

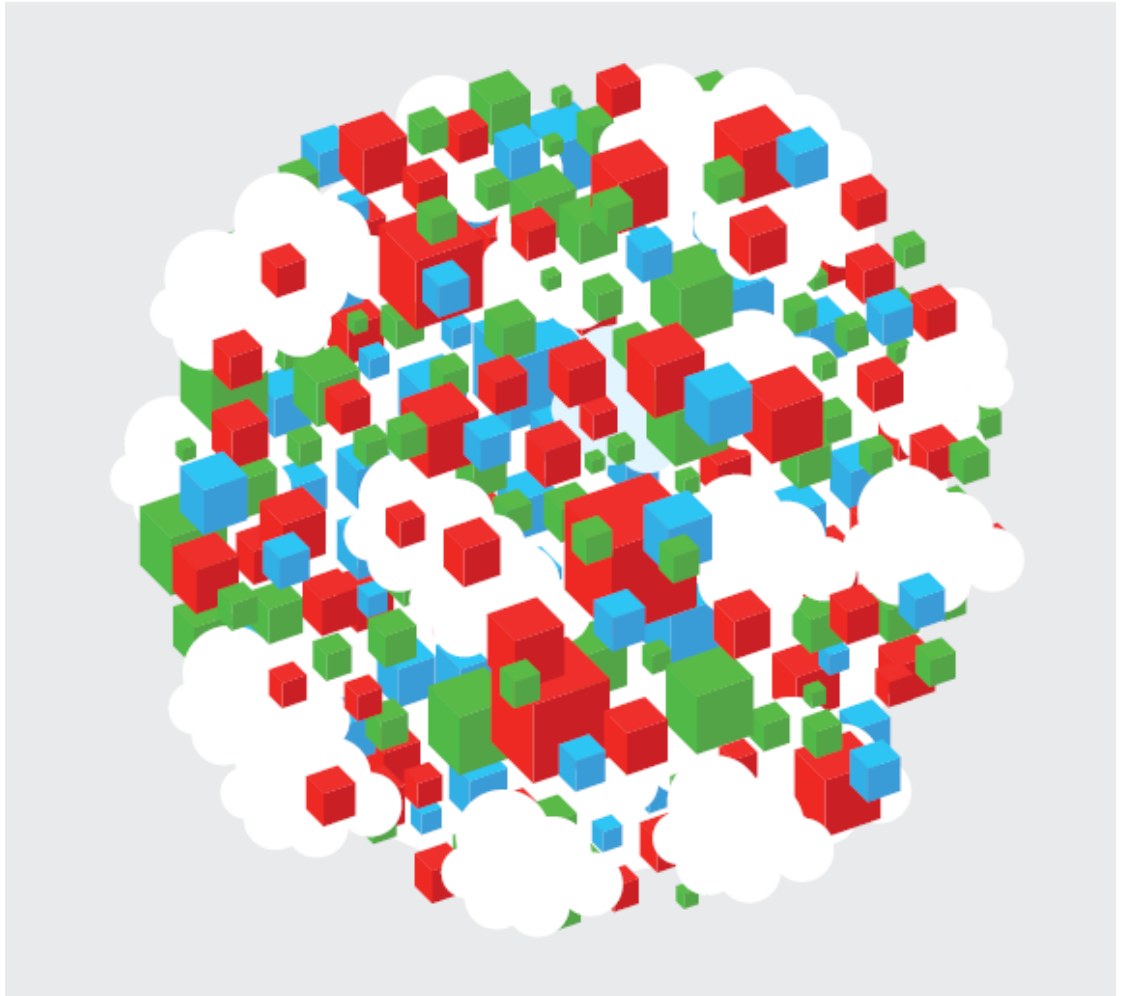


www.maintenance.tv

A major advance for engineering & technical services

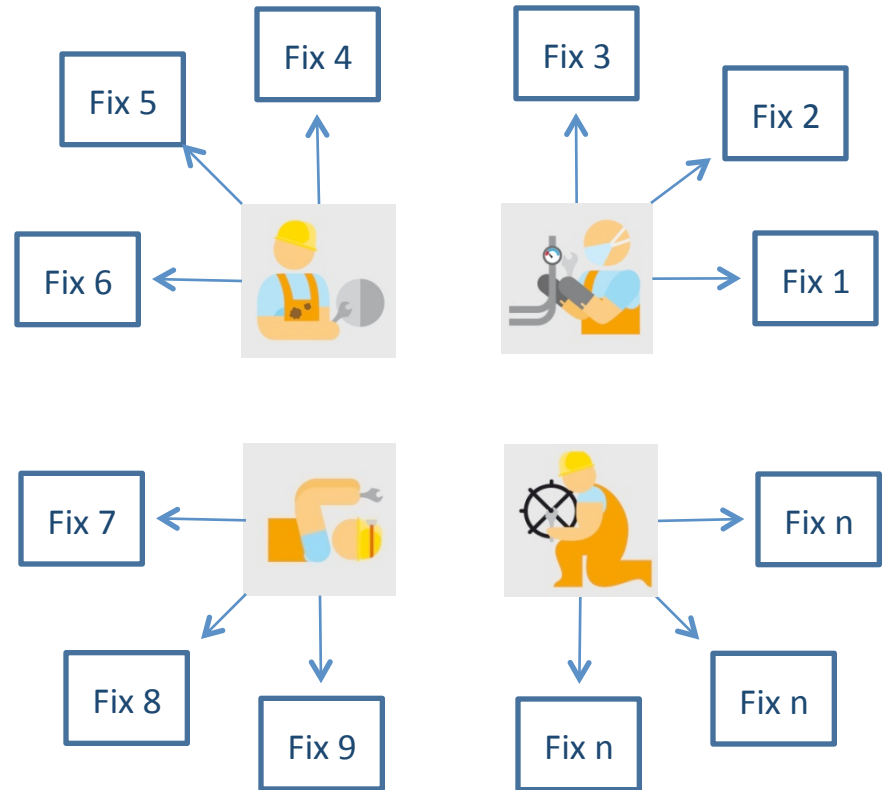
Downtime & repair costs are excessive: Knowhow will drive them down. Mtv is an innovative way to capture, share & apply knowhow for vastly improved performance

- Cost savings of over 10%
- Significantly increased equipment performance



First time fix – how much is it costing you *not* to get it right first time?

- Given a problem, alarm, breakdown
- How many tries, swaps, change-outs, repeat failures are required before the problem is fixed?
- What is the cost of errors, lack of knowhow?
- Perfection is the goal: First Time Fix



1 000's of failures, 10 000's of possible fixes.
Right first time – how many times on average?
How much do repetitive failures cost the organisation?



