

Reviewing and Renewing the approach to Effective Management of Time on Mega Projects

Why there are so many problems and
how to solve them?

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Outline

- Time is not money!
- **The Guide**
 - Project Planning
 - Project Scheduling
- Education Framework
- Discussion

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Time is not money!

This section:

- The state of play
 - ICT – Gartner
 - Construction – CIOB
- Time -v- Money
- Skills and Knowledge

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The state of play

- ICT – Gartner
- Construction – CIOB
 - *Managing the Risk of Delayed Completion in the 21st Century*
(http://www.mosaicprojects.com.au/PDF/CIOB_TM_report_full.pdf)
- Complex -v- Simple

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Time -v- Money

- Money – keep until you spend
 - Symptom of other successes or failures
- Time – 60 seconds lost every minute
 - Can't change the past
 - Now is too late to change
 - Manage the future

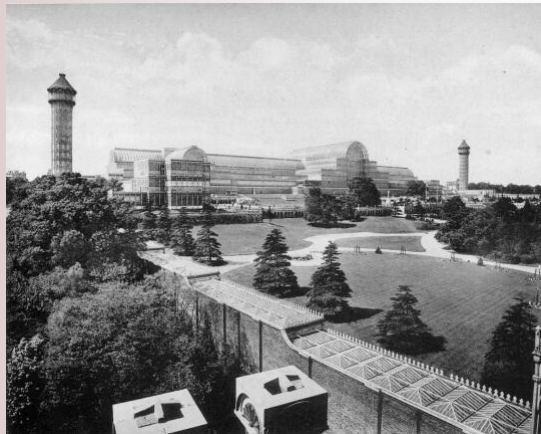
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Crystal Palace

- We are not so good!
- Crystal Palace.....
- Built in 1851

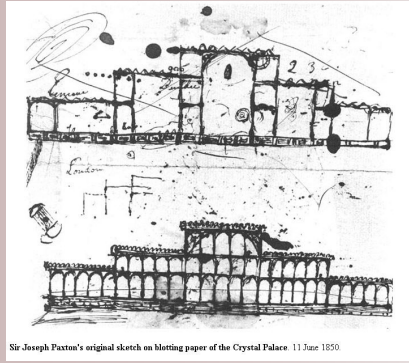


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Crystal Palace



The Crystal Palace, was a building the size of a modern shopping mall:
1848 feet [563.3 meters] long, 408 ft [124.4 m] wide and 108 ft [32.9 m] high.

New technology - Prefabricated cast iron was used extensively.

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Crystal Palace



From a rough sketch on blotting paper to the Great Exhibition of 1851 –

How long?

Royal patronage probably helped!!

The Crystal Palace was built in eight and a half months starting on 15 July 1850, opening on 1st May 1851

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The Effective Management of Time on Mega Projects

Burj Khalifa -v- Empire State Building

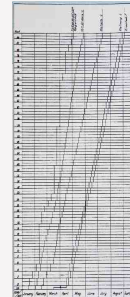


Burj Khalifa Dubai
208 floors in 5+ years



Empire State Bldg.
completed in 1931

102 Floors
built in
410 days



The steel frame
rose at the rate of
four and a half
floors per week

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Burj Khalifa -v- Empire State Building

If the Burj Khalifa in Dubai had been built at the same speed as the Empire State Building it would have opened two years earlier!



Burj Khalifa Dubai
208 floors in 5+ years



Empire State Bldg.
completed in 1931

The steel frame
rose at the rate of
four and a half
floors per week

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Time -v- Money

- Things that don't work!
 - Contract terms and conditions / penalties
 - CIOB Report
 - UK Government metrics (Constructing Excellence)
 - Static contract programs
 - Measure failure
 - Used for claims and court actions after the event

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Skills and Knowledge

- Skills and Knowledge
 - Very few skilled planners and schedulers
 - Not used or respected by management
 - Except for the fights after the event
- A Brief History of Scheduling

http://www.mosaicprojects.com.au/Resources_Papers_042.html

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Skills and Knowledge

- Solutions are being developed
 - Definition of good practices
 - Development training and certification
 - Education of management
- These elements are the focus of the balance of this paper

