


# Standardising Quality in Project Scheduling


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For the supporting paper see:  
[http://www.mosaicprojects.com.au/Resources\\_Papers\\_071.html](http://www.mosaicprojects.com.au/Resources_Papers_071.html)

1 Standardising Schedule Quality 

## Agenda

- Problems with current Scheduling Practice
- The Value of Scheduling & Emerging Trends
- Standardising the Scheduling Process
- Certifying Schedulers
- Conclusions

2 Standardising Schedule Quality 

## This Section Problems with Scheduling

- Damaging Influences
- Promising the Impossible

3

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## Damaging Influence #1

- Making a detailed schedule into a 'contract document'
  - This distorts the schedule as parties manipulate data to 'political' ends
    - Adding links to 'lock in' anticipated delays
    - Manipulating the location of the 'Critical Path'
  - Prevents sensible changes as 'reality' unfolds
    - Changes de-value the 'credibility' of the unaltered schedule jeopardising 'claims'

4

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## Damaging Influence #1

- Many contracts prohibit or restrict changes to the schedule
- Making the 'best of a bad job':
  - See the 'Delay and Disruption Protocol'<sup>1</sup>
  - Separate the 'real' schedule from the contract version
  - Recognise 'float' is a construct of CPM<sup>2</sup>

1. See: <http://www.eotprotocol.com> (Free download)

2. See 'Float – Is It Real?': [http://www.mosaicprojects.com.au/Resources\\_Papers\\_043.html](http://www.mosaicprojects.com.au/Resources_Papers_043.html)

5

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## Damaging Influence #1

- Traditional contract programs measure failure
- Penalty clauses have no effect
- Contract formats have no effect
- The effective management of time has an effect

6

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## Damaging Influence #2

- Excessive detail - Schedules may have:
- Adequate detail for a collaborative 'coordinated' approach to scheduling **OR**
- Finite detail to 'control' the work? **BUT**
- 'Project Control Systems cannot control anything' (they can only provide guidance)<sup>3</sup>

3. See 'A Simple View of Complexity':  
[http://www.mosaicprojects.com.au/Resources\\_Papers\\_070.html](http://www.mosaicprojects.com.au/Resources_Papers_070.html)

7

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## Damaging Influence #2

- Excessive detail
  - Hides useful information and slows information flows
  - Prevents the easy testing of ideas by 'what if' changes
  - At best shows where people are 'failing' to meet the program (even if it is wrong)
  - Does not improve 'accuracy'<sup>4</sup>

4. See 'The cost of Time': [http://www.mosaicprojects.com.au/Resources\\_Papers\\_009.html](http://www.mosaicprojects.com.au/Resources_Papers_009.html)

8

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## Damaging Influence #2

- The human brain can manage around 7 pieces of data at one time (typically between 5 and 9)
- Command and Control is an outdated philosophy (McGregor 1960)
  - The only purpose for excessive detail is to attempt to control the uncontrollable<sup>5</sup>

5. See 'A Simple View of Complexity':  
[http://www.mosaicprojects.com.au/Resources\\_Papers\\_070.html](http://www.mosaicprojects.com.au/Resources_Papers_070.html)

9

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## Promising the Impossible

- Scheduling has been sold as:
  - 'A control tool' – nothing written on paper will 'control the future'
  - A precise statement of fact 'the contract program'
  - As having accurately calculated durations<sup>6</sup>

6. See 'The Cost of Time - or who's duration is it anyway?':  
[http://www.mosaicprojects.com.au/Resources\\_Papers\\_009.html](http://www.mosaicprojects.com.au/Resources_Papers_009.html)

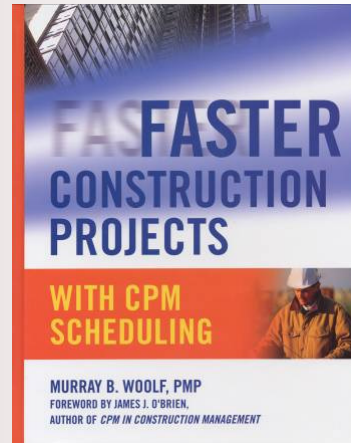
10

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## Promising the Impossible

- For more on this read:  
Faster Construction  
Projects with CPM  
Scheduling  
By: Murray B. Woolf<sup>7</sup>
- He has a whole new set  
of ideas to play with



