

Project Management Forum

Eilat 2009

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Purpose

- To build on the sessions in Hong Kong and Stockholm
- To review the elements of PM
- To review examples of the stages of development of a Project
- To review examples in Cadastre.
- To explore a problem in Cadastre

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Project Management Introduction

- Project Management has developed out of a desire to use best practice techniques on a regulated formalised basis to avoid random failures.
- One Objective of Commission 10 is to promote best practice techniques

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Project Management Introduction (cont.)

- Many Federal Organisations used to carry out direct works
- In many countries this has been replaced by management of specialist subcontractors.
- Technical Managers have needed to learn skills in Procurement and contract administration.

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Project Management Introduction (cont.)

- In the private sector success can be measured by increased margin
- In the public sector success can be measured by reduced cost and waste
- Project Management was associated with Construction because this was the earliest discipline adopting.

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- Now many Technical Managers

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Reviewing the Elements of Project Management

- What do we mean by a Project ?
- A Project is a temporary one-off exercise to create a unique product or service.
- All members of FIG have to manage some form of Project

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Project Management (cont)

- Products range ~ modest house extensions - multi-billion \$ schemes
- Services range ~ modest land surveys - multi billion \$ flotation
- All projects need managing to ensure:-
 - delivery of defined scope
 - quality, time and cost

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Project Management (cont)

- Project Managers
 - reduce risk, over-see cost, time and quality
 - use various management techniques.
- All FIG managers providing a unique product or service must control Finance, time and human resources.

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Project Management (cont)

- PM techniques started in the 1950's and most surveyors recognise
 - Critical Path (CPM) planning
- PM Methods & Tools now Extended
 - Germany - "DIN 69901" standard
 - UK Government "Prince2"
 - US CoE uses Project Management Information System P2

Project Management (cont)

- All methods have similar stages employing different tools
 - Project Initiation
 - Project Planning
 - Project Execution
 - Project Monitoring
 - Project Completion

Project Management (cont)

- We further defined these stages
- Re-iterate to refresh
- Project Initiation
 - Identification of Opportunity
 - Definition of the problem
 - Concept
 - Analysis & Design of Objectives
 - Feasibility

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Project Management (cont)

- Project Planning
 - Business Case
 - Estimated resources
 - Success Criteria
 - Risk Management
 - Design
 - Modelling
 - Procurement

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Project Management (cont)

- Project Execution
 - Implementation
 - Direction
 - Production
 - Make & Build

Project Management (cont)

- Project Monitoring
 - Controls
 - Forecasts
 - Tracking & Reporting
 - Test & Analysis
 - Commissioning
 - Quality Management
 - Change Management

Project Management (cont)

- Project Completion
 - Hand-over
 - Operation & Maintenance
 - Defects Prevention
 - De-commission resources
 - Follow on actions
 - Evaluation

Project Management Summary

- Project Management skills are used by all FIG members
- Many projects worldwide do not come in on time or cost or quality
- About 50% of corporate global projects ~ new products, large computer systems and mergers **FAIL.**

Project Management Summary

- PM builds on skills used by successful projects and reduces the Risk of failure.
- Tools and techniques employ best practice to support the manager to:-
 - Focus on the right project
 - At the right time
 - For the right reasons
 - At the right Cost

Examples of Good and Bad Project Management

- Important to learn from examples
- Applies to all types of work

Project Management Examples

- Looked at examples in each stage.
 - Project Initiation
 - Project Planning
 - Project Execution
 - Project Monitoring
 - Project Completion
- Examples provided by FIG members

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Project Examples – Initiation Ticketing System

- Project details
 - State Ticketing System, Victoria, Australia
- Scope
 - Smartcard ticketing system to be rolled out across State. Similar System - HK, Taipei, London, Singapore
- Other details – value, participants
 - Reported at \$500m (part of \$1b operating)
- Management circumstances
 - Civil & Equipment installation Jan 2007
 - Pilot during 207
 - Roll out system late 2007
 - Announced in May 2008 – 3 years over-run, +\$350m

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Project Examples - Initiation Ticketing System (cont.),

- What went badly
 - Complexity of system drastically underestimated
 - Existing system to be maintained in parallel for 18 months minimum (12 months extra)
 - Ticket machines and tickets to be altered
- What went well
 - Altering machines allows use of notes as well as coins
 - Memory on cards extended which will allow other uses

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Project Examples - Initiation Ticketing System (cont.),

- What to do/ not to do again
 - Investigators have uncovered potential conflict of interest between authority and contractor.
 - CEO of authority – a specialist on a very high salary left under “mutual consent
 - Government acknowledged the “expert” advice received “that the system could be installed much faster than other examples” was incorrect
 - Software problems reported with all systems worldwide
- Comments / conclusions
 - Initiation stage was not properly managed by client in particular feasibility and procurement

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Project Examples – Planning Victoria Line

- Project details
 - Victoria Underground Line, London, UK
- Scope
 - Large complex project - planned and completed in three stages
- Other details – value, participants
 - In 1965 valued at £56m [£1b today]
- Management circumstances
 - LTB provided overall control to 22 main contractors
 - Project used Network Analysis, [new at the time] to maintain overall control.