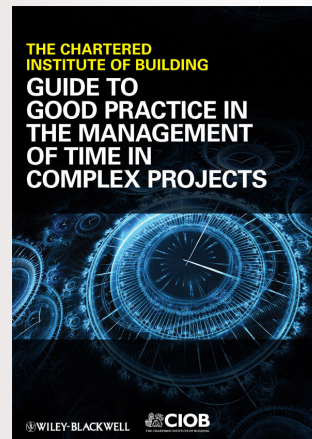
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The Guide

- *Guide to Good Practice in the Management of Time in Complex Projects*
- Publication
Early 2011
- Copies available from:



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The Guide

- Planning -v- Scheduling
- Schedule design
- Schedule Density
- Durations and Links
- Updating & Maintaining the schedule
- Reporting & Communicating

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Planning -v- Scheduling

- Project Planning
 - Strategic process
 - Focus on objectives and methods
 - Foundation for scheduling
- Project Scheduling
 - Develop and maintain an effective schedule

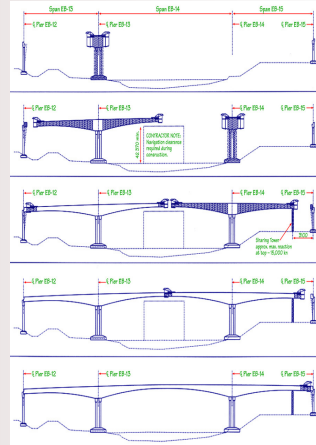
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Project Planning

- Precedes Scheduling
- Focuses on methods and Strategy
- Creative - requires skill and knowledge of the project



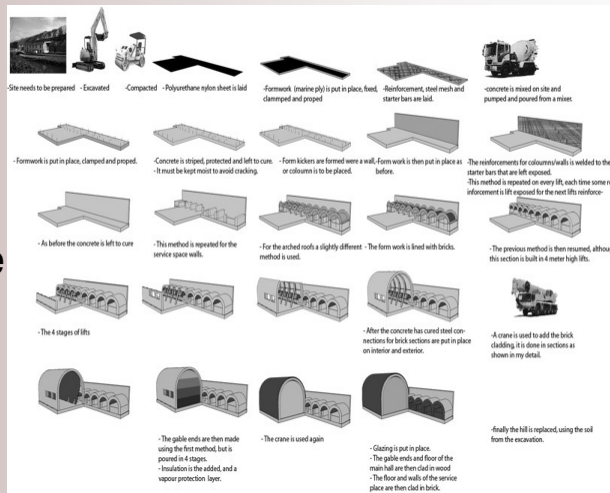
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Project Planning

- Creates Buy-in
- Frames the Schedule



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Project Scheduling

- Requires good knowledge of scheduling
- Understanding of the scheduling tool
- Involves:
 - Designing the schedule
 - Developing the schedule
 - Maintaining the Schedule

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Designing the schedule

- Understanding the Project Scope & Objectives (Planning)
- Determine the optimum update cycle
- Major milestones, gateways and phasing
 - The project life cycle

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Designing the schedule

- Schedule users / audience
 - Code and report structures
- Schedule size
 - Heuristics (25 / 600)
 - Control using Schedule Levels