7. Follow the link from: <http://www.mosaicprojects.com.au/Books.html#books>

11

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## Summary - Problems

- The credibility of 'scheduling' has been severely tarnished by:
  - Over promising on the 'control' aspect
  - Under performing on the quality of information provided
  - Under performing on the skill sets of many people 'doing scheduling'  
(anyone can drive MSP and be a 'planner')

12

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## This Section The Value of Scheduling

- Schedules: define / underpin / support
  - Most project management functions
- Primary uses of a schedule

**“Schedule is king” – Stephen Gumley, DMO**

13

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## Schedules are ‘good for’

- OR at least  
**‘good schedules are good for...’**
- Developing and testing the optimum delivery strategy for a project
  - Sequencing the WBS ‘work packages’
  - Coordinating & optimising the flow of work

14

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## Schedules are 'good for'

- Providing a valid time baseline for
  - Earned Value
  - Earned Schedule
- Assisting in day-to-day decision making
  - Resolving dilemmas
  - Evaluating the consequences of change
  - Testing ideas
  - Communicating strategy & setting objectives

15

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## Schedules are 'not good for'

- Accurately predicting end dates
  - Schedules do not 'scale' remaining durations based on performance to date
  - Earned Schedule solves this problem
- Controlling work at the 'coal face'
  - You need people to do this
- Measuring productive efficiency
  - Earned Value does this

16

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## Scheduling's 'Client'

- The Project Manager should be the primary user of schedule information
  - To decide on the project's strategy
  - To coordinate workflows and balance resource demands
  - To test decisions and resolve dilemmas
- Uses that distract from this primary purposes damage the project

17

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## Summary Value of Scheduling

- Offering an agreed 'vision' for the future of the project for the 'team' to use
- Allowing variations to the plan to be quantified as they occur
- Assisting in re-planning to deal with variance and optimise outcomes
- Keeping the progress of the project works coordinated and aligned

18

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## This Section Emerging Trends

- Command and control or Collaboration
- Ideas from ***The Guide***

19

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## Emerging Trends

- We cannot:
  - Predict the future or
  - Control the future
- We can influence the future behaviour of people



20

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## Emerging Trends

**Data is not information,  
information is not knowledge,  
knowledge is not understanding,  
understanding is not wisdom.**

Clifford Stoll

Effective reporting gets you to 'information'  
and helps with 'understanding'

See: Beyond Reporting - The Communication Strategy  
[http://www.mosaicprojects.com.au/Resources\\_Papers\\_094.html](http://www.mosaicprojects.com.au/Resources_Papers_094.html)

21

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## Emerging Trends

Which map is more useful  
If you are looking for the Dojo



'Useful', 'Accurate' and 'Fully Detailed' are not  
synonymous and may be contradictory!  
Plan to Communicate

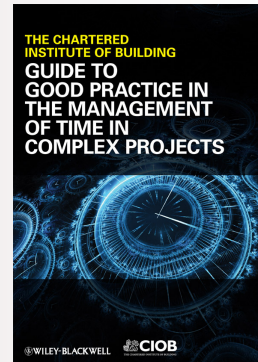
22

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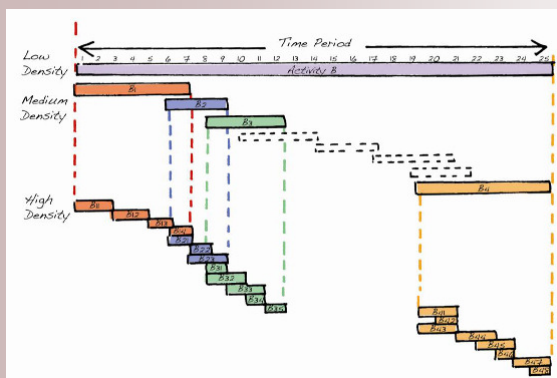
## Ideas from 'The Guide'

- **Guide to Good Practice in the Management of Time in Complex Projects**
- Publication - January 2011: Wiley Blackwell & CIOB UK



