

# Can the Global Lean Standard ISO18404 offer a breakthrough for the Construction Sector?

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Presentation in 2 parts – the background and the case study of first application



- Apprentice Carpenter / Carpenter/ General Builder – 1976 – 1998
- Customer Care (snag buster) / Innovation Manager --1998 – 2004
- Discovered Lean around 2001 and applied to Hotel & Supermarket projects – 20% lead time reductions.
- CLIP Engineer (Building Research Establishment) 2004 – 2007
- Lean Construction Training & Consultancy --2007 on

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Lots of businesses.

BSI Standards Publication

Quantitative methods in process improvement - Six Sigma - Competencies for key personnel and their organisations in relation to Six Sigma and Lean implementation

bsi ...making excellence a habit

ROYAL STATISTICAL SOCIETY

RSS 18404  
Royal Statistical Society  
Certification Scheme for  
demonstrating compliance  
to ISO 18404:2015

ISO International Organization for Standardization

ISO 18404:2015

bsi.

Lean Construct

18404 offers a roadmap or a transformational model

## Lean Intervention Vs Transformation

- Lean Intervention

- Definitions

- The act or fact of [intervening](#).
    - Ad Hoc deployment of Lean Techniques based on Waste Removal

- An Example



The point here is that most applications of lean construction are of an ad hoc nature, based on either someone's general interest in improvement or most often as a “silver bullet” because a project is in trouble.

Next 3 slides are just Lean Basics that were used in slide 5 – (example of an intervention)

## What do you see?

When you look at sites, offices, fabrication yards...

What do you see?

Lots of busy people?

Busy at what?



**ACTIVITY = WORK + WASTE**

## 3 Elements of a Day

### Value Adding



Something changes to get closer to what the customer wants

### Support Activity



Something we currently MUST do but does not in itself add value for the customer

### Waste



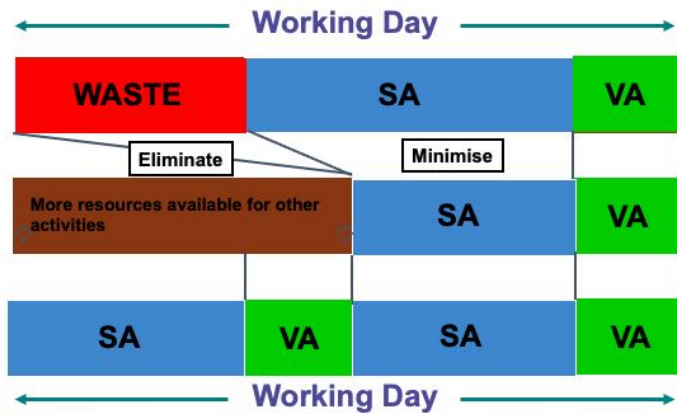
Transport  
Inventory  
Motion  
Waiting  
Over Process  
Over Production  
Defects



Explanation of divisions of work

# Making Value FLOW

To raise the ratio of **Value Added** activities to **Support Activity** and **Waste**



Explanation of basic VSA & Process Transformation activities

## Work Observation

### Value Stream Map (VSM)

TOTAL TIME	60 min.
V.A.	11 min
S.A.	<del>30</del> 29
WASTE	20

Support activity & waste constitute 83% of the concrete panel erection process. Main waste activities include:

1. Locating & identifying the correct brackets
2. Moving and manoeuvring the cherry picker
3. Adjusting the concrete panels



### Example intervention

This is an example of a one day intervention to help solve a particular problem on site. (see full summary book attached to email)

The installation production rate of pre-cast panels was supposed to be 8 per day but the team were achieving 4. A day was spent facilitating and carrying out direct observation of the process. The fitters were “our most experienced men and cannot be improved” By closing out the actions formed by the end of the day, the team were able to easily reach the required outputs. Note the proportions of value and waste on the summary above. These are REAL. By tackling the waste part productivity easily doubles.



