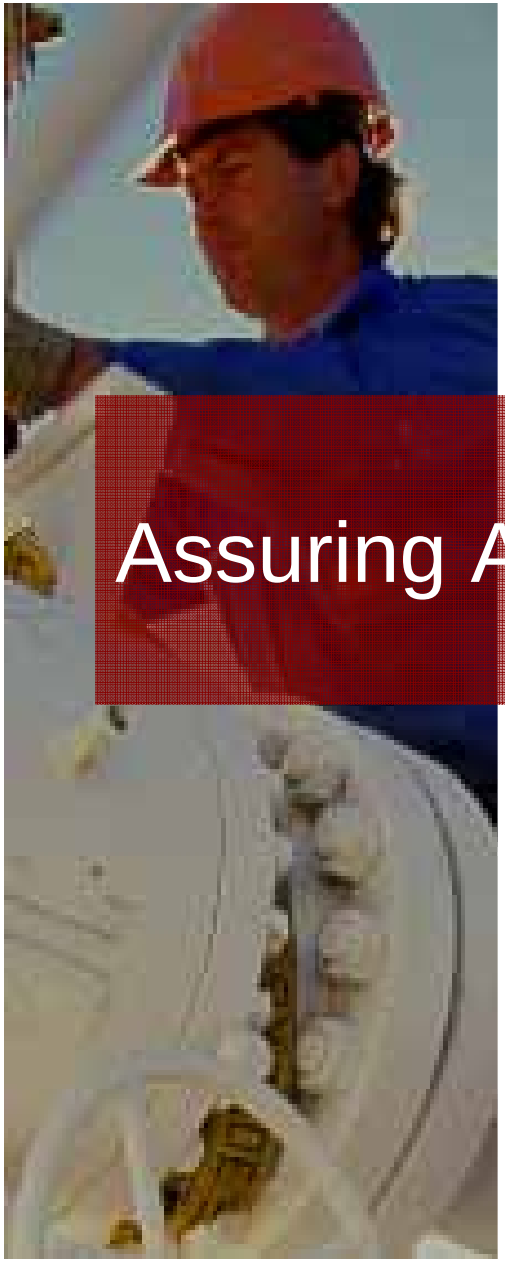

ASSET MANAGEMENT COUNCIL

Assuring Asset Integrity

A lifecycle approach

Jim Kennedy
National Chair
Asset Management Council
Australia

What is AM Council?

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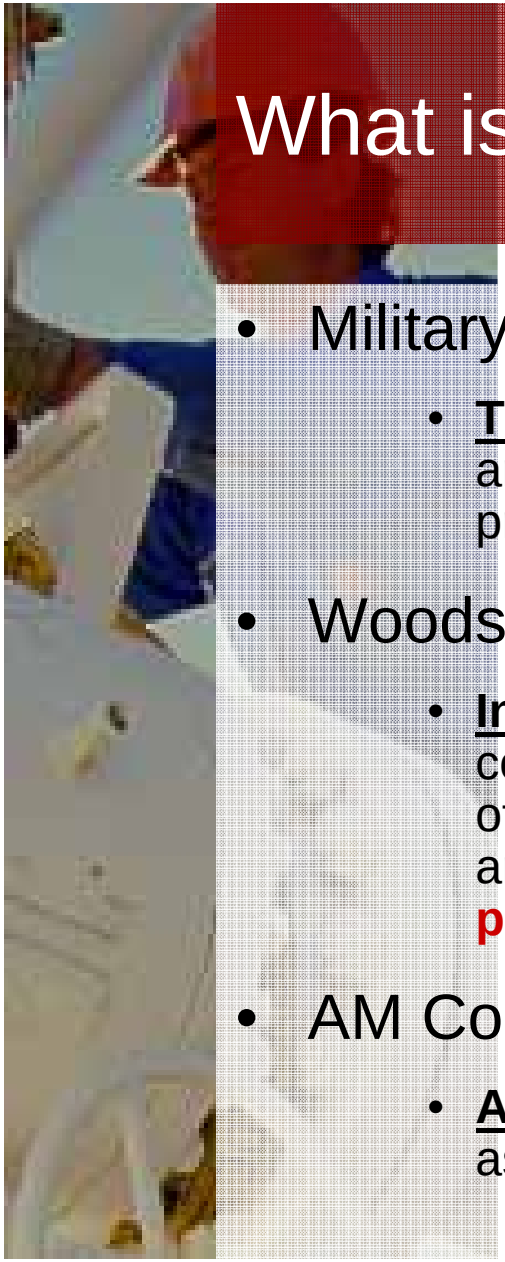
- Learned society in Engineers Australia
  - 1300 individual members
  - 117 corporate members
  - 1 Supporter – Silcar (more in pipeline)
  - Patron – Transfield Services
- Focussed on whole life asset management through an
  - AM Definition
  - AM Framework model
  - AM Technologies model