## Schedule Density

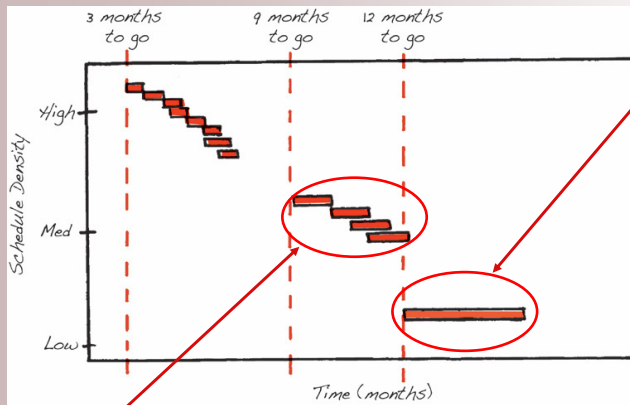
Figures © Guide to Good Practice in the Management of Time in Complex Projects



Activities are progressively expanded to greater levels of 'density' as more information becomes available

Unless the work is designed in its entirety and all subcontractors and specialists appointed before any work commences, it is impossible to plan the work in its entirety, in detail at the beginning of a project.

## Schedule Density

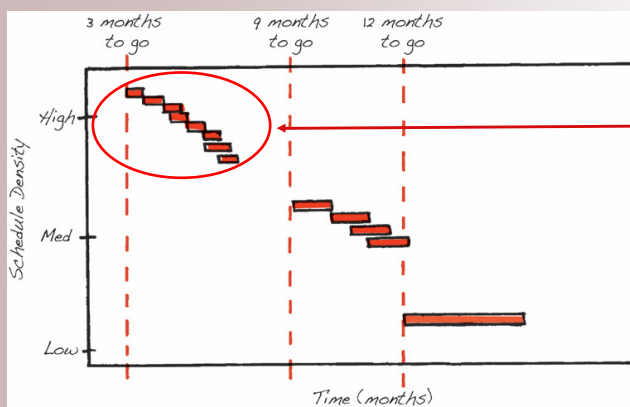


Low-density is appropriate for work, which is intended to take place 12 months, or more in the future.

Tasks may be several months in duration

Medium density is appropriate for work, which is intended to take place between 3 and 9 months after the schedule date. At this stage the work should be designed in sufficient detail to be allocated to contractors, or subcontractors. Task durations should not exceed 2 months.

## Schedule Density



High-density scheduling is an essential prerequisite for undertaking work. The schedule is prepared with the people doing the work.

Task durations should be no more than the update cycle

As the density is increased, adjustments to the plan take into account actual performance to date, resources, work content, and other factors necessary to achieve the overall schedule objectives.

## Schedule Density

	Location	Zone	Area	Section	Item	Description	Activity ID
Low Density	A	B	A			Substructures	ABAZ20000
Medium Density	A	B	A	A		Excavations	ABAA20000
	A	B	A	B		Piling	ABAB20000
	A	B	A	C		Ground beams	ABAC20000
	A	B	A	D		Floor slabs	ABAD20000
High Density	A	B	A	C		Ground beams	ABAC20000
	A	B	A	C	A	Formwork	ABAC40000
	A	B	A	C	B	Reinforcement	ABAC60000
	A	B	A	C	C	Placing concrete	ABAC80000
	A	B	A	C	D	Curing	ABAC00000
	A	B	A	C	E	Strike formwork	ABAC00000
	A	B	A	C	F	Backfill	ABAC00000

The activity coding structure (ID) maps high to medium to low density

27

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## Schedule Levels

- Traditional Schedule Levels  
(Adapted from Bechtel & Fluor standards)
  - Level 1: Project Master Schedule
  - Level 2: Summary Master Schedule
  - Level 3: Project Coordination Schedule
  - Level 4: Project Working Level Schedule
  - Level 5: Detailed Short term schedule
- For details, see Schedule Levels  
[www.mosaicprojects.com.au/Planning.html#Core\\_Papers](http://www.mosaicprojects.com.au/Planning.html#Core_Papers)