## Lean Intervention Vs Transformation

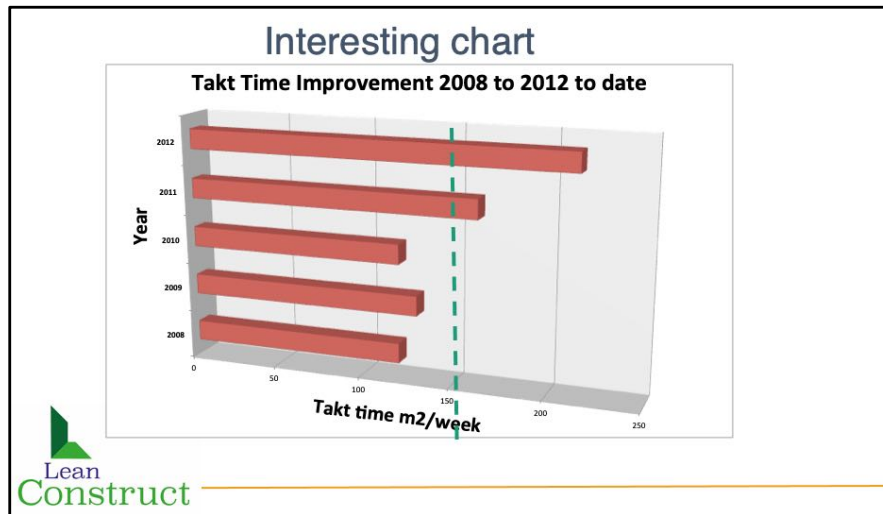
- **Lean Transformation**

- A systems wide, *long term* and *continuous* approach to improving operations, based on Lean Thinking that benefits customers, employees and the business.

- **An Example**



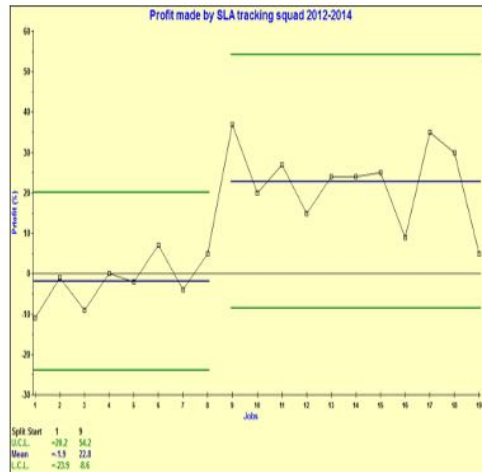
Point is that Transformation is very different from intervention.  
Lean Transformation definition my own.



I am claiming this as transformational because it shows the ave performance of a supply chain (3 Main contractors) over a three year period of effort. = £1.5mil pa saving on prelims alone + an overall cost reduction of 7%. By End 2013 Progressed 400m2/week – nearly 4 times faster.

HM clothing store fit out ave lead time reduced from 11weeks to 4 weeks through collab planning & logistics management. Pilot 10 day fit out also achieved.