Repeat fixes generate several costs and are significant



Admin



Parts & materials



Time & travel, to go back and do it again

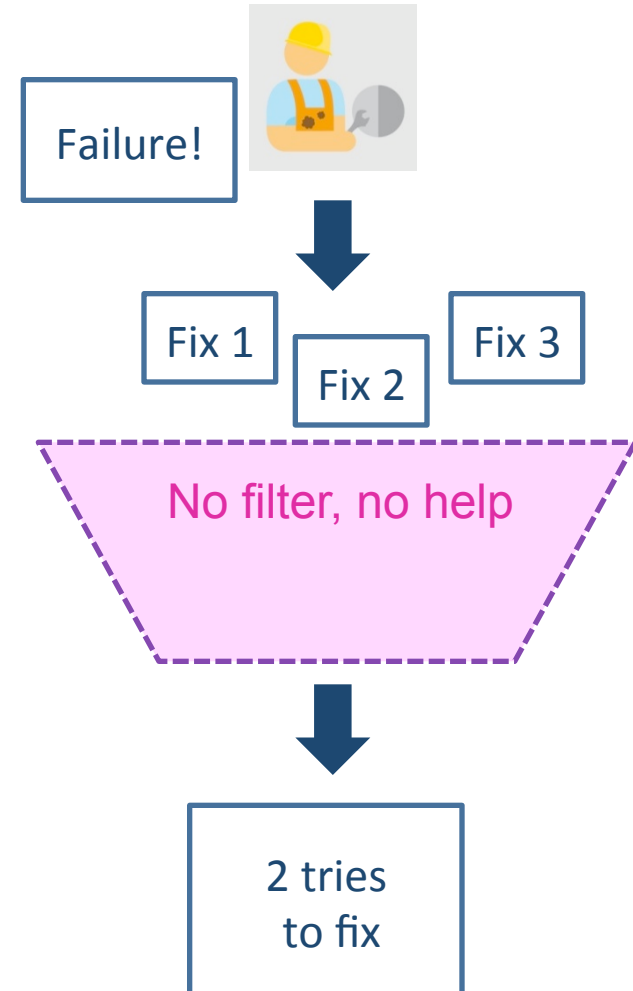


Lost equipment performance

Scenario 1: A failure & 3 possible fixes. No indication of the right one

- On average, it will require 2 attempts to make the fix*
- Costs = time, parts, admin equipment performance loss

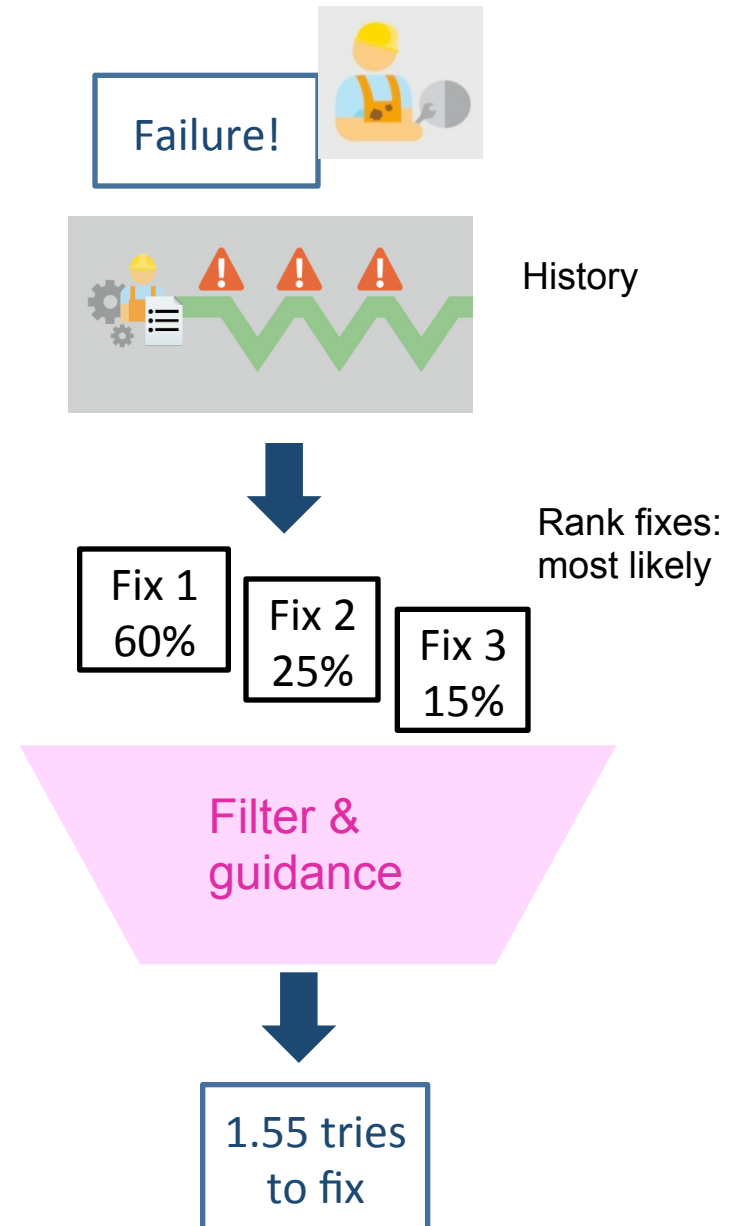
1. Working with no guidance



Scenario 2: Study the history, rank fixes with probability, experience

- Technician is guided to the most likely fix:
 - Fix 1 is right 60% of the time
 - Fix 2 is right 25% of the time...
- Repeat fix rate is reduced, to 1.55 tries on average *
- Costs reduced 22.5 %
- But costs are still 55% above excellence

