Considering Human Factors in Practice

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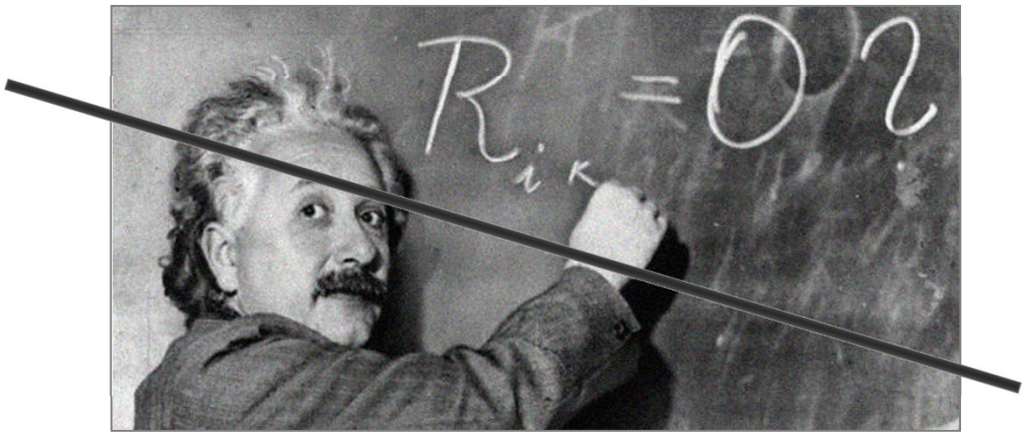
Rio Tinto Iron Ore

2016 CME Safety & Health Innovation Awards

People Category



Rio Tinto

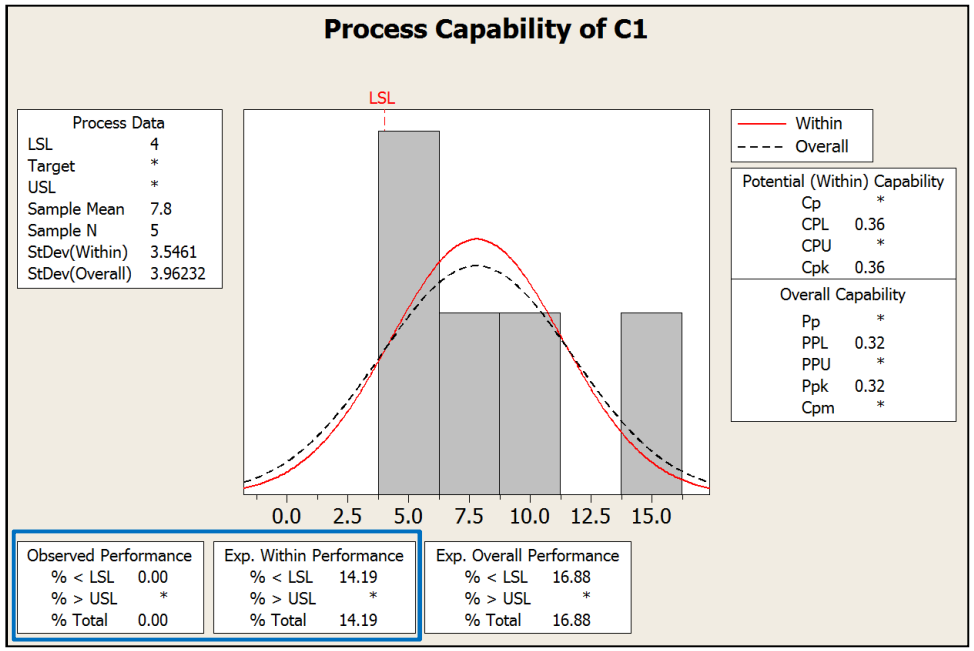
1.1 – Preventing human failure

7.0 – Designing for people

The context…

How would we go about doubling our production?