## Small Scale Actions...



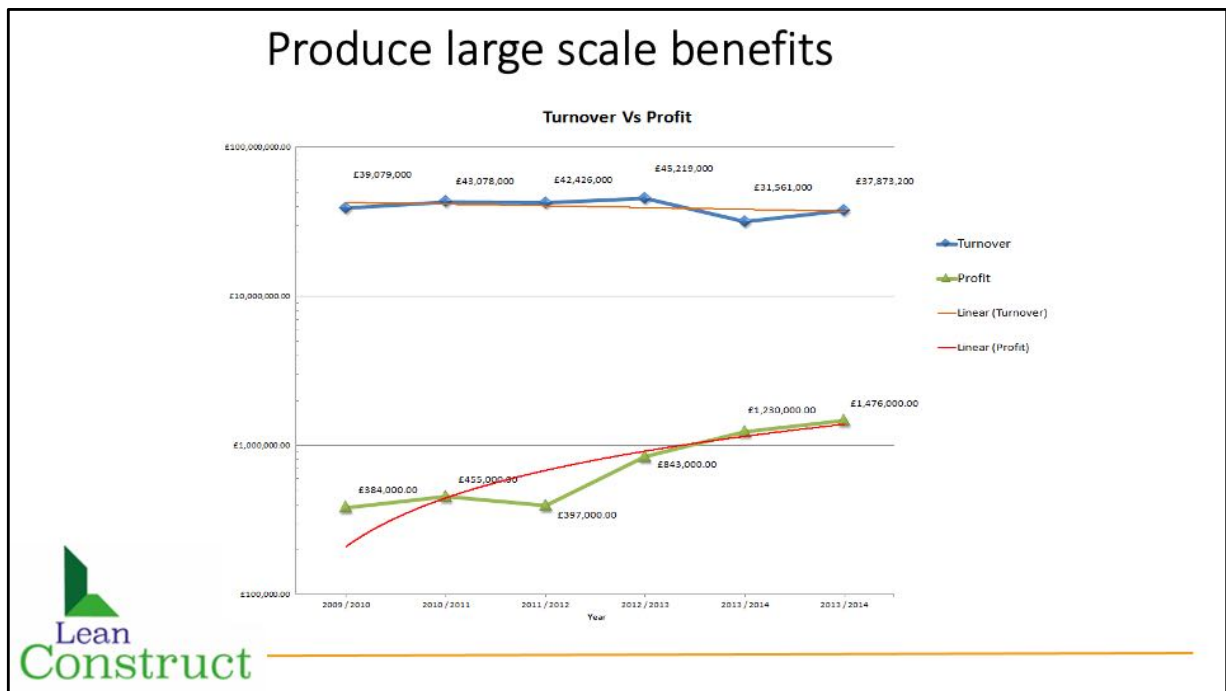
Over the last 3 years...

Street Lighting +20%  
 Patching +20%  
 Slurry sealing +30%  
 Blairgowrie +10%  
 Forfar +10%



KTP in LA Roads maintenance in Scotland. 3 year project. The above slide shows jump in performance after applying line balance & takt.

## Produce large scale benefits



Above slide shows bottom line profit vs turnover. Claiming that this is transformational as profit has improved almost 400% over a 5 year period but against a STATIC turnover. Note that there was a lot of lean work going on in the first two years and that this wasn't "instant pudding"

## Why ISO 18404?

- We Didn't know how it might apply/work?
- Had heard Resistance?
- Critics?
- Gut feel was it's the right way to go.

Now we have an informed view.



My own initial feelings about the ISO initially. Draw full of process maps.

## Why ISO 18404?

ISO 18404 attempts to deal with two issues.

- Quality of Training (should be **certification**)
- **Organisational** Deployment

### Quality of Training

[Six Sigma Black Belt Certification - \\$99.99](#)

With the ever increasing requirement of executing projects in almost every industry, the role of the Six Sigma Black Belt certified project manager has become all the more important. Certified project managers are one of the highest paid and most sought after professionals today.

[Go to Six Sigma Black Belt Page](#)

- Yellow Belts? Really?
- Quality of training – some questionable
- Tendering confusion for clients – companies claiming to be Lean to get work.



Point is you can buy a blackbelt cert for £50

I once heard that a consultancy was giving out Yellow belts for turning up to and just attending a half day workshop.

## Why ISO 18404?



- **Competency of Personnel**
  - Knowledge, experience, auditable competence
- **Adequacy of the organisations approach**
  - **Strategy**
    - Must be clear link to business plan
    - Defined objectives
  - **Architecture**
    - E.g. steering groups, reporting structure, accountabilities, supporting resources.
  - **Continuous Improvement**
    - Defined Metrics, targets & review mechanisms

Interestingly no requirement for training

## IGLC Paper Dublin - July 2019



This research examines what is necessary for lean construction transformation



## Research Methods – A Single Case Study, Structured Interviews and Literature Review last.

- Literature Review – IGLC Conference paper search returns.
  - ISO18404 no papers
  - “Transformation” 79 papers retrieved but many about TFV Theory(Koskela)
  - 15 relevant papers about lean transformation in construction organisations



The subject in focus is business transformation in the context of Lean Thinking. Not Ad hoc deployment of tools. Need the 1<sup>st</sup> three for successful transformation. Need the fourth for sector wide impact.