See: Core Papers @

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

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Designing the schedule

- Schedule Levels & Schedule Density

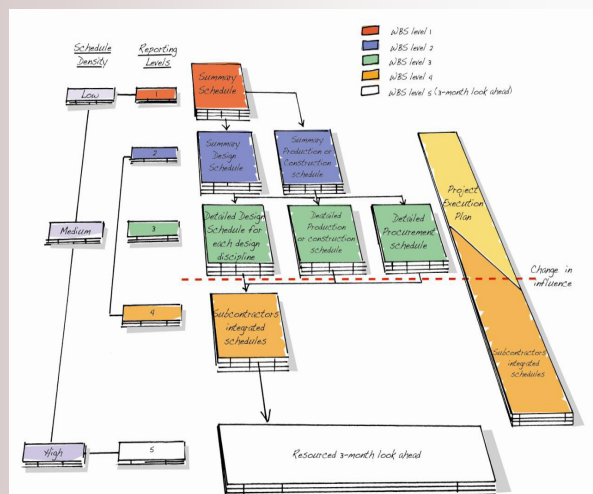


Figure © Guide to Good Practice in the Management of Time in Complex Projects

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Developing the schedule

- Schedule Density
- Sensible Activities
- Practical Logic

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Developing the schedule

- Schedule Density
 - Overall framework is essential for Time Management..... But
 - Detail planning requires the people doing the work to be involved (eg, Last Planner)
 - Therefore, add detail when appropriate

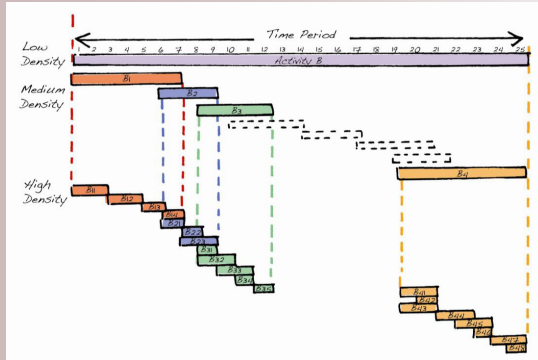
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Schedule Density

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

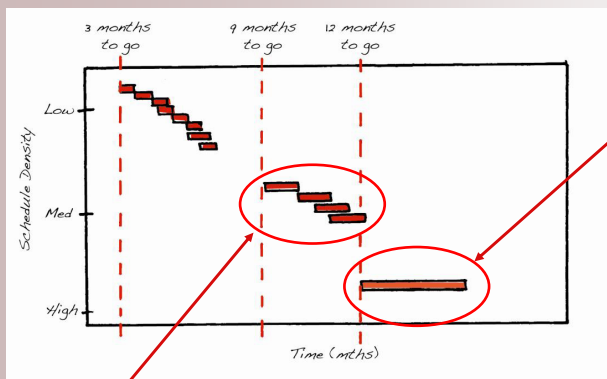
Unless the work is designed in its entirety and all subcontractors and specialists appointed before any work commences, it is impossible to plan the work in its entirety, in detail at the beginning of a project.

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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

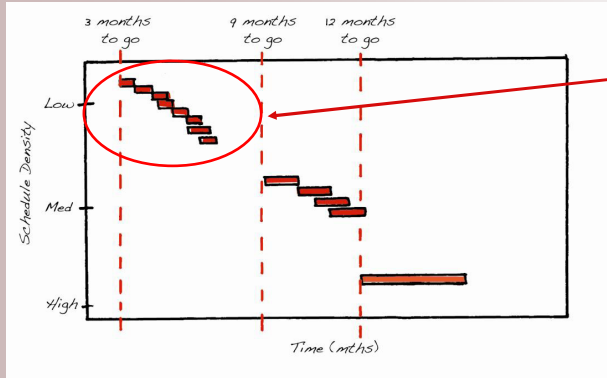
Medium density is appropriate for work, which is intended to take place between 3 and 9 months after the schedule date. At this stage the work should be designed in sufficient detail to be allocated to contractors, or subcontractors. Task durations should not exceed 2 months.

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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.

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Schedule Density

	Location	Zone	Area	Section	Item	Description	Activity ID
Low Density	A	B	A			Substructures	ABAZZ0000
Medium Density	A	B	A	A		Excavations	ABAAZ0000
	A	B	A	B		Piling	ABABZ0000
	A	B	A	C		Ground beams	ABACZ0000
	A	B	A	D		Floor slabs	ABADZ0000
High Density	A	B	A	C		Ground beams	ABACZ0000
	A	B	A	C	A	Formwork	ABAC0000
	A	B	A	C	B	Reinforcement	ABACB0000
	A	B	A	C	C	Placing concrete	ABACC0000
	A	B	A	C	D	Curing	ABACD0000
	A	B	A	C	E	Strike formwork	ABACE0000
	A	B	A	C	F	Backfill	ABACF0000