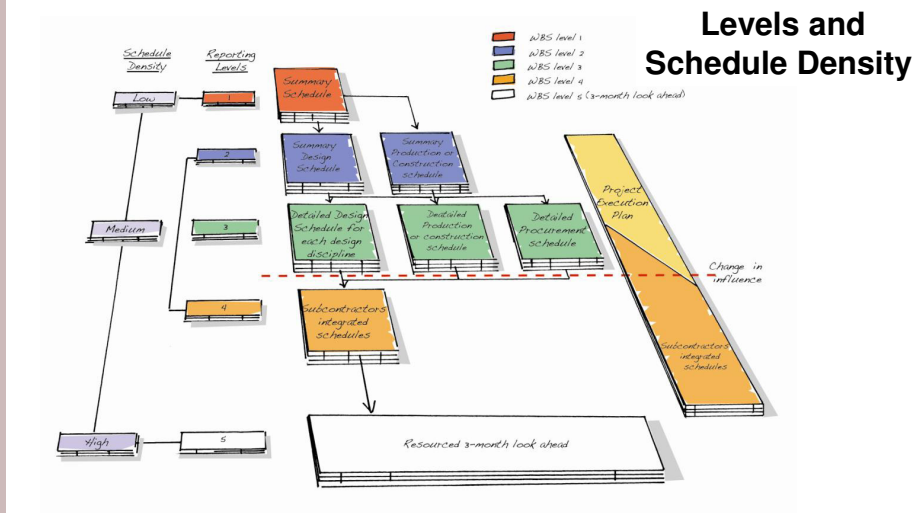
28

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# Schedule Levels

Figure © Guide to Good Practice in the Management of Time in Complex Projects



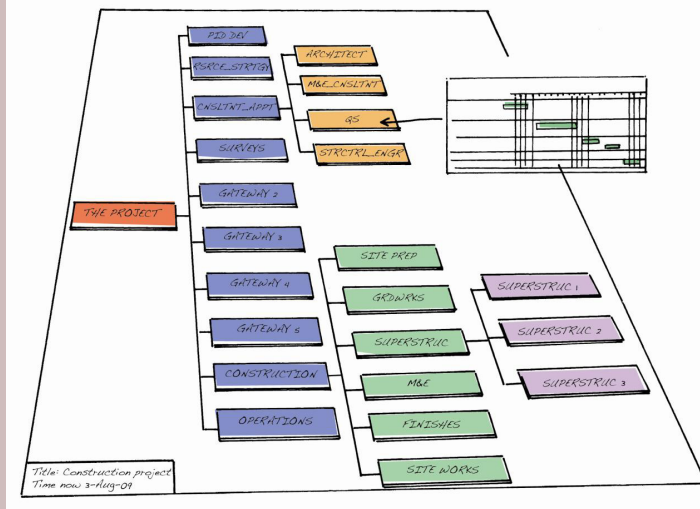
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# Work Breakdown Structure

Figure © Guide to Good Practice in the Management of Time in Complex Projects



30

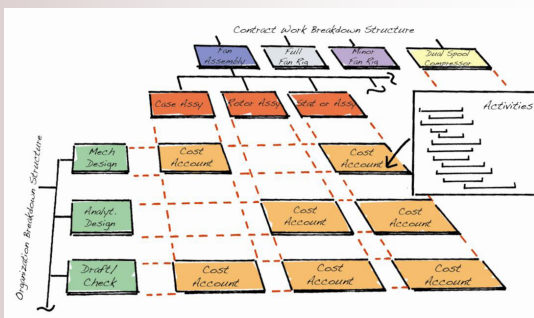
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## Control Accounts

Figure © Guide to Good Practice in the Management of Time in Complex Projects

The interaction between the OBS and WBS can be used to create management control points (**control or cost accounts**) where a specified manager has responsibility for a defined deliverable.



