The Evolution from a Simple Planning Document to an Integrated Asset Management Plan

Dr Theuns Henning, Ross Waugh
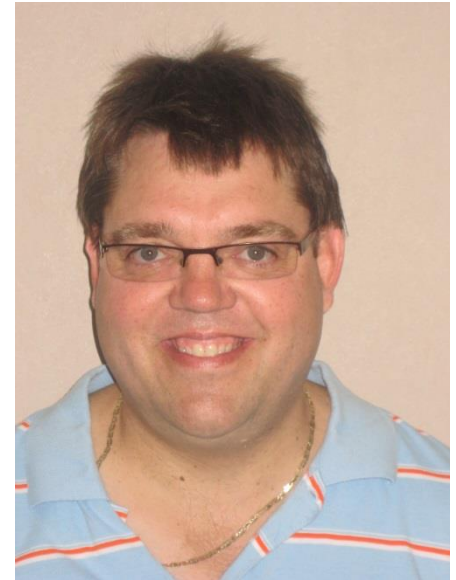
TRB Conference, Miami

April 2014

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Introducing Dr Theuns Henning

- Started work 1990, 24 years in 2014
- Civil Eng. Infrastructure Management
- Responsible for post graduate teaching and research at the University;
- Managing the national PMS implementation in NZ;
- Experience in local and central government, contractors and consultants;
- Asset groups include roads, water bridges and buildings;
- Also working as advisor to the World Bank in Performance Based Contracting

THE UNIVERSITY OF AUCKLAND

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Te Whare Wānanga o Tāmaki Makaurau

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Introducing Ross Waugh

- Started work 1982, 32 years in 2014
- Civil Eng. Infrastructure Management
- 16 years – working for Councils
- 16 years – consulting
- 70% of NZ Councils are clients
- 85% of NZ population served
- Worked across NZ, in Australia
- Working for Govt. Tokelau, Pacific
- Presented in NZ, Australia, USA, Finland
- Input into national, international manuals
- Input into NZ govt. inquiries

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AM Progression 1996 – 2014

| 1996	2014
AM Mandated	Multiple Legislative Changes, 4-5 cycles of updates
Basic or Core AM	More Advanced AM, ODM used
Simple Asset Registers, Condition	More sophisticated understanding of assets and asset condition
Current service levels	Some service level modelling
Simple future demand understanding	Better future demand understanding
Some risk management	More sophisticated risk management
Simple financials and assumptions	Scenario analysis, ODM, more understanding of assumption impact

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18 years - Overall Progression

- More knowledge of assets
- More knowledge of condition and failure modes
- Better understanding of risks
- More ODM analysis (but not used by all)
- 15:70:15 – industry adoption spread

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18 Years – Still Gaps

- Service Level trade-offs with budgets and risks

- Demand Forecasting

- Multiple scenario analysis

- ODM analysis

- Better understanding of preventative maintenance verses renewal trade-offs

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Service Level Trade-offs

Quality of Asset Management
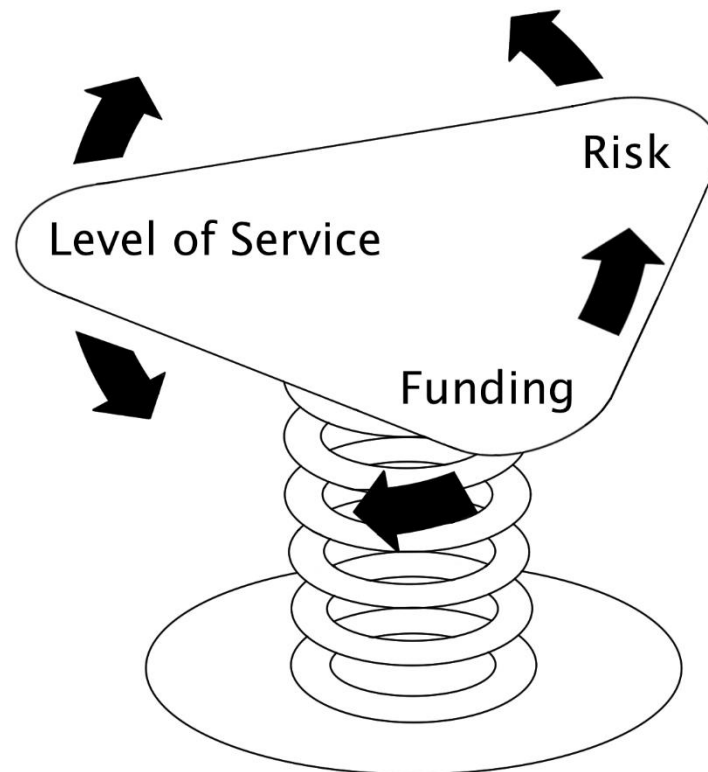
Quality of Asset Management Plan