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

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Sensible Activities

- Milestones
 - Zero Duration
 - Marks a significant point or event in a project
 - Start and Finish
 - Other key points

Personal preference – ALL constraints are placed on Milestones

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Activity Identification

- Involve Stakeholders and Team
- Test for completeness
- Keep level of detail consistent with your 'plan for the schedule'
- Identify all Activities before moving onto next stage

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Attributes of a 'Good Activity'

- A discrete element of work
- A single person is responsible for managing the performance of the work
- Its description is unique and unambiguous
- The work is capable of proceeding to completion without interruption

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Estimate Activity Durations

- Deal with each activity in turn
- Estimate optimum duration for activity
- Consider: the work involved, the ideal crew size & the team's experience
- Involve people who will be responsible actually for 'doing' the work

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Estimate Activity Durations

- High Density - Its duration is less than twice the update cycle (or undividable)
- Be real!
 - For 90% of projects use 'days'
 - Most of the rest 'weeks'

See: The Cost of Time (Durations)-

www.mosaicprojects.com.au/Resources_Papers_009.html

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Developing the schedule

- Practical Logic
 - Organise the activities into a logical sequence
 - Only use 'real logic'
 - Use Finish-Start relationships where possible
 - Keep getting agreement

See: Links, Lags & Ladders -

www.mosaicprojects.com.au/Planning.html#Core_Papers

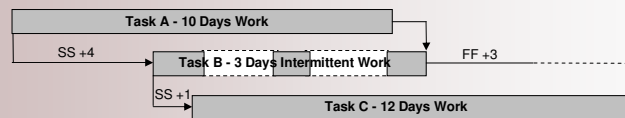
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Links Cause Problems

- Progressive feed (but understand the issues)
 - Use both SS and FF
 - Use Approximation or 'Ladders' if available



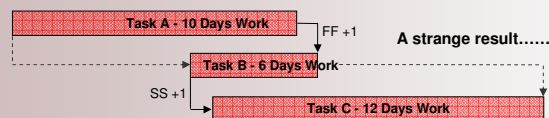
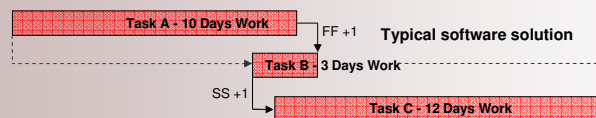
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Links Cause Problems

- But make sure you understand how your system works



Increasing the duration of 'critical' Task B reduces the overall duration of the work!

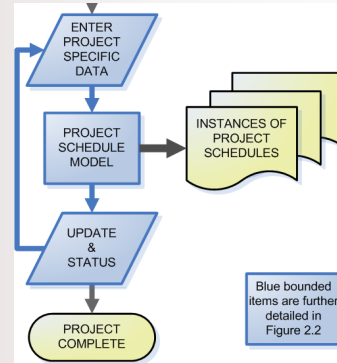
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Maintaining the Schedule

- Establish a baseline
 - At the development stage
 - As part of a re-baseline
- Record actual progress
- Reschedule from 'data date' (or Time Now)



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Maintaining the Schedule

- Edit for accuracy
 - No tool accurately manages all of the issues around partially complete tasks
- Involve both task owners and managers
 - Use 'their data' not yours!

See: Managing for Success - The power of regular updates-
www.mosaicprojects.com.au/Resources_Papers_002.html

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Reporting Options

- The major challenge with scheduling is communicating complex data effectively
- This is achieved by effective reporting

See: Seeing the Road Ahead –
the challenge of communicating schedule data
http://www.mosaicprojects.com.au/Resources_Papers_106.html

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Reporting Options

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

Clifford Stoll

See: Beyond Reporting - The Communication Strategy
http://www.mosaicprojects.com.au/Resources_Papers_094.html

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Qualification Framework

This section:

- Current certifications
- Planning Planet
- CIOB Time Management Credentials

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Qualification Framework

- Current Qualification Framework
 - Association for the Advancement of Cost Engineering International (AACE) PSP
 - PMI Scheduling Professional (PMI-SP)
- Both focused on highly experienced schedulers 3 to 5+ years