What is integrity management?

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- Military
  - **Technical integrity.** An item's **fitness-for-service**, **safety** and compliance with regulations for **environmental** protection
- Woodside –Shell
  - **Integrity.** Achieved when, under specified operating conditions the **risk of failure** that would endanger the safety of personnel, the environment or asset value is **tolerable** and has been reduced to **as low as reasonably practicable**.
- AM Council
  - **Asset Management.** **Lifecycle management** of physical assets to achieve the **stated outputs** of the enterprise

AM - A lifecycle approach

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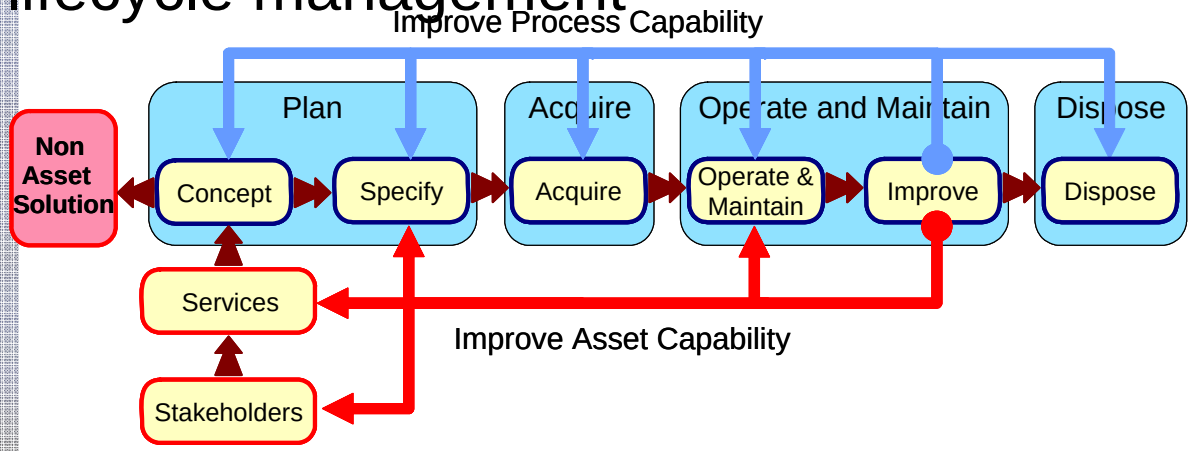
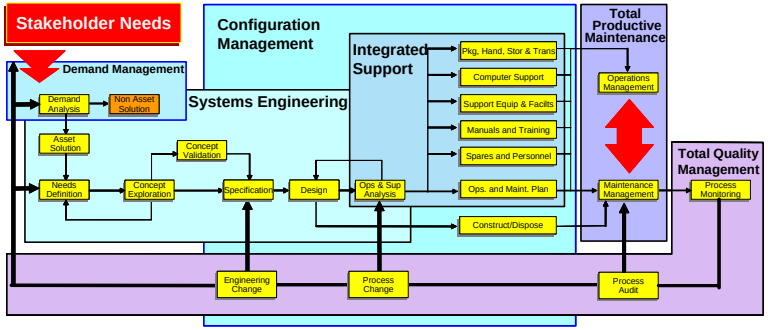
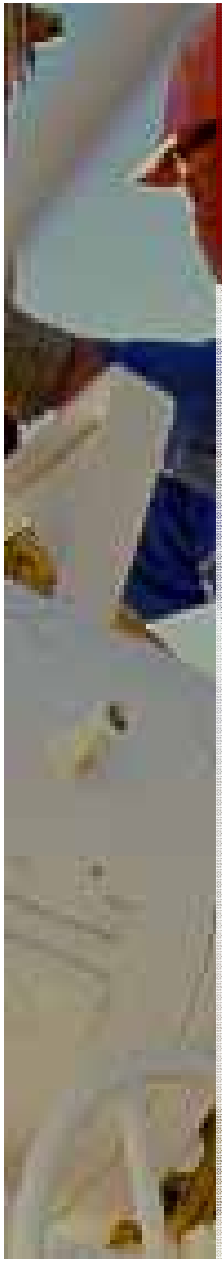
- Asset lifecycle management



- Achieved through a core technical process





AM/IM – Is there a difference?