## Four Themes emerged (Things needed to achieve transformation)

1. Organisational Structure --- “Must be clear link between Lean operations, strategy and capability”
2. *Roadmaps* for Lean and clarification of concepts
3. Lean Leadership --Simultaneous top down & bottom-up strategy
4. Change by Force ---we know what to do but won’t do it until forced. (UK Farmer Report concurs)



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# Piloting ISO 18404 as a Transformation Model

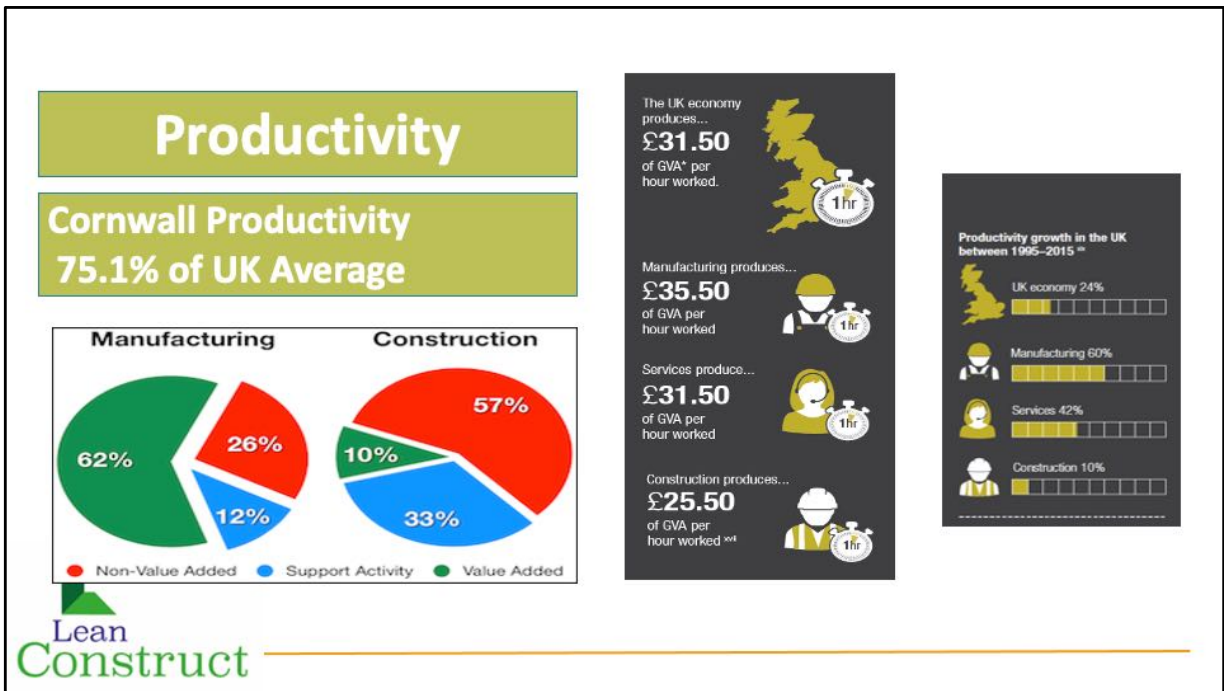


G&G Case study

## Gilbert & Goode Ltd

- Cornish Main Contractor & Developer (with a social purpose)
- Operating for over 40 years
- Growing Rapidly
- Owned by Ocean Housing Group