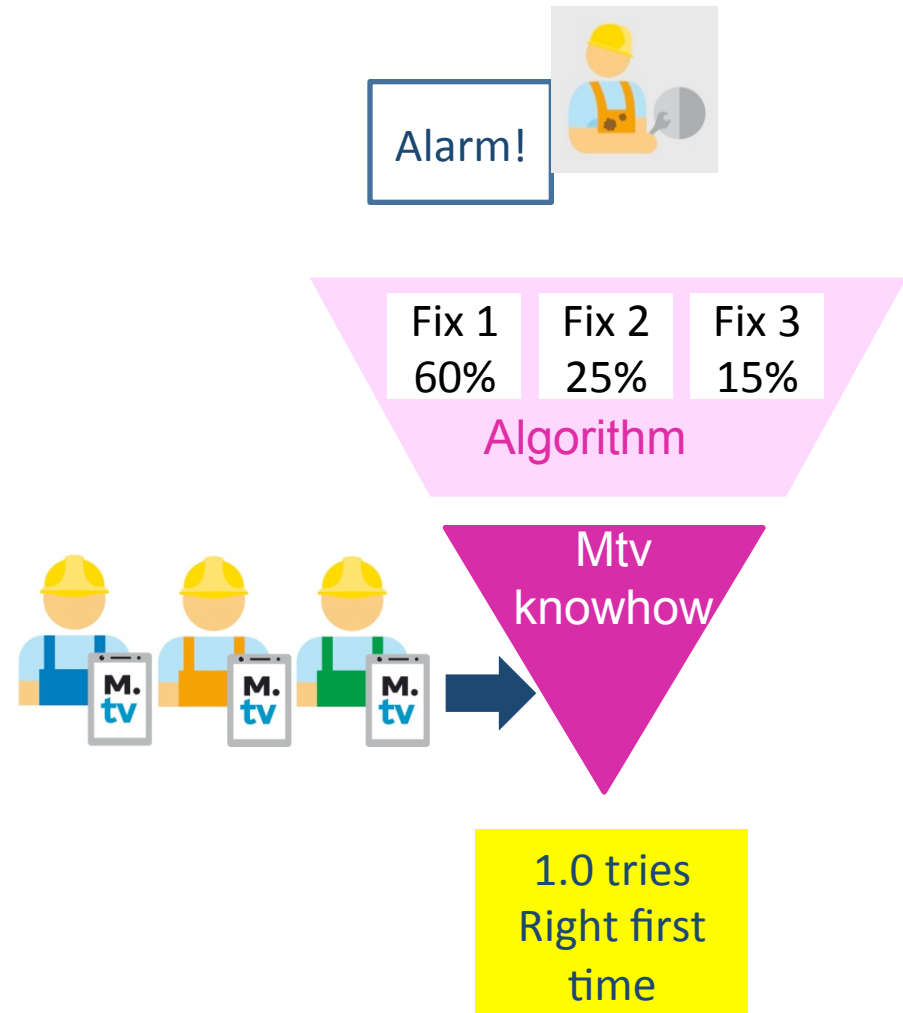
2. Working with probability



Scenario 3 – Mtv solution:

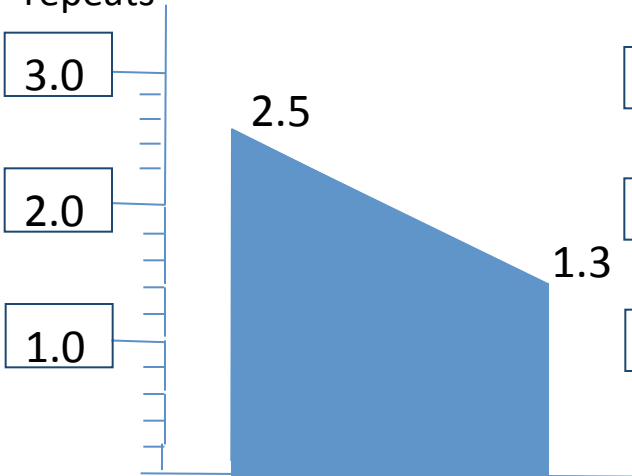
- History & experience = probability
- Mtv algorithm for quickest, least cost path to a fix
- Adds all internal (and external) expertise to refine decisions & procedures further
- First time fix becomes possible
- Costs reduced another 35%