How would we go about halving our operating costs?



- 0% of historic performance less than target
- Probability of success: 14.2%
- Worse than a 1 in 7 chance

If you had a 1 in 7 chance of hitting your production target for the year would you do the same things that you've always done?

What should we do differently?

DMAIC Kaizen – Safety Focus

DMAIC Kaizen

- 5 days
- Full time
- Frontline personnel
- Subject Matter Experts
- The people with the money
- Try-storming
- Large investment
- Lot of preparation

DMAIC Kaizen

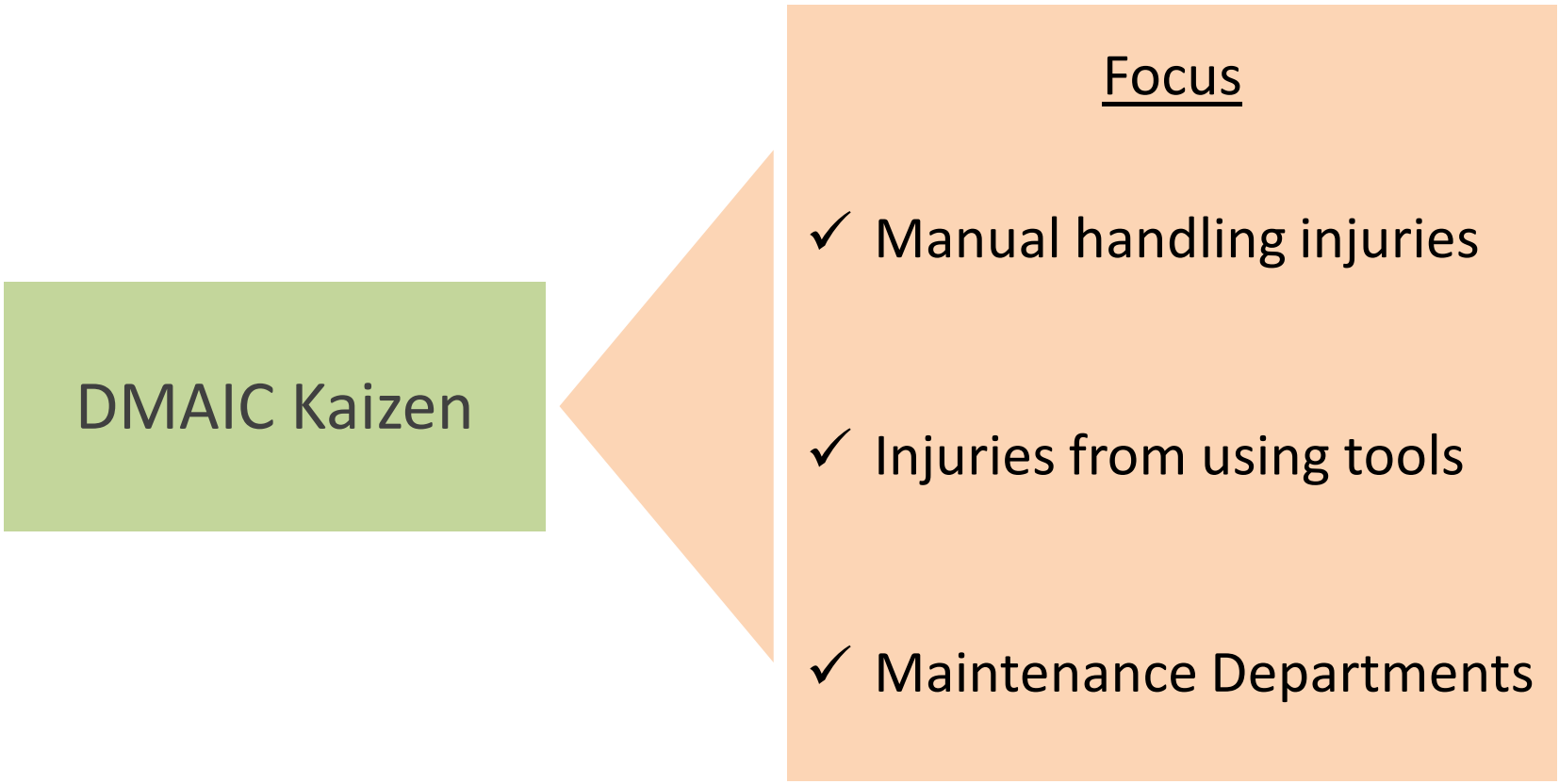
Data

WA Mining – 60d+ LTI: 2003-2009

WA Mining – 60d+ LTI: 2009–2013

Site – All injuries previous year

Site – All recordables last 5 years


DMAIC Kaizen
Focus
✓ Manual handling injuries
✓ Injuries from using tools
✓ Maintenance Departments

YANDI LEADERSHIP INFORMATION CENTRE
SPOTLIGHT
WEEK IN PROGRESS

1.1 – Preventing human failure

7.0 – Designing for people

1.1 – Preventing human failure

‘Guys we’re going to look at how to stop people getting hurt when using tools.’