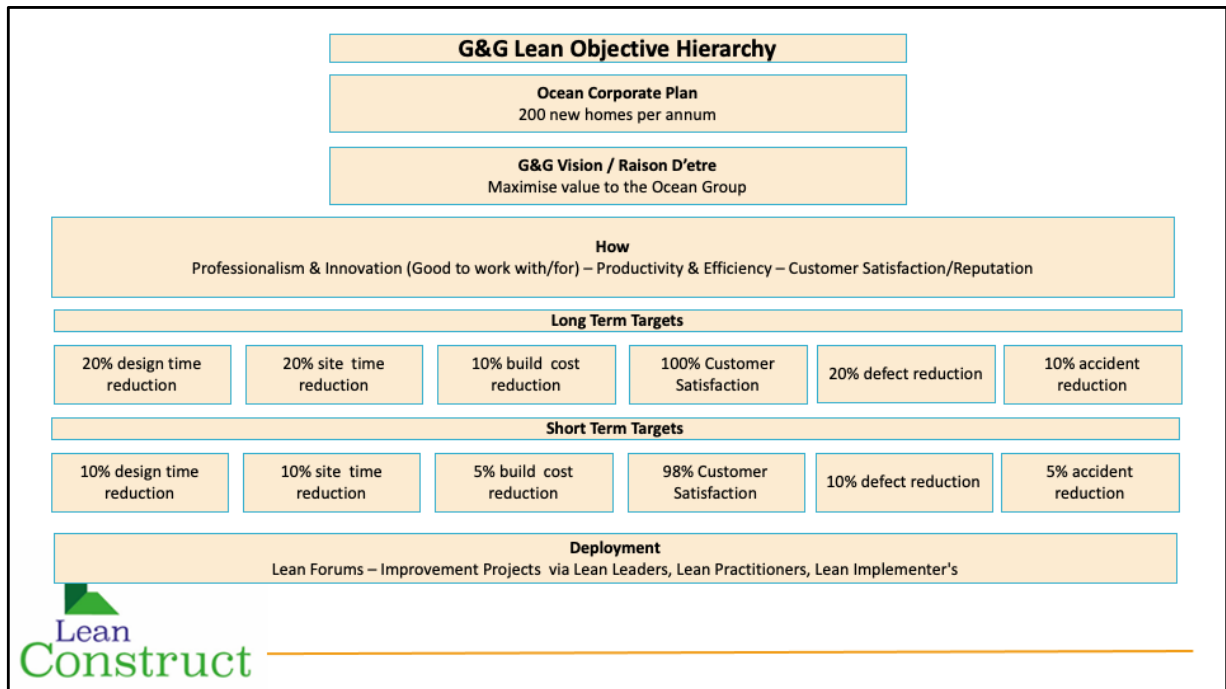


Also mention other sectors such as agriculture, services

## Lean Journey

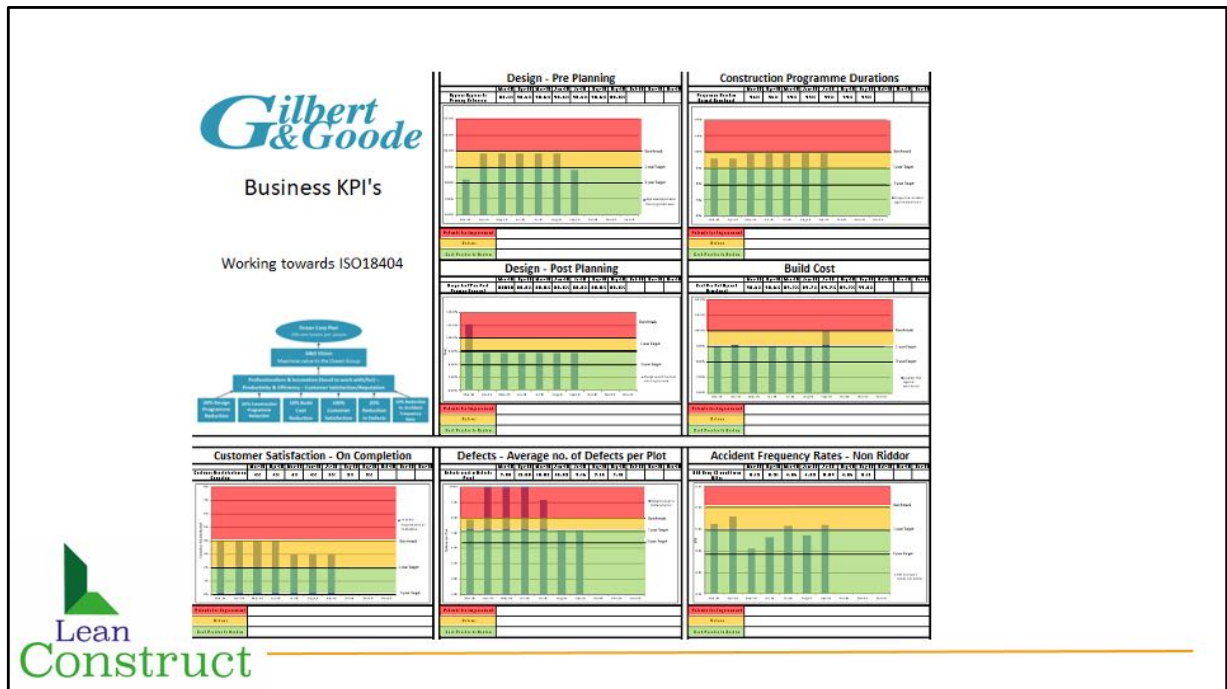
- Success realised for two pilot projects; desire to rollout across company and all operations
- Desire to move from “Intervention to Transformation”
- Selected ISO18404 as a route map