3. Probability + knowhow



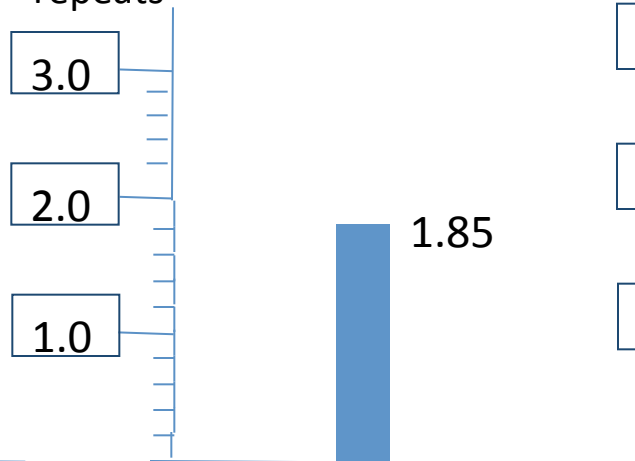
Repeat fix rates across industries - examples

Number of repeats



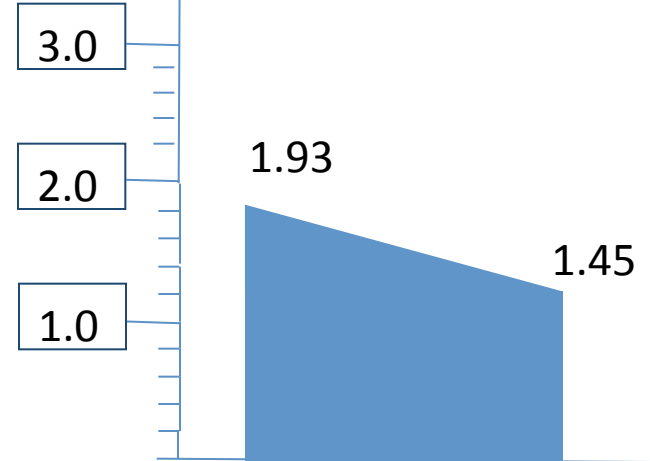
ExiM Filling – 250 plants in 40 countries, between 1.3 & 2.5