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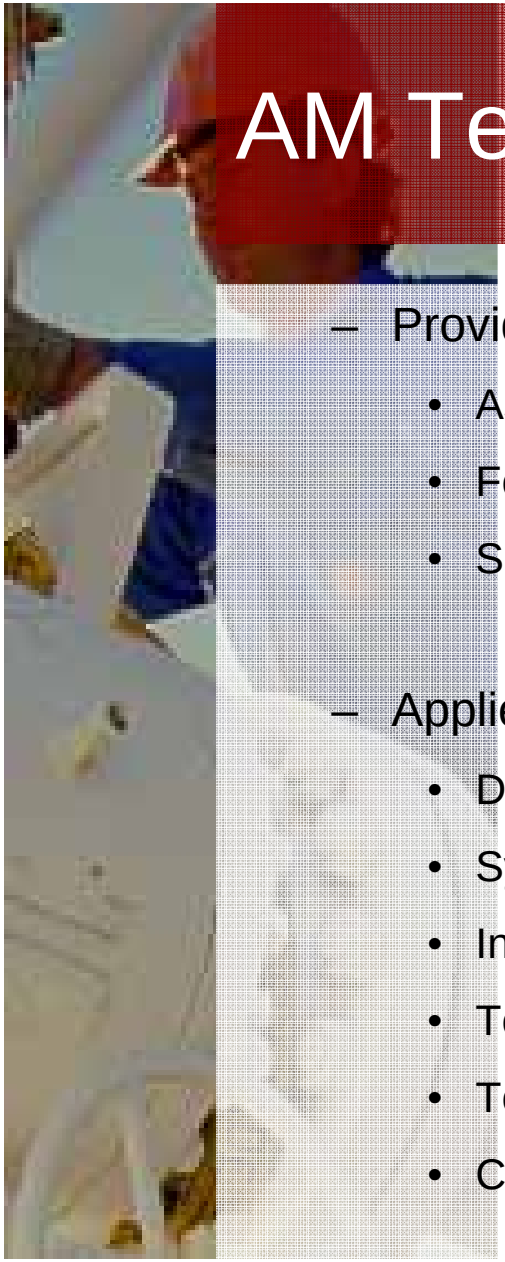
- Extensive written integrity rules for many:
  - Aerospace, Rail, Power, Oil and Gas, Military
- Common elements
  - Whole of life management
    - Specify/design, Build/buy, Use/maintain/improve, Dispose
  - Authorised persons, processes, tools and info for:
    - Creating and disposing of assets
    - Sustaining assets thru maintenance and alignment
- But still major integrity breaches
  - Aerospace QLD 2005 (17 deaths)
  - Waterfall NSW 2003 (7 deaths 40 serious injuries)
  - Longford VIC 1998 (2 deaths 8 serious injuries)
- Why? - Is it that there is no whole of life approach?



AM Technologies Model

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- Provides process rigor to the management of a risky life
  - Assures statutory compliance - evident due diligence
  - Focuses on outcomes for stakeholders
  - Supported by AS/NZS/ISO/IEC 15288:2003
    - Systems engineering – Systems lifecycle processes
- Applies key integrity disciplines (shown following)
  - Demand Management
  - Systems Engineering (classic view)
  - Integrated (logistic) support
  - Total Productive Maintenance
  - Total Quality Management
  - Configuration Management

