cost	\$ / tonne	\$0.70	\$0.69	\$0.68	\$0.68
	Total Cost / Output	\$ / tonne	\$9.50	\$9.40	\$9.30	\$9.00

## 5. Displaying your Targets

- All measures should be displayed to a site standard
- Where possible the target should be a sloping line to indicate the need for improvement
- Reporting should be to a set timeframe

**Reactive:**      Daily      Number plus Run Chart for the month

LINE	PRODUCT	TARGET 70% OEE			ACTUAL TONNES PACKED			ACTUAL O.E.E	HIT OR MISS
		DAY	NIGHT	TOTAL	DAY	NIGHT	TOTAL		
L20	1 KG	35	35	70	26	21	47	47	●
L21	1 KG	40	38	78	10	34	44	40	●
L22	5 KG	86	86	172	77	72	149	61	●



## 5. Displaying your Targets

- All measures should be displayed to a site standard
- Where possible the target should be a sloping line to indicate the need for improvement
- Reporting should be to a set timeframe

**Pro-active:**      Weekly      Bar Chart for 4 months or 6 months



## 6. Summary

	<b>Reactive</b>	<b>Pro-active</b>
Target	Budget	Perfection
Focus	Annual	5 years
Reporting	Daily	Weekly
Display	Number + Run Chart	Bar Chart – colour coded

# Final Word

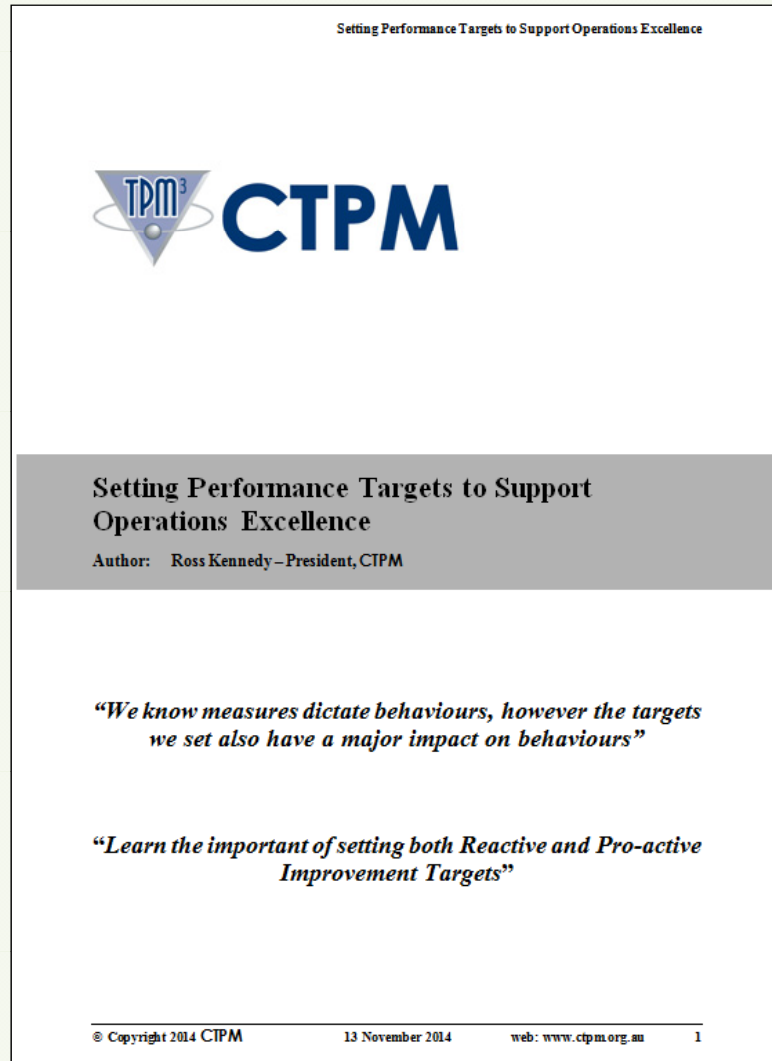
## *Measures dictate Behaviour*



**If you have the wrong measures or the wrong targets,  
you will get the wrong behaviours**

# How can we help?

[www.ctpm.org.au](http://www.ctpm.org.au)



Watch out for our 2015 Training calendar – to be released shortly or

Contact CTPM if you would like find out more about our extensive range of in-house or host workshops

Review past webinars on our webpage / YouTube



# Question Time



Presentation by:  
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