How well is the plan integrated with business
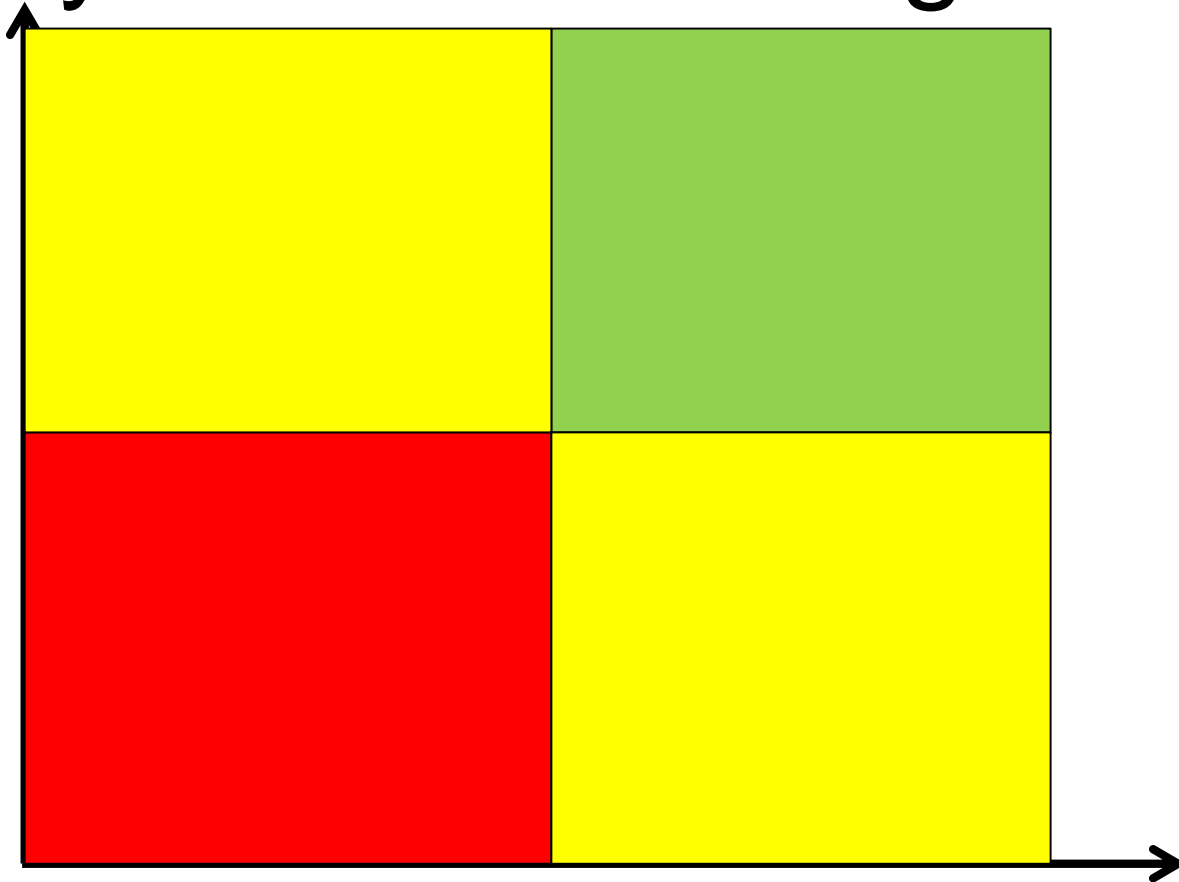
18 Years – AMP Assessment Tools