Core disciplines

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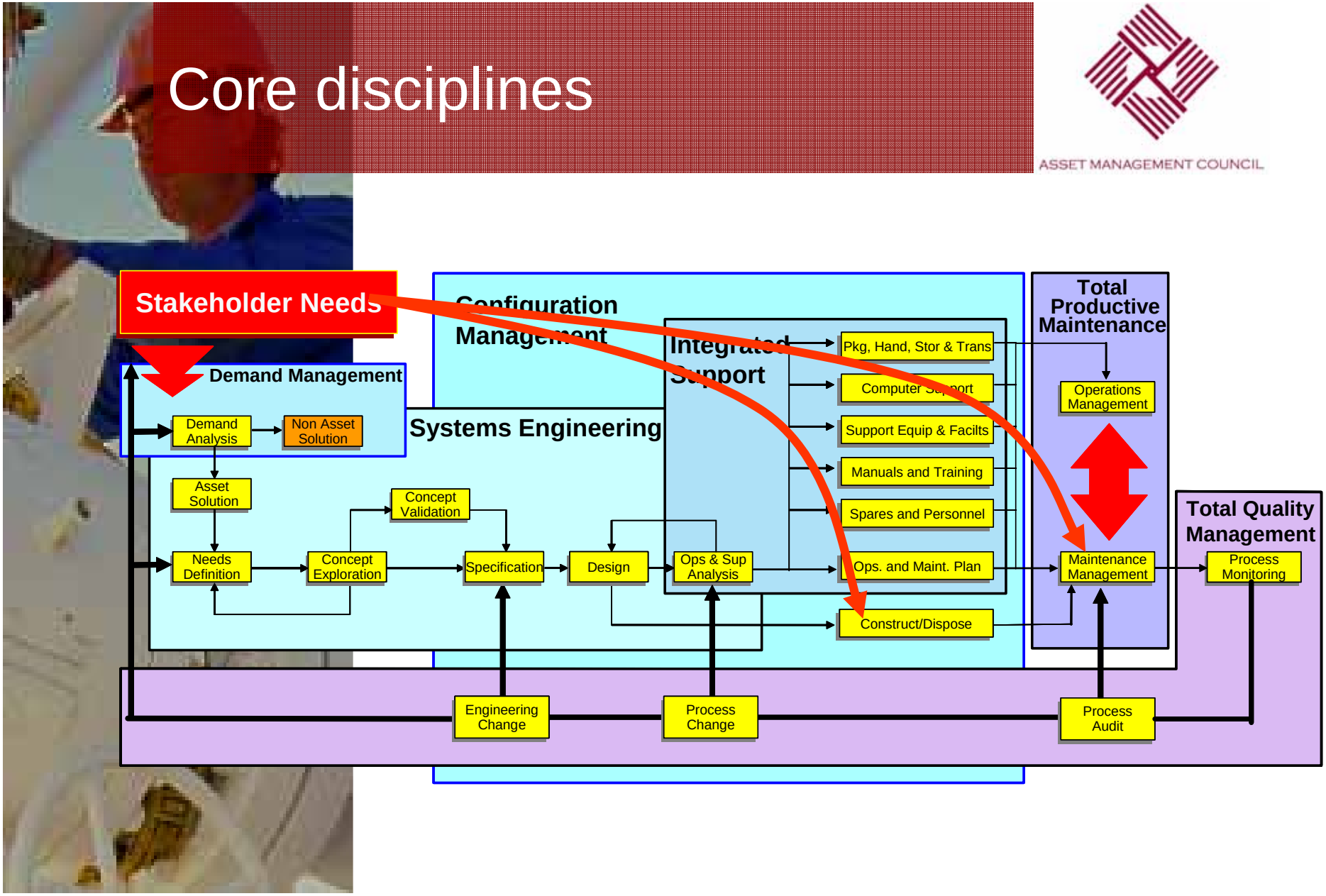
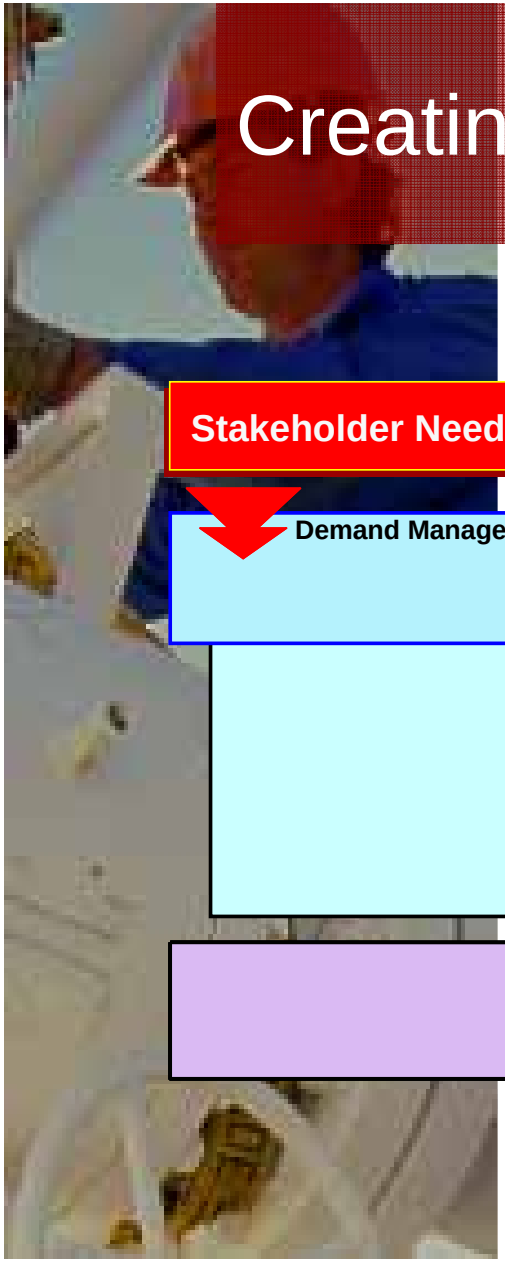