Summary graphic of lean strategy

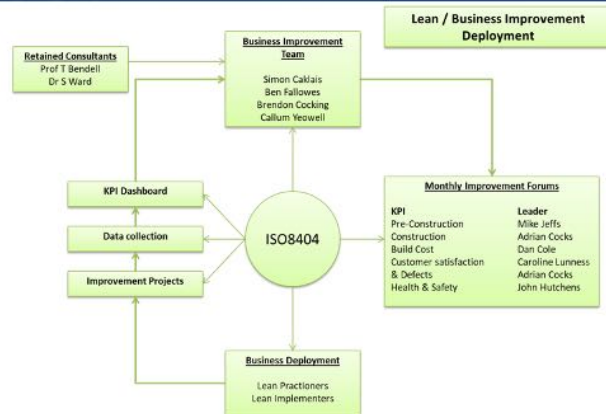




This is dashboard on key KPIs that link with strategy

# Business Improvement Model - Deployment

- Lean Leaders – run BIT
- Lean Practitioners run forums
- Deployment via Lean Practitioners & Lean Implementors
- Engagement with front line staff and supply chain



Progress to date													
LEGEND				KPIs									
Status No.	1			Pre-Construction	Construction	H&S AFR	Build Cost	Customer Satisfaction	Customer Satisfaction	Defects	Reduce Failure Demand / Free up Time	Progress	Remaining
Allocated	2			(10% for y1, 20% for y2)	(10% for y1, 20% for y2)	(5% for y1, 10% for y2)	(5% for y1, 10% for y2)	(On Completion)	(After Defects Period)	(10% for y1, 20% for y2)			
Started	3							(2% for y1, 4% for y2)	(After Defects Period)				
Reviewed	4												
Complete													
Strong Impact	P		P										
Partial Impact	T		T										
Project ref.	Description	Lean Champion											
Des1	Design Last Planner (Tracker)	Mike Jeffs	0%									100%	0%
Des2	Designer Monthly Planner	Mike Jeffs	5%									0%	100%
Cons1	Weekly Work Planning & PPC	Callum Yeowell		5%			2%					80%	20%
Cons2	Timber Frame Option Trials	Callum Yeowell		0%			0%					100%	0%
Cons3	Groundworks Procedure Restructure	Adrian Cocks		1%	1%	1%						0%	100%
Cons4	On Time Material Procurement	Adrian Cocks & Callum Yeowell		0.5%								10%	90%
Cons5	Reducing Kitchen Lead Times	Adrian Cocks & Callum Yeowell		0.5%			0.2%					10%	90%
Cons6	6 Weekly Lookaheads	Callum Yeowell & Adrian Cocks		2%			1%					20%	80%
Cons7	Jeffloor (New Floor System)	Adrian Cocks		1%			0.2%					5%	95%
Cost1	New QS Required Info Forms	Shaun Rabey									◆	25%	75%
Cost2	Reduced no. of Skips	Dan Cole					0.2%					10%	90%
Cost3	Estimating Make Ready Needs	Darren Hicks									◆	50%	50%
Cost4	Process Map of Key QS Functions	Shaun Rabey									□	0%	100%
Cost5	Estimating Enquiries Standardised	Darren Hicks									◆	50%	50%
Cost6	General QS Failure Demand Assessment	Dan Cole									□	10%	90%
Dfct1	New QA System	Adrian Cocks & Callum Yeowell					0.4%					5%	95%
H&S1	New Accident & Near Miss Reporting Documents	Callum Yeowell					0%					100%	0%
H&S2	Standardised H&S Standards	Adrian Cocks					1%					25%	75%
H&S3	Accidents from 1st Half 2018	Adrian Cocks & John Hutchers					1%						
Total				5%	10%	3%	5%	0%	0%	5%			
Percentage for 1 Year Target				5%	0%	2%	0%	2%	3%	5%			