Service		Description of Assets	Levels of Service	Managing Demand	Risk Management	Lifecycle Decision Making	Financial Forecasts	Planning Assumptions and Confidence Levels	Outline Improvement Programmes	Councils Commitment	Sustainability	Planning by Qualified Persons	AMP Format
Roading	Existing Status	40%	23%	27%	33%	15%	29%	15%	3%	22%	18%	3%	42%
	Appropriate Level	89%	85%	82%	88%	73%	86%	80%	80%	78%	86%	98%	98%
	With improvement items	40%	23%	27%	33%	14%	29%	15%	3%	22%	18%	3%	42%
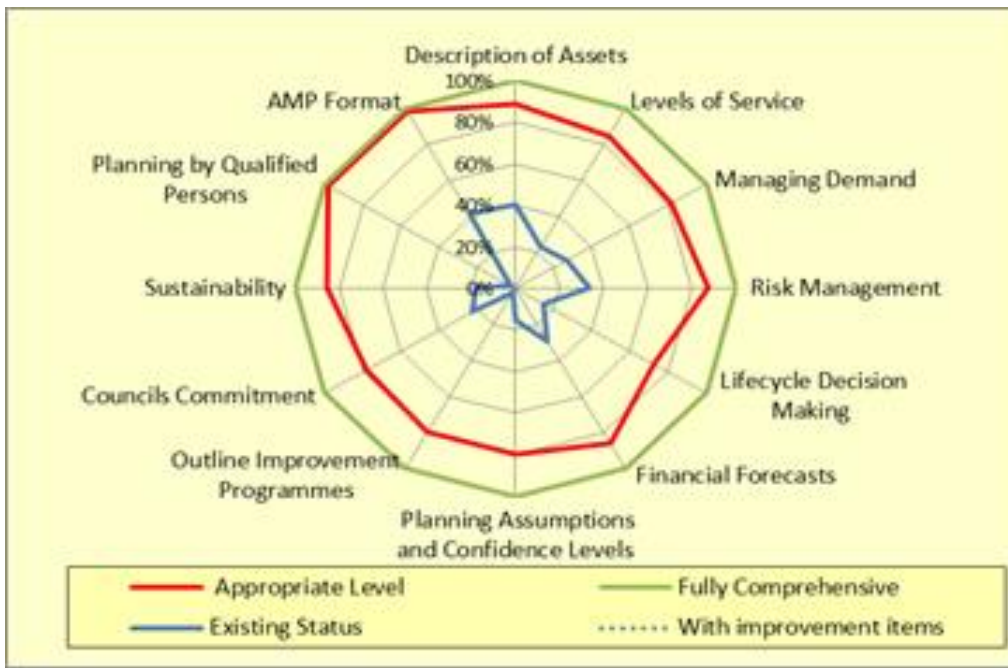
- Structured assessment methodology
- Based on appropriate practice level
- Transparent, Repeatable

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18 Years – ODM Tools

- IDS dTIMS project – 16 year partnership between NZ public infrastructure engineers and Deighton, Canada