Creating Capability



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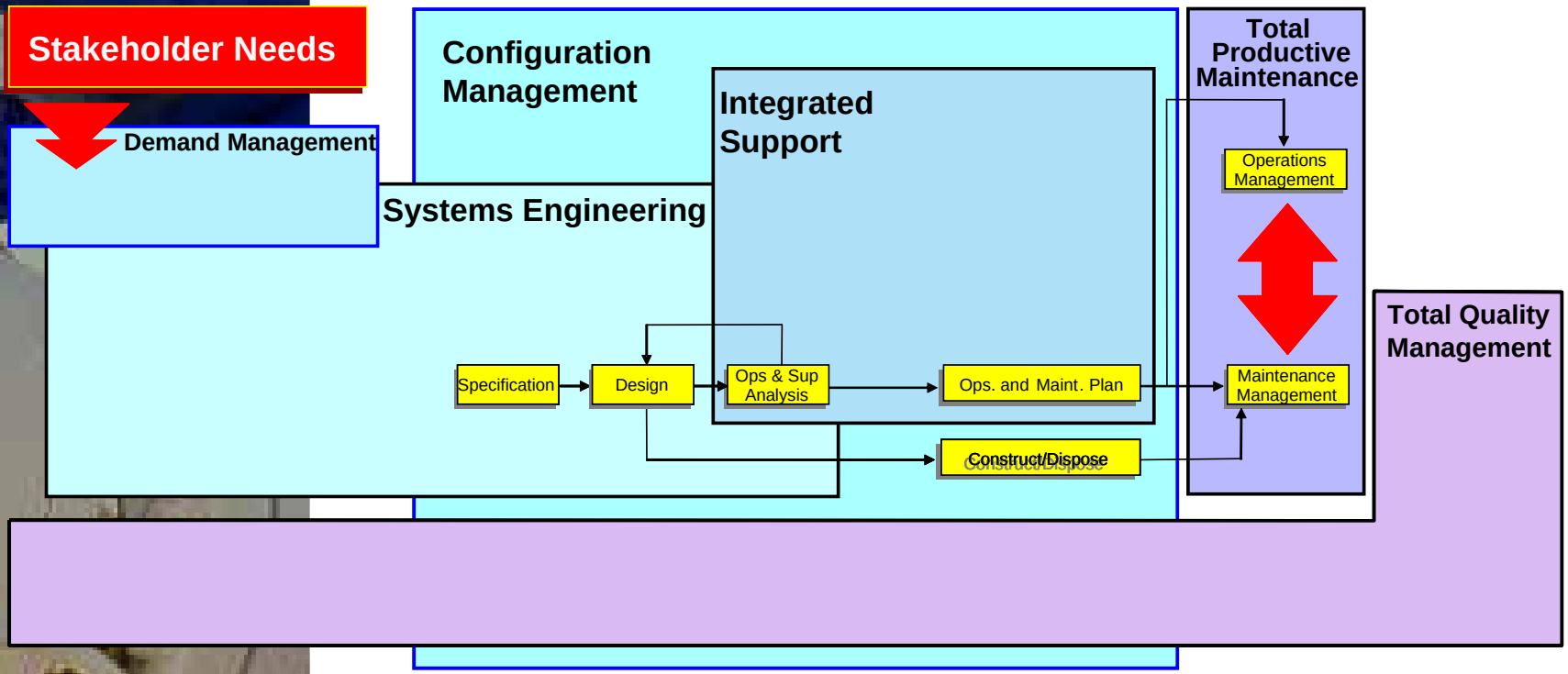
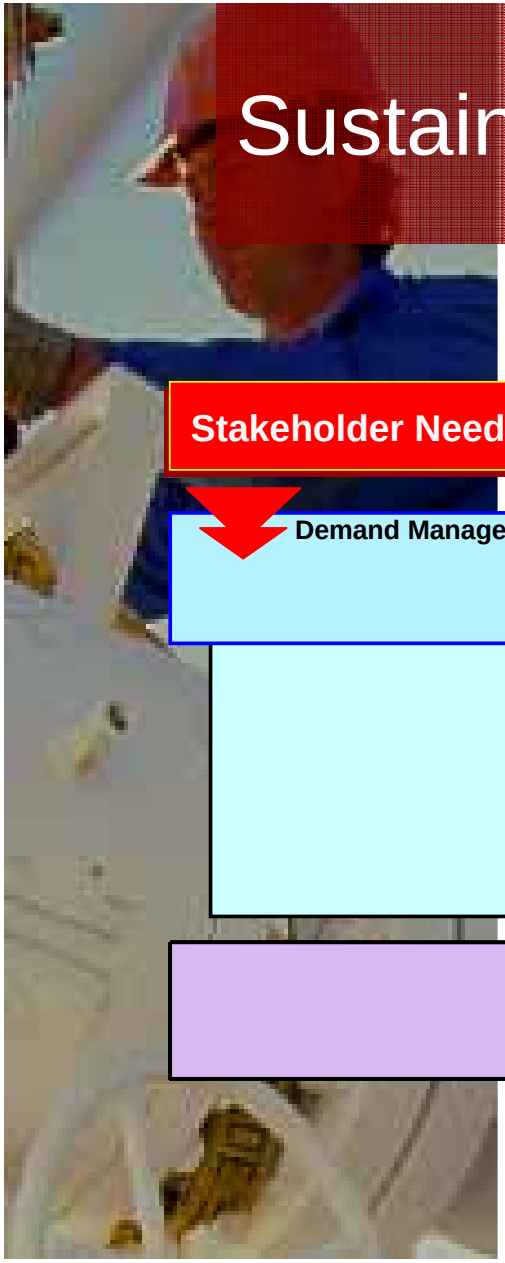