Policy deployment plan/tracker showing how improvement projects link directly to strategy

## Training & Communication



Lean  
Construct

Lean Leaders providing Internal Training

Unit	Competency	Performance criteria	Essential outcomes of applicable competencies	Essential outcomes of knowledge	Essential outcomes of skills	Essential outcomes of attitudes	Essential outcomes of personal development
<b>Competency Evidence</b>							
1	1.1	1.1.1	1.1.1.1	1.1.1.2	1.1.1.3	1.1.1.4	1.1.1.5
1	1.2	1.2.1	1.2.1.1	1.2.1.2	1.2.1.3	1.2.1.4	1.2.1.5
1	1.3	1.3.1	1.3.1.1	1.3.1.2	1.3.1.3	1.3.1.4	1.3.1.5
1	1.4	1.4.1	1.4.1.1	1.4.1.2	1.4.1.3	1.4.1.4	1.4.1.5
1	1.5	1.5.1	1.5.1.1	1.5.1.2	1.5.1.3	1.5.1.4	1.5.1.5
1	1.6	1.6.1	1.6.1.1	1.6.1.2	1.6.1.3	1.6.1.4	1.6.1.5
1	1.7	1.7.1	1.7.1.1	1.7.1.2	1.7.1.3	1.7.1.4	1.7.1.5
1	1.8	1.8.1	1.8.1.1	1.8.1.2	1.8.1.3	1.8.1.4	1.8.1.5
1	1.9	1.9.1	1.9.1.1	1.9.1.2	1.9.1.3	1.9.1.4	1.9.1.5
1	1.10	1.10.1	1.10.1.1	1.10.1.2	1.10.1.3	1.10.1.4	1.10.1.5
1	1.11	1.11.1	1.11.1.1	1.11.1.2	1.11.1.3	1.11.1.4	1.11.1.5
1	1.12	1.12.1	1.12.1.1	1.12.1.2	1.12.1.3	1.12.1.4	1.12.1.5
1	1.13	1.13.1	1.13.1.1	1.13.1.2	1.13.1.3	1.13.1.4	1.13.1.5
1	1.14	1.14.1	1.14.1.1	1.14.1.2	1.14.1.3	1.14.1.4	1.14.1.5
1	1.15	1.15.1	1.15.1.1	1.15.1.2	1.15.1.3	1.15.1.4	1.15.1.5
1	1.16	1.16.1	1.16.1.1	1.16.1.2	1.16.1.3	1.16.1.4	1.16.1.5
1	1.17	1.17.1	1.17.1.1	1.17.1.2	1.17.1.3	1.17.1.4	1.17.1.5
1	1.18	1.18.1	1.18.1.1	1.18.1.2	1.18.1.3	1.18.1.4	1.18.1.5
<b>Page 1 of 2</b>							

## Competencies in 18 Areas

Understanding, Applying, Managing and Training.

Portfolio development

## Recap & Compare - Four Themes found in IGLC literature (Things needed to achieve transformation)

1. Organisational Structure --- “Must be clear link between Lean operations, strategy and capability”
2. *Roadmaps* for Lean and clarification of concepts
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*“ISO18404 Provides a Roadmap, demands Organisational Structure, encourages good leadership and offers a lever for sector wide change”*



There appears to be a good match between the recommendations in the literature and the deployment of 18404

## In Summary

### ISO18404 Provides.....

- Confidence in certified individual's competence in Lean
- Confidence in an Organisation's genuine Commitment to Lean Improvement
- A Roadmap for Lean Transformation that works and facilitates "buy-in"



Thank you for listening

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