- See Inframanage.com/blog for recent video on ODM

- Achieving good analysis and results

- The IDS dTIMS project has taken sustained effort

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18 Years - ODM Tools Results
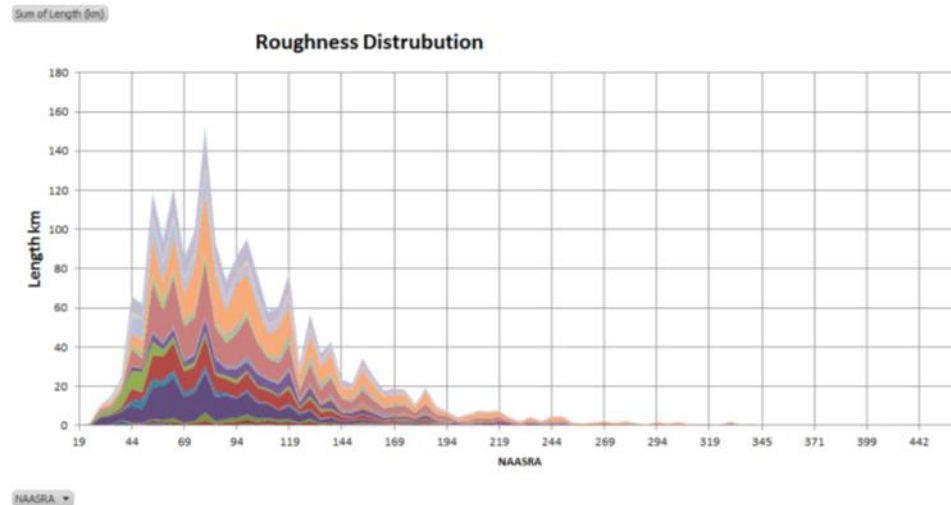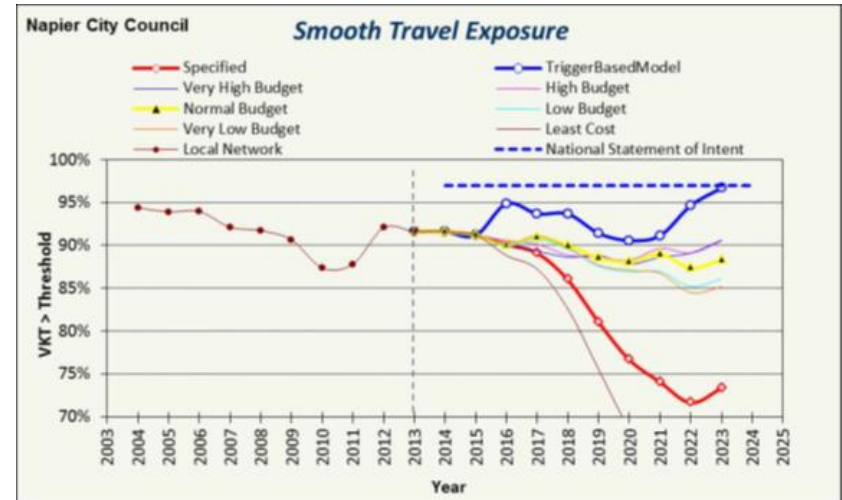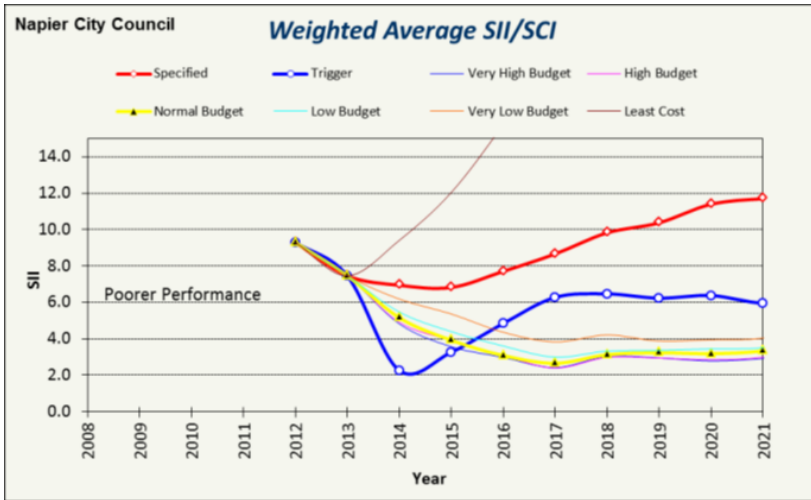
Learning - Do the basics well

- Asset Register
- Condition Assessment
- Asset Maintenance Program

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Learning – Spiral of Understanding

- AM doesn't finish
- Spiral of improved understanding and practice

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Learning – Demand Forecasting

- Rapidly Growing Cities

Austin, Texas #1
2014 - Forbes

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Learning – Demand Forecasting

- Rapidly Declining Cities
- Rapid changes in demand

Cleveland, OH #1
Detroit, MI #2, 2014

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Learning – Demand Forecasting

- Agricultural Production
- Getting goods to market
- Changes in production
- Changes in land use