Number of repeats



One of world's largest software support centres, 1.85

Number of repeats



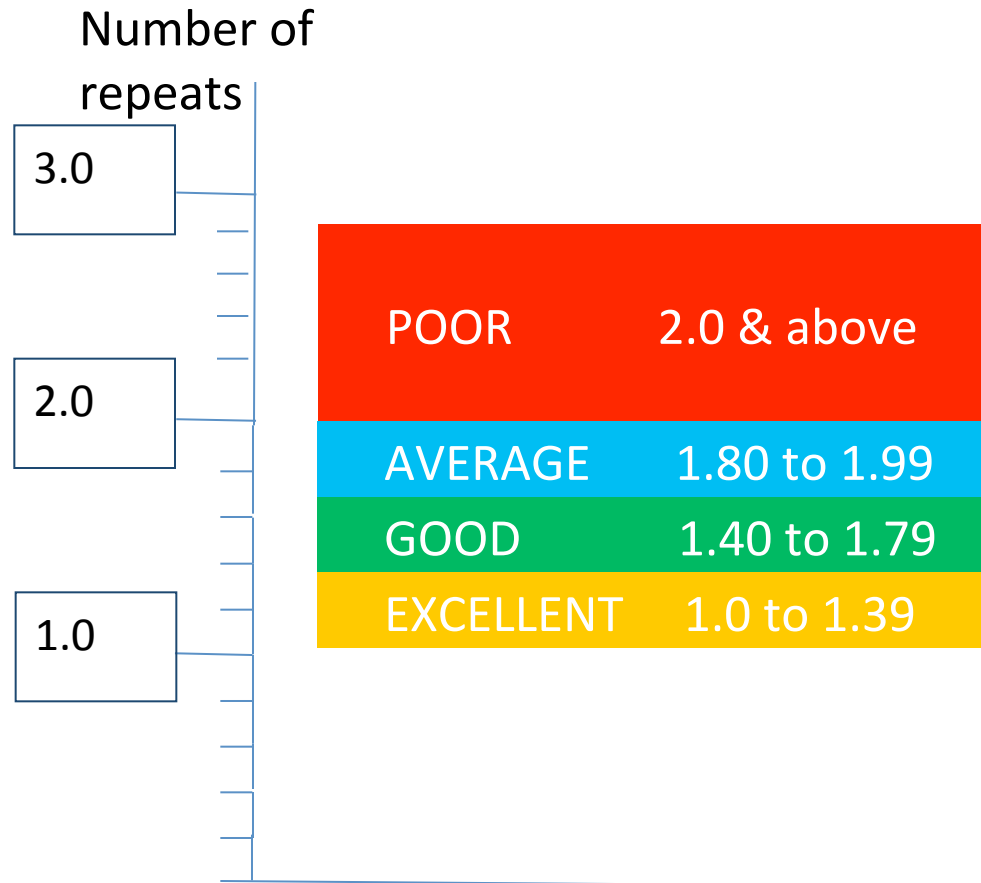
Plants in cement industry, 1.45 to 1.93

Excellence means knowhow, your organisation has all the knowhow it needs for superior performance



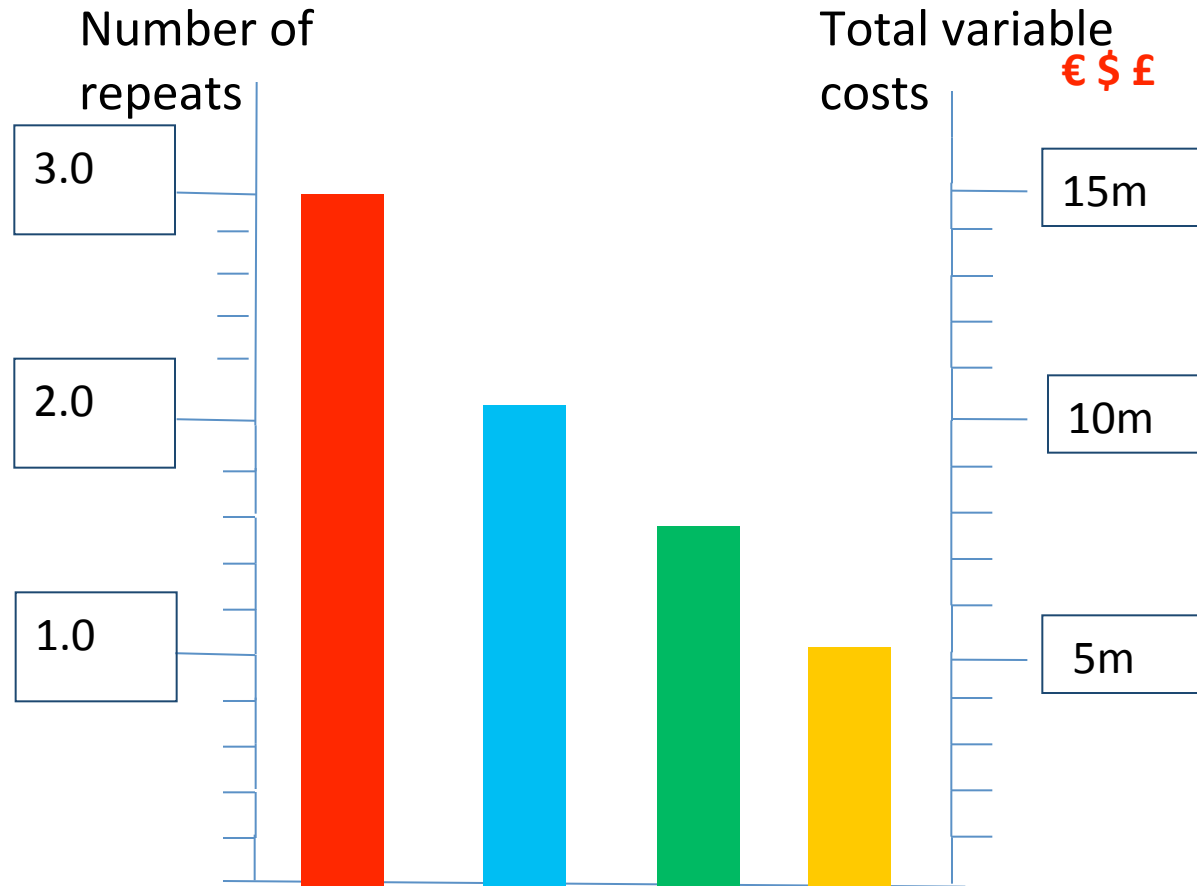
For bibliography & sources of info see last slide