Sustaining Capability



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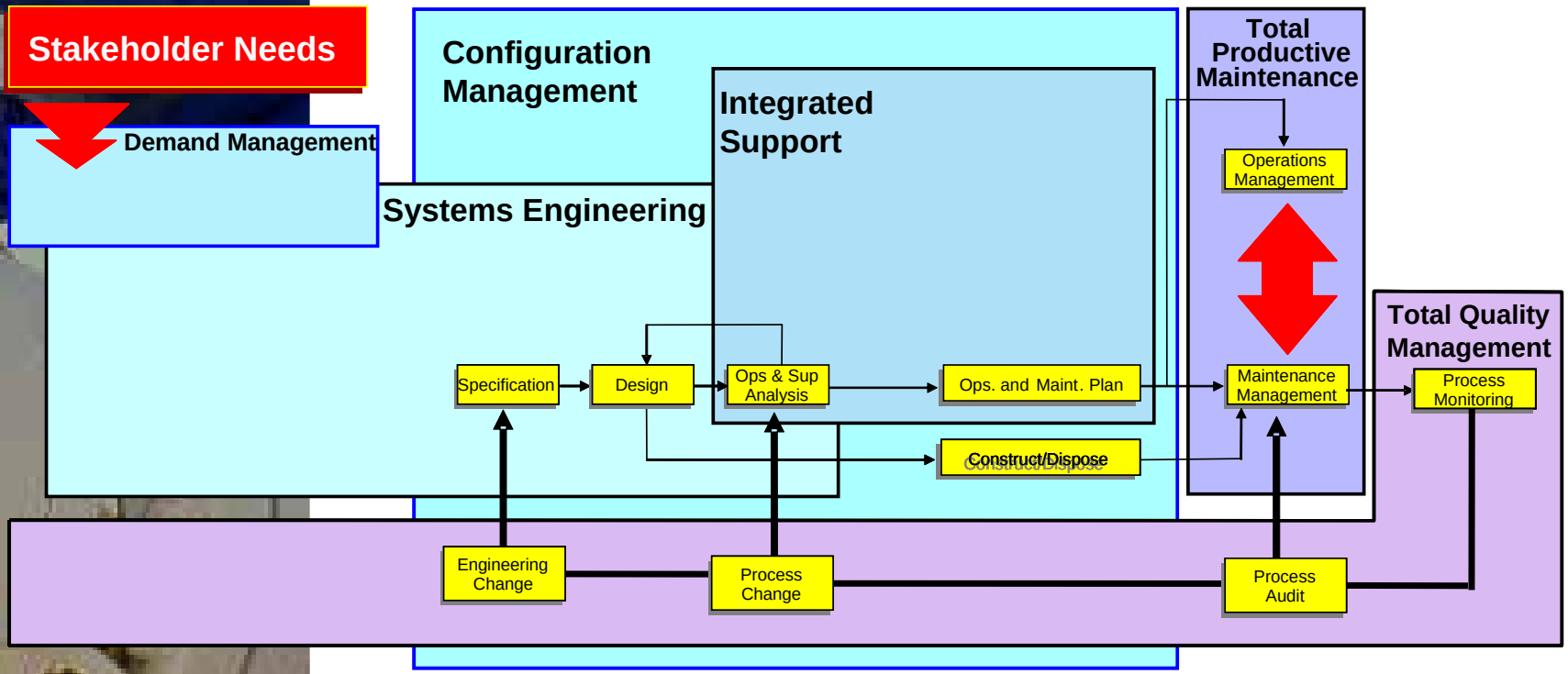

Assuring integrity outcomes

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- Design it right
  - Specifications with measurable outputs including support
  - Flow down of requirements that are verifiable
  - *Uses authorised people, processes, tools and information*
  - Outputs are verified and validated
- Deliver it right *(construct, use/maintain and dispose)*
  - Construct to, and use/maintain to, the designed solution
  - *Uses authorised people, processes, tools and information*
  - Sustain alignment with change in function and in asset