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Learning – Demand Forecasting

- Multi-modes
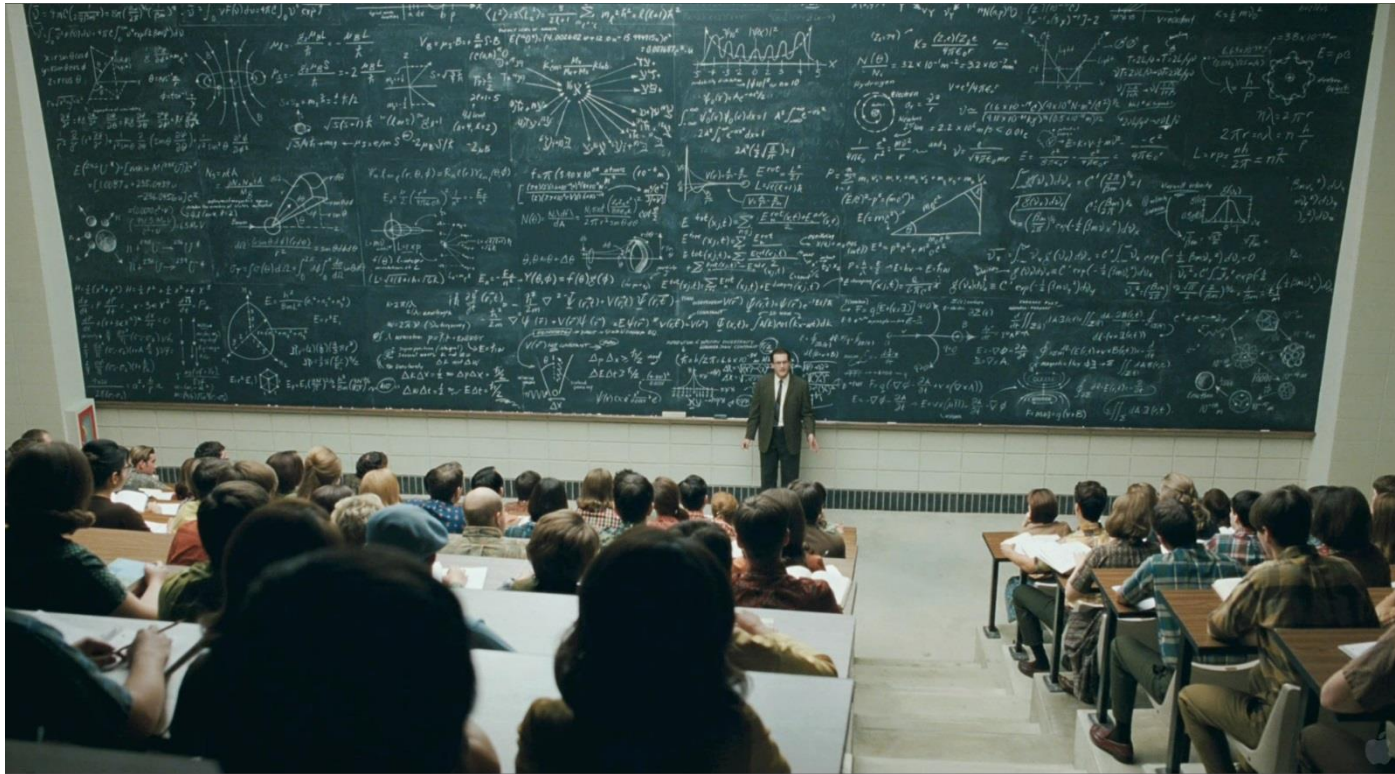- Where are the mode changes?

Learning – Demand Forecasting

Don't use todays money to build roads for tomorrow based on yesterdays demand

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Learning – Worst First vs. ODM

Worst first response like fighting a wildfire

Moral Hazard – rewards poor behaviour

Learning – Complexity & Engineers

"Keep everything as simple as possible, but not simpler", Albert Einstein

We are making progress

18 years into this journey, we are making progress, but still have a long way to travel

Questions?

- www.waughinfrastructure.com
- www.inframanage.com

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