Rough Guide, varies across industries



Costs at different repeat rates

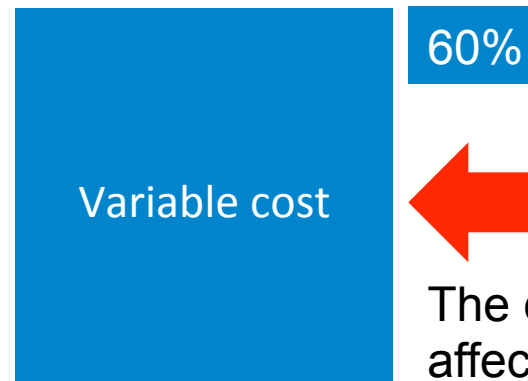
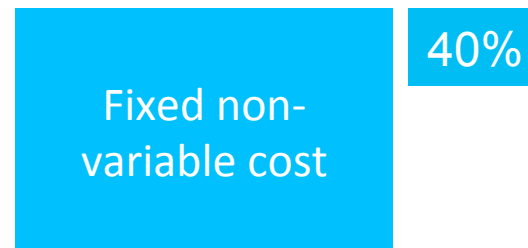
Assumed total variable costs right-hand scale



What % of costs can be affected by reduced errors and repeat fix?

- Say 60% of total service costs are variable
 - Fixed costs = however good the maintenance is these costs remain
 - Variable = the workload that can be impacted by higher levels of expertise/knowhow/skills
- Impact on variable costs by knowhow & expertise can be very high...

Total maintenance costs



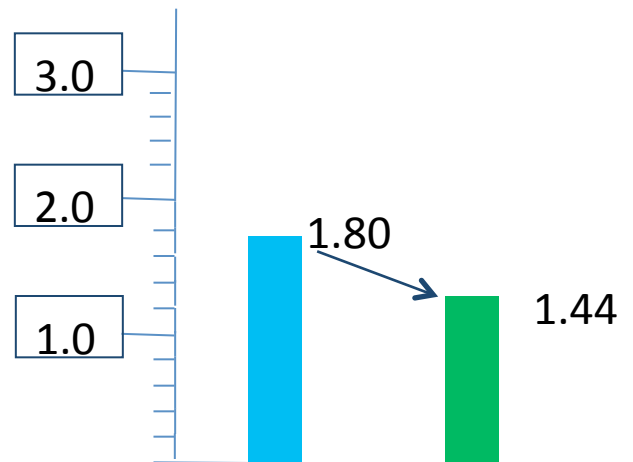
A model of savings

Assumption 1: Variable costs are 60% of total service costs

Total service costs		10,000,000
1) Fixed, non variable costs	4 000 000	
2) Variable costs	6 000 000	

Assumption 2: Actual repeat fix rate is Average at 1.80

With Mtv it is improved to Good, 1.44



The improvement is
20%
= 1 200 000 savings
on variable costs

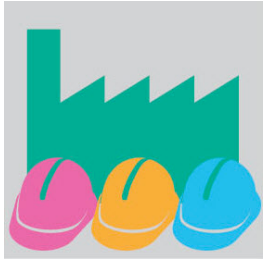
Timeline of savings

Variable cost target		6 000 000
Target on variable costs of 20% (moving from average 1.80 to good 1.44)		1,200,000
Year 1, achieve 30% of target	Per Q = 90,000	360,000
Year 2, achieve 45% of target	Per Q = 135,000	540,000
Year 3, achieve 25% of target	Per Q = 75,000	300,000

Payback details in Euros

Mtv Pilot: Set up & preparation costs (internal + external)	20 000	Assume PCs, smartphones already available, no other capital costs.			
Assume 100 technicians , Mtv cost € 30 per month	36 000	Annual costs , includes Server, computing, security, backup...			
	Yr 0 Mtv Pilot	Yr 1	Yr 2	Yr3	Totals
Costs	20 000	36 000	36 000	36 000	128 000
Variable cost reductions	0	360 000	540 000	300 000	1 200 000
Cumulative Gain	-20 000	304 000	808 000	1 072 000	
				Total Gain	1 072 000