## This Section Standardising Process

- PMI's Practice Standard for Scheduling
- The Scheduling Excellence Initiative



## The Way Forward

- Practice Standard for Scheduling
  - Describes an effective scheduling methodology
  - Provides a quantifiable means for assessing the maturity of a schedule model



- Scheduling Excellence Initiative  
[www.pmicos.org/sei/COS\\_Website/mainpages/seiindex.html](http://www.pmicos.org/sei/COS_Website/mainpages/seiindex.html)

33

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## Standardising Process

- The 'Practice Standard for Scheduling'<sup>8</sup>
  - Places scheduling in the context of the PMBOK Guide 3<sup>rd</sup> Edition
  - Describes 'good scheduling practice' (Ch. 3)
  - Defines the components needed for any schedule (Ch. 4)
  - Offers a 'conformance scoring' system for evaluating schedules (Ch. 5)

8. To order: <http://www.mosaicprojects.com.au/Books.html>

34

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## Standardising Process

- Good scheduling practice (Ch. 3) offers guidance on:
  - The purpose of the ‘schedule model’
  - Designing the ‘schedule model’
  - Developing the ‘scheduling framework’
  - Developing the baseline schedule
  - Maintaining the schedule

35

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## Standardising Process

- Schedule Components and Conformance Scoring (Ch. 4 & 5)
  - Component list describes the ‘building blocks’ of the schedule model:
    - Project Calendar
    - Activity target finish date
    - Critical path, Etc
  - Components may be data entered by the scheduler or calculations

36

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## Standardising Process

- Schedule Component characteristics
  - A name (unique)
  - If it's 'Required' or 'Optional' (see conformance)
  - If it's entered manually or calculated
  - Its data format (eg, 'date' / 'numeric' / etc)
  - Its 'behaviour' (how it 'works' within the tool)
  - Good practices in its use
  - Conditional notes / associated components
  - Definition

37

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## Standardising Process

- Conformance Assessment Process
  - Validate all 'Required' components are present for the status of the model
  - Validate all 'must' good practices are followed for the 'required components'
  - **The schedule model is assessed as minimally conforming and can be 'scored'**
  - Non conforming schedules are not scored

38

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## Standardising Process

- Conformance Assessment Scoring
  - ‘Points’ are earned for all correctly used components (both Required and Optional)
  - The score is divided by the maximum possible score for the model as developed
  - The conformance level is described as a percentage %
- The values vary depending on the schedule model (eg, if there is no progress recorded these components are not considered)

39

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## Standardising Process

- Requirements for a ‘conforming schedule’ can now be specified by clients
- And measured!
- BUT – the system does not subjectively measure how ‘useful’ the schedule is - this is to be developed in future versions
- **2nd Edition will be published in 2011**

40

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## Standardising Process

- College of Scheduling and the Scheduling Excellence Initiative (SEI)<sup>9</sup>
- SEI is working on the 'Scheduling Enhancement Series' (SES)
  - A multi-volume reference for scheduling:
    - Concepts
    - Methodologies
    - Best Practices

9. See: <http://www.pmicos.org>

41

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## Certifications

- AACE's PSP™ Certification<sup>10</sup>
- PMI's Scheduling Credential PMI-SP
- Planning Planet Certifications
- CIOB Certifications

42

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## AACE PSP™

- AACE's 'Planning & Scheduling Professional Certification'<sup>10</sup>
  - 7 Hr examination
  - 8 Years scheduling experience
  - Construction industry focus
  - No tool bias (?Primavera influence)
- Approx. 650 Certifications awarded
- Credentials available for last 6 years

10. See: <http://www.aacei.org/certification/certExplained.shtml>

43

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## The PMI-SP Credential

- Difficult 170 question exam:
- Eligibility requirements:
  - Three to five years of project scheduling experience, and
  - A minimum of 5,000 (3,500 with a Degree) hours of project scheduling experience, and
  - 40 contact hours of formal education.
- For additional information see

<http://www.mosaicprojects.com.au/Training-Planning.html>

44

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## The PMI-SP Credential

- No industry bias
- No tool bias
- But only 360 qualifications awarded in 3 years

45

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## The PMI-SP Credential

- Focus of the exam: Understanding and 'using' schedule information, scheduling +
  - Communications & Stakeholders
  - Risk and variability
  - Scope, WBS and Earned Value
  - Organisation structures
- Aimed at scheduling and PMO managers
  - & senior schedulers moving to management

46

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## Planning Planet

- [www.planningplanet.com](http://www.planningplanet.com)
- Developing the: PPAS  
Planning Planet Accreditation Scheme
- 20 Accreditation editors appointed from around the globe
- Support from corporations
- Practitioner focus
- Likely to have specific industry based credentials