  - Dispose to a plan that is also designed
- Conduct audits (some independent) at multiple levels

Integrity - a design objective

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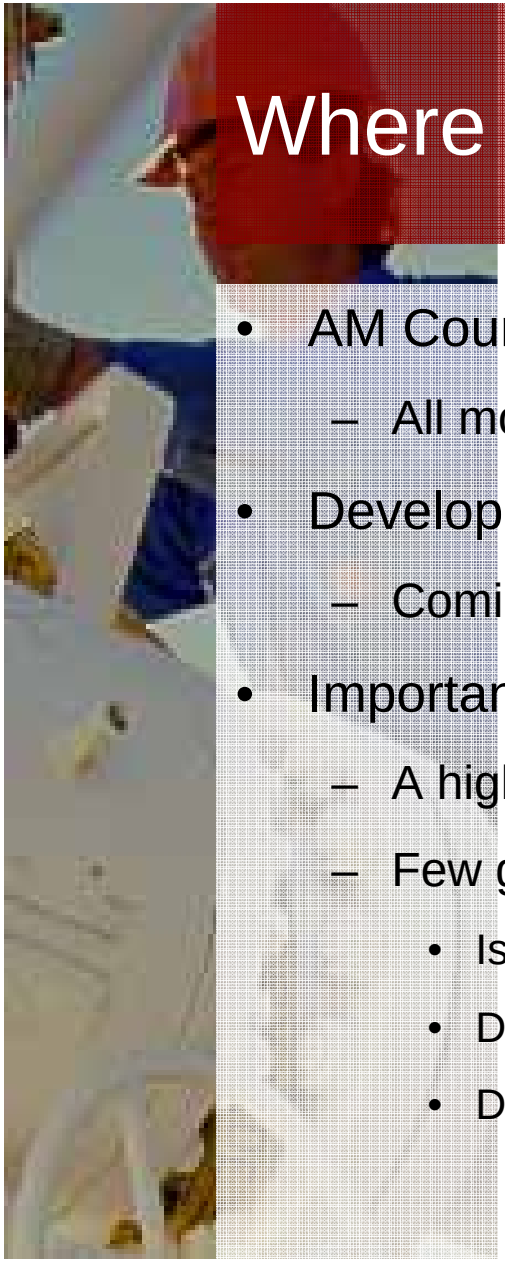
- Integrity assurance processes are based on risk, e.g.
  - Failure Modes Effect and Criticality Analysis (FMECA)
  - Reliability Centered Maintenance (RCM)
  - Fault/Event Tree analysis (FTA/ETA)
  - Hazop/Hazan
  - Human Reliability Analysis (HRA)
  - Reliability, maintainability and supportability analysis (Ao)
  - Repair or replace economic decisions
- Many standards and handbooks are available:
  - The really good ones are often public domain