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Qualification Framework

- Limited training for PMI-SP or AACE
 - Assumed self study by experts
 - Mosaic planning a PMI-SP course for 2011
- Relatively low numbers of credentials awarded
 - 650 AACE in 6 years
 - 360 PMI-SP in 3 years

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New Developments

- Planning Planet: www.planningplanet.com
Planning Planet Accreditation Scheme (PPAS)
 - Developing training materials
 - Developing accreditation process
 - Likely to offer industry based qualifications
 - Entry level certification included

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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

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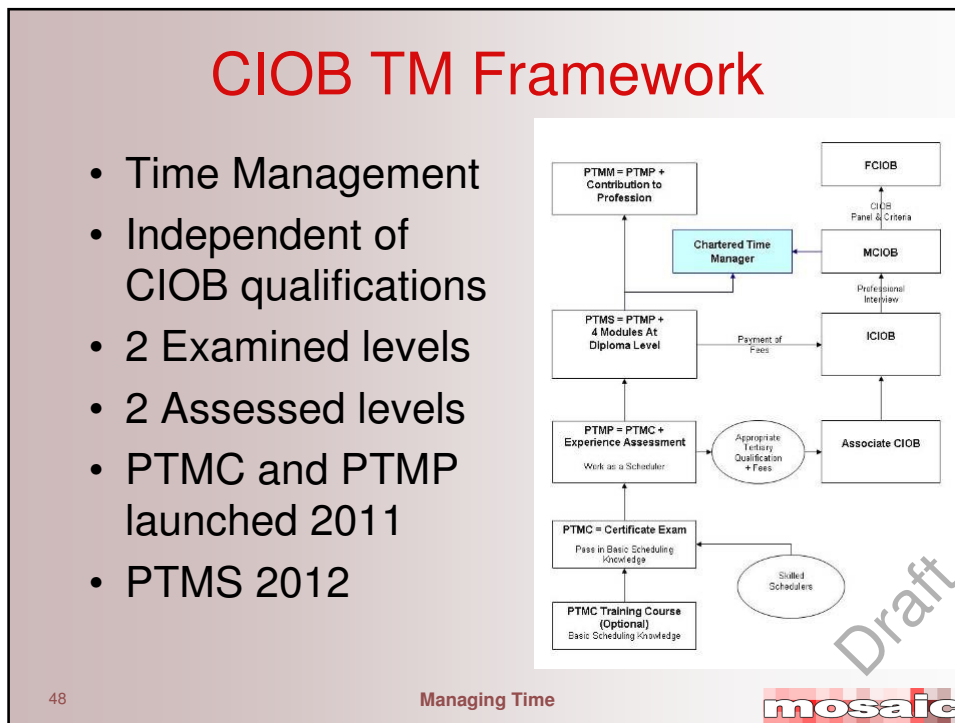
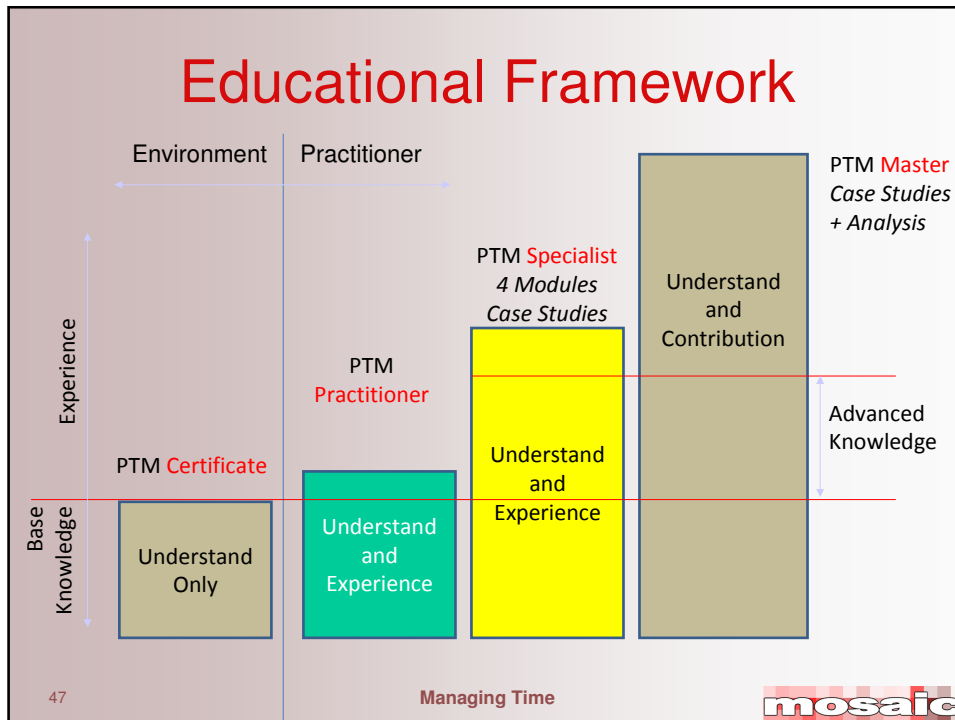
New Developments