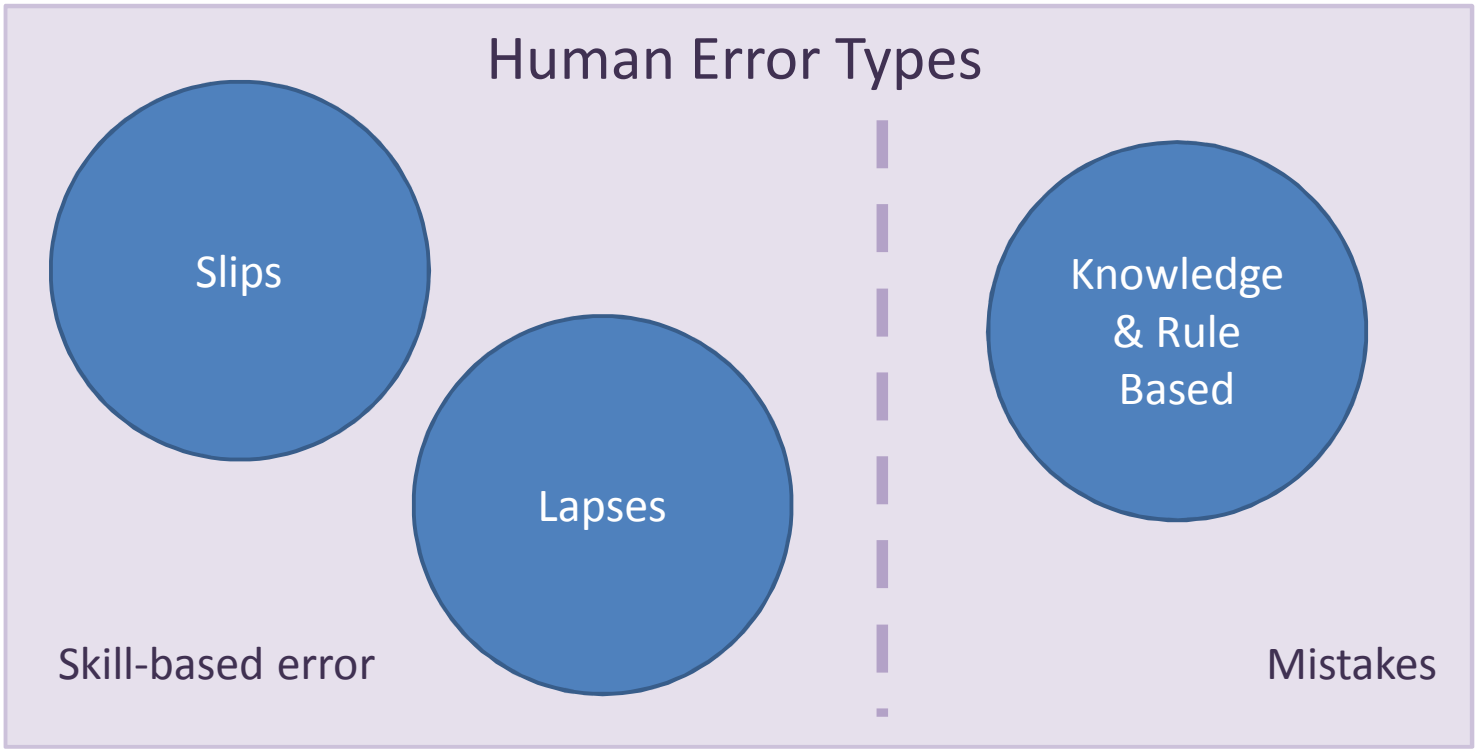
1.1 – Preventing human failure

‘If they were decent tradespeople they wouldn’t get hurt.’

1.1 – Preventing human failure

‘They clearly need more training.’

1.1 – Preventing human failure → Need to understand human failure



Tooling Injuries

Question 1: When people get hurt using tools are they normally doing a familiar task or something they've never done before?

Question 2: Is it experienced or inexperienced people who hurt themselves with tools?

Tooling Injuries

- What does this mean?
- *When we're trying to stop tooling injuries we need to find a way to stop the 1 time in 10,000 that skilled workers make mistakes.*

How people get things wrong

There's different ways:

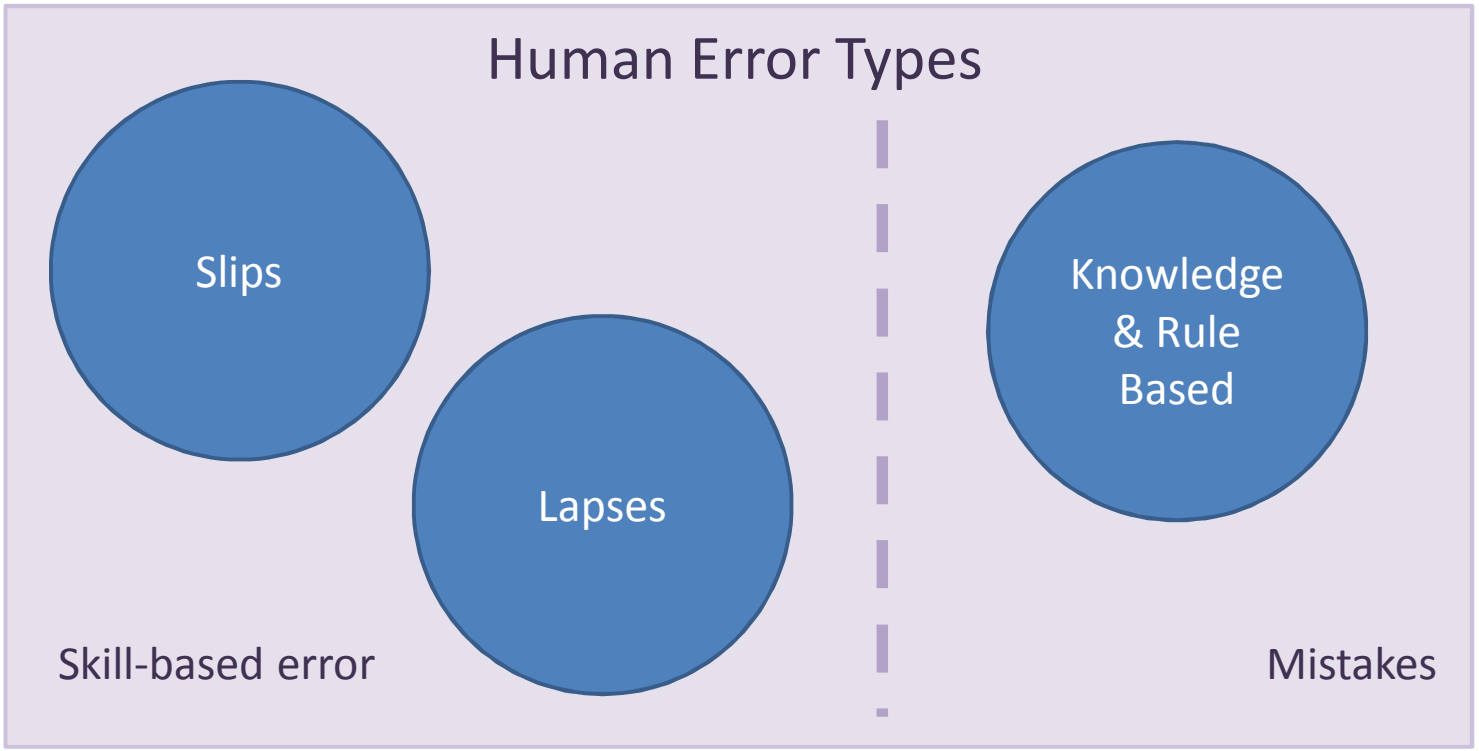
ACCURACY & CONTROL

What the smart people say

- These mistakes involve a simple, frequently performed physical action going wrong.

- They are often made by experienced, highly-trained, well motivated staff: additional training is not valid.

1.1 – Preventing human failure → Need to understand human failure



1.1 – Preventing human failure

7.0 – Designing for people

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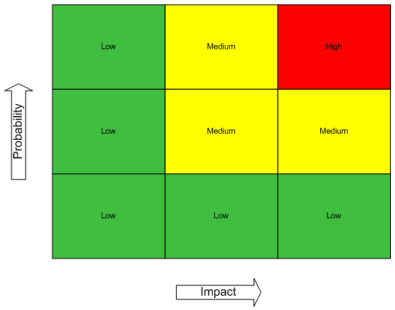
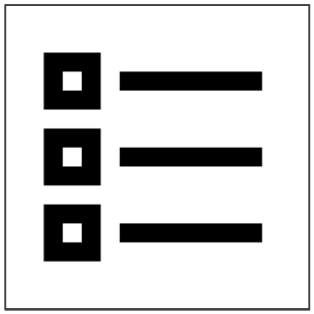
Provide baseline understanding

7.0 – Design for people

Choose your weapon



Risk Matrix ?



Snook's Liberty Mutual Tables

Company Tool

NIOSH Lifting Equation

7.0 – Design for people

Quantify baseline and set the challenge

Before

35kg overhead lift*:
- Safe for 28% male and 0% females

ErgoAnalyst:
- Shoulder Exertion – **Maximum**
- Acute Score – **Highest Possible (12)**

Hands: 'Not a time when you don't hurt them' – *Multiple Maintainers*

7.0 – Design for people

Quantify the end result and compare

Before

35kg overhead lift*:
- Safe for 28% male and 0% females

ErgoAnalyst:
- Shoulder Exertion – **Maximum**
- Acute Score – **Highest Possible (12)**

Hands: 'Not a time when you don't hurt them' – *Multiple Maintainers*

After

<5kg manoeuvring force:
- Safe for >95% male and females

ErgoAnalyst:
- Shoulder Exertion – **Low**
- Acute Score – **Moderate (5)**

Hands: Very low. Crush risk eliminated.

Predictor
lotto
RIDLEY

Takeaways

- Human Error
  - There are benefits in using these frameworks in our business.
  - This information can be easily understood by frontline personnel – it does not need to exist only in the realm of our health and safety teams.

Takeaways

- Design for people
  - Really? Prove it.
  - Choose the appropriate weapon.
  - Codify and quantify. Improve. Repeat.
  - Design for people, not for human bodies.