But Mtv brings other benefits & savings



A. Health, Safety, Environment

- less incidents
- higher awareness
- Mtv docs have illustrated warnings

B. Management

- better control
- higher visibility
- less wasted time

C. Collaboration

- team working
- raised skills
- higher motivation

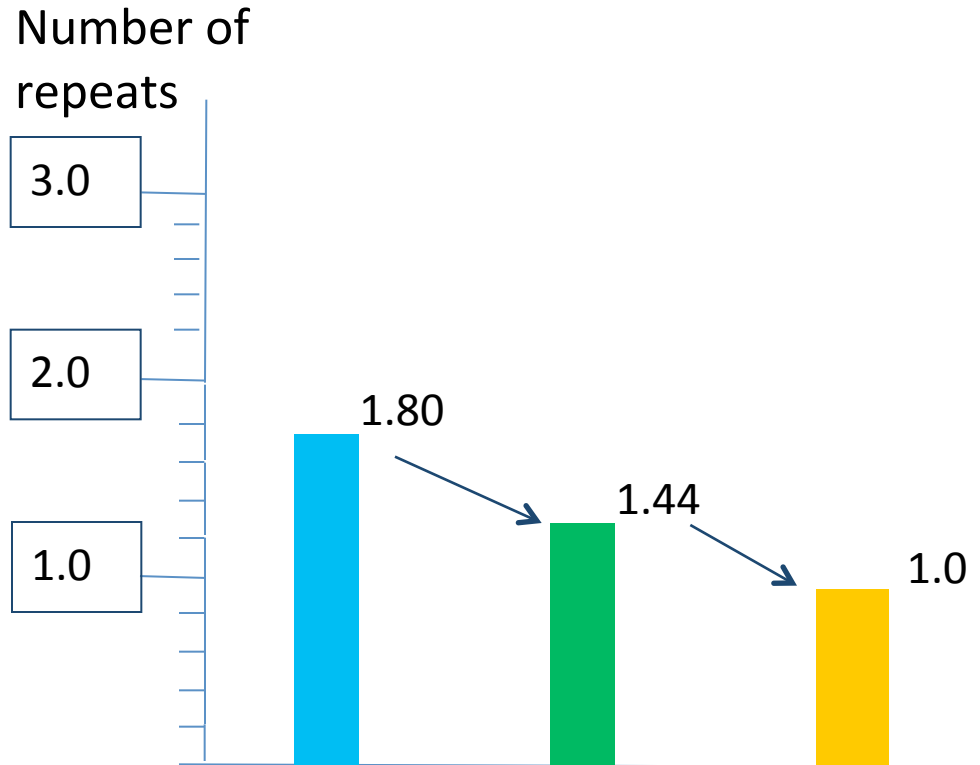
D. Other savings

- 5%? 10%? 15%?

	Previous	Savings	New
Total Costs	10,000,000		
1) Repeat fix rate reduction		- 1 072 000	8 928 000
2) Additional savings from A, B, C, D....?		500 000? 1 000 000?	8 000 000 ?

But what if you are already good?

- Answer: even at 1.44 the variable costs are 44% above theoretical
- Further reductions bring more cost savings, better knowhow
- Savings that Mtv can help you achieve



Calculating repeat failure rates

- The formula for random selection of options is $(N+1)/2$ where N is the number of options
- Further reductions bring more cost savings, better knowhow
- Savings that Mtv can help you achieve

Industry sources for repeat failures

- The ExiM Study was carried out by the founders of Mtv during the 1990's. Data on over 250 filling plants worldwide was collected and analysed. The data represents thousands of filling lines
- The data for the Call Centre of a major American software company was likewise carried out by persons close to Mtv, who is also an expert in this area
- The cement industry data was given informally to Mtv.

The variable cost element of total costs will vary. For instance, for a site or a location a minimum number of people are required, whatever the workload. Such costs are fixed. Variable costs will grow as the maintenance needs grow over and above the minimum required resources. Variable costs are thus directly related to productivity.