- CIOB – Time Management Credentials
 - Four levels
 - Based on ***The Guide***
 - Certificate courses late 2011
 - Higher level certifications to follow

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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

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What Mosaic is doing:

- We are developing a free resource at www.mosaicprojects.com.au/Planning.html

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home training stakeholder management tools & techniques resources & papers consulting & ADR services company profile breaking news

Project Planning & Scheduling

"Someone's sitting in the shade today because someone planted a tree a long time ago."
Warren Buffett

Index

- Core papers
 - [The attitudes of a Scheduler](#)
 - [A Guide to Good Scheduling Practice](#)
 - [Dynamic Scheduling](#)
 - [Links, Lags & Leaders](#)
 - [Schedule Float](#)
 - [Schedule Levels](#)
- [The need for good scheduling practice](#)
- [Schedule Performance Scoring](#)
- [Scheduling Training and Certifications](#)
- [Scheduling Consultancy Services](#)
- [Planning and Scheduling resources](#)
 - [Published Papers](#)
 - [Resources, Organisations, Bodies & Standards](#)
 - [Scheduling Tools](#)

It's just one dam project after another!
[\[See all sites \]](#)

Scheduling Workshop

Bookings are now open for Mosaic's new Scheduling workshop based on the PMI Practice Standard for Scheduling. Next courses:

- [TopLink - Kuala Lumpur 8th Sept - \[Download Brochure \]](#)
- [Tonkin \(2 day\) - Brisbane 8 & 9 Nov - \[Download Brochure \]](#)
- [Tonkin \(2 day\) - Sydney 15 & 16 Nov - \[Download Brochure \]](#)

[\[See more on our Scheduling Training \]](#)

[Visit the Mosaicproject's Blog for scheduling news and views](#)

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Conclusion

- Definite trend towards
 - Standardising planning and scheduling
 - Developing training frameworks
 - Accrediting Planners and Schedulers

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Conclusions

- Solve the 'chicken and egg' conundrum
 - Well trained schedulers can help project managers and advise senior managers
 - But no one is training senior schedulers
 - Therefore very few people experience the benefits of working with skilled schedulers
 - Consequently they don't know what they are missing
 - And don't invest in training.....

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Conclusions

- We need a management re-education program
 - SOX, etc mandate the need for predictive process like scheduling
 - So why do so many projects have time 'set in stone' before anyone looks at a realistic schedule?
 - Senior managers need to understand the value of skilled schedulers

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Conclusions

- International credentials will help
 - Focused on new planners and schedulers
 - Planning Planet & CIOB are in discussion to normalise or coordinate
- **The Guide** and PMI's Practice Standard provide the framework
- We have the opportunity to reinvigorate the role of planning and scheduling

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Conclusion

- Challenges:
 - Keep training and credentials aligned
 - Gain respect of management
- We can make a difference!

**Useful schedule are useful
because they are used!**

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Discussion

- Questions please
- Contact details:
 - Free planning and scheduling resources:
<http://www.mosaicprojects.com.au/Planning.html>
 - Email: patw@mosaicprojects.com.au

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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