47

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## Planning Planet

- PPAS –Standard Documents
  - SD 0 - Why Plan ?
  - SD 1 - Planning, Scheduling and Project Control Methods
  - SD 2 - Designing the Schedule
  - SD 3 - Creating and Building the schedule
  - SD 4 - Maintaining the Schedule
  - SD 5 - Using the schedule or Specialism's

48

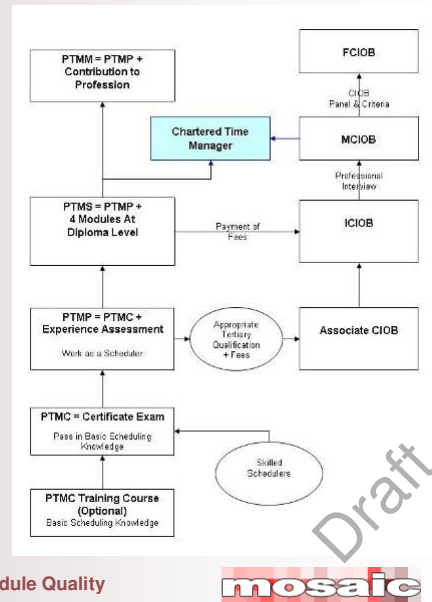
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## CIOB TM Framework

- Time Management
- Independent of CIOB qualifications
- 2 Examined levels
- 2 Assessed levels
- PTMC and PTMP launched 2011
- PTMS 2012



49

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## CIOB TM Framework

- Examination specifications under development
  - Certificate no industry bias
  - Higher levels Construction industry
- International team (including me)
- CIOB has 190 years of experience as a professional association
- Malaysian Region and office

50

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## What Mosaic is doing:

- We are developing a free resource at [www.mosaicprojects.com.au/Planning.html](http://www.mosaicprojects.com.au/Planning.html)



51

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## Conclusions

- **The trends are positive:**
- The new Practice Standard for Scheduling
- SEI developing best practices & guidelines
- CIOB publishing **The Guide**
- Practical 'Scheduling Certifications' are coming – PPAS & CIOB
- We can now rate the technical competence of a schedule

52

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## Conclusions

- New ideas and paradigms
  - CIOB's Guide to Good Practice in the Management of Time in Complex Projects Publication - January 2011
  - Faster Construction Projects with CPM Scheduling By: Murray B. Woolf Published, McGraw-Hill.
  - Plus others

53

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## Conclusions

- A focus on 'using' the schedule should emphasise
  - Collaboration & Agreement
  - Coordination and timely information
  - The ability to adapt to changing circumstances quickly
  - Supporting the PM Team (TKO) with useful information

54

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## Conclusions

- But this needs:
  - ‘Alliance’ type contracting
  - Collaborative management
  - Skilled schedulers
  - Tools to measure the ‘usefulness’ of schedules
  - Management and lawyers to understand what’s possible and what’s not possible

55

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## Conclusions

- The future of PM is predicted to be one that focuses on the ‘soft skills’
  - Communications
  - Motivation & leadership
- **Command and control is dead!**
- Uncertainty will be recognised as normal
  - Skills for managing uncertainty will become essential for successful PMs

56

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## Conclusions

- Project control tools will need to become
  - Project collaboration tools
  - Used to help the project manager
  - And the project team members to operate as an effective TKO
- **By providing timely and useful information, NOT masses of irrelevant data weeks after the event**

57

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## Conclusions

- Accepting *Every model is wrong, but some models are useful* G. Box 1979
  - Scheduling is a modelling process that helps communicate and coordinate ideas about what might happen in the future
  - It is not a cartographic process for mapping what already exists
- After 50 Years<sup>9</sup> we still have a long way to go

9. See 'A Brief History of Scheduling' :  
[http://www.mosaicprojects.com.au/Resources\\_Papers\\_042.html](http://www.mosaicprojects.com.au/Resources_Papers_042.html)

58

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## Questions Please



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Download this paper from the '**Resources**' section of the Mosaic site

The '**Papers & Resources**' section of the Mosaic site has:

- Direct links to all of the project management associations
- A large number of free PM papers and useful scheduling references

The '**Planning**' section of the Mosaic site has the latest information on the PMI Standards, SEI and the proposed Scheduling Credential