Where can you find out how?

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- AM Council - Fundamentals of Asset Management course
  - All models here are from our one day course
- Developing “Body of Knowledge”
  - Coming soon to the AM Council Website
- Important role of configuration management:
  - A high priority for a subsidiary AM Council course
  - Few get it right:
    - Is your asset register at right level and 100% correct?
    - Do you know the function of all your equipment?
    - Do you know their physical composition?

Summary

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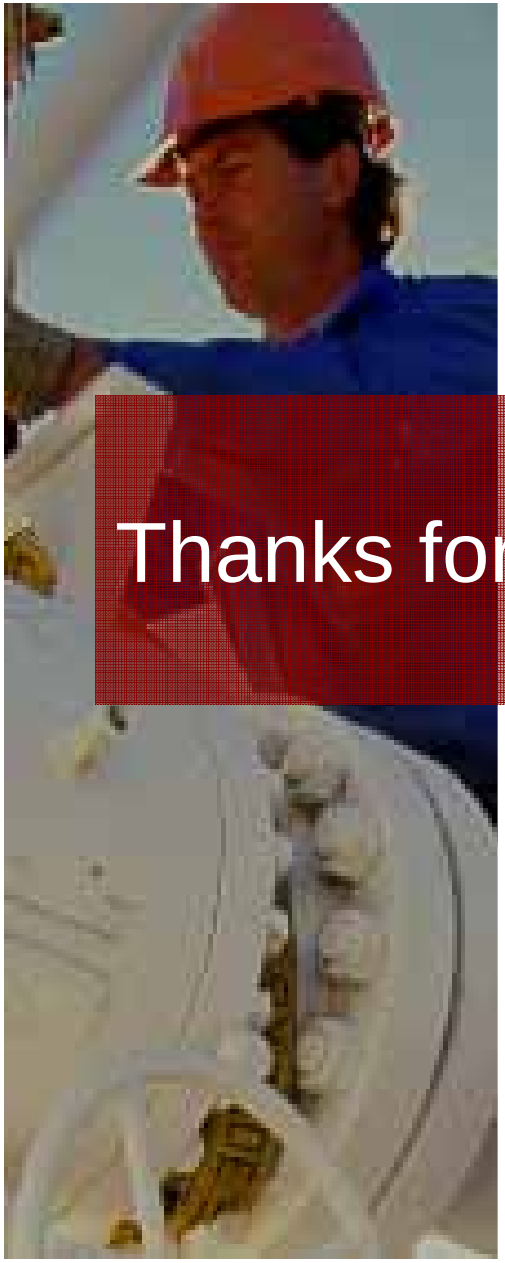
- Asset Integrity assured by an Asset Management discipline that:
  - Takes a quality based life cycle approach
  - Integrates process, leadership and culture
  - Focuses on measurable and verifiable outcomes
  - Applies proven processes
  - Has a peak body to provide leadership
    - In Australia – the Asset Management Council



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Thanks for this opportunity.

jim.kennedy@amcouncil.com.au