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Project Examples – Planning Victoria Line (cont.),

- What went well
 - Project met all three target dates and was completed to budget.
 - Network analysis contributed to successful :- Planning, Control, Communications and co-ordination.
 - Network used to co-ordinate widely separated participants
 - Progress reports issued succinctly with realistic float
 - Clear policy, experienced planners, training given.
 - Programmes properly reviewed and adjusted
- What went badly
 - Little reported as going badly. Team and project very successful.

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Project Examples – Planning Victoria Line (cont.),

- What to do/ not to do again
 - Good leadership by Client - London Transport Board.
 - Progress reported to board monthly. Board reviewed updated programme every 2 months.
 - Look ahead always several years ahead
 - Design stage integrated into planning to give early forecast of methodology
- Comments / conclusions
 - Planning and Implementation well executed.
 - Why did this large complex project in 1965, with novel tools, succeed when more recent projects have failed?
 - Success not dependant on PM tools

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Project Examples – Execution - Survey (Human Resources)

- Project details
 - Survey of an oilfield, Turkey
- Scope
 - Establish ground control over two areas of 4000 sq km.
- Other details – value, participants
 - £100k in 1990 [£250k today]
- Management circumstances
 - Small company at leading edge of satellite technology
 - Contracts won through an associate company.
 - Decision to use GPS rather than transit satellite equipment to reduce time

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Project Examples – Execution - Survey (Human Resources) (cont.),

- What went badly
 - Technical problems with implementation.
 - GPS readings accepted when only three satellites available.
 - No redundant rays used in the observing scheme
 - No connection to existing ground control
 - Senior Surveyor trained in system but made technical errors.
 - No station mark for reference, stations not linked.
 - Senior Surveyor left site before completion.
- What went well
 - Good relationships established with client in overcoming the problems created

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Project Examples – Execution - Survey (Human Resources) (cont.),

- What to do/ not to do again
 - New staff often unsuccessful, do not assume paper qualifications mean quality assured.
 - Sending new staff to remote locations without trial has a high level of failure
 - Use of new technology without trial has a high level of failure
- Comments / conclusions
 - One unsuccessful project may wipe out the profit from 10 successful projects.
 - Execution stage is normally major expenditure. Learn from experience. Use best practice.
 - Management of Human resources critical in execution.
 - FIG paper published last year

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Project Examples – Monitoring the Contract - Road Project

- Project details
 - Road project in Botswana - housing development.
- Scope
 - Construction of 55km of roadway and associated drainage and landscaping, value approx £5m.
- Other details – value, participants
 - Work was done by a subcontractor to a Main Contractor. S/C had no access to the Client. Subcontract included guarantees and LAD's.
- Management circumstances
 - The project got off to a bad start due to delayed access and level changes. The subcontract required the S/C as a condition precedent to give a notice within 28 days of event giving rise to change. Subcontractor failed.

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Project Examples – Monitoring the Contract - Road Project (cont.),

- What went well
 - The Subcontractor had valid reasons to claim additional monies, not disputed.
- What went badly
 - The Subcontractor failed to give the condition precedent notice and therefore lost entitlement.

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Project Examples – Monitoring the Contract - Road Project

- What to do/ not to do again
 - Make sure that everyone understands what is required of the contract and follow the procedure. Have a workshop at the project commencement so the team know the ground rules.
- Comments / conclusions
 - Monitoring of the contract conditions was not followed

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Project Examples - Completion - Bridge

- Project details
 - Bridge in South East Asia.
- Scope
 - Construction of a major cable stayed bridge
- Other details – value, participants
 - Fixed price lump sum Contract with design carried out by Client. Value £250m
- Management circumstances
 - Changes occurred to the design.
 - Lengthy battle took place on liability for changes.
 - Matter went to arbitration.

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Project Examples - Completion - Bridge (cont.),

- What went badly
 - Contractor won the arbitration principle but failed to link cause and effect on the money side to the level he was seeking.
- What went well
 - Contractor won the arbitration principle

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Project Examples - Completion - Bridge (cont.),

- What to do/ not to do again
 - Project team got buried in detail; before embarking on arbitration/litigation weigh up the costs of the arbitration. The records and evidence to support the case and that costs flow from the principle agreed.
- Comments / conclusions
 - Before embarking on a long litigation route ensure the case is sound and more importantly the records and evidence and contact history to recover the costs are available.
 - The project was successful the completion a failure.
 - High level contract advise required

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Project Examples – Planning Cadastre - Ethiopia

- Project details
 - Set up new cadastre for Bahir Dar in Ethiopia
- Scope
 - Establish Data in a series of linked tables
 - Owners details; Land parcel details
 - Building details; Utilities supplies
 - Records of disputes
- Other details – value, participants
 - Work done by local Surveyors 1999 to 2004
 - Contract sponsor - Local government
- Management circumstances
 - Consultant reported to Local Government

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Project Examples – Planning Cadastre - Ethiopia (cont.)

- What went well
 - Surveys carried out to conventional booking system and registration transferred to digital record.
- What went badly
 - Lack of visible fairness and independence
 - Lack of support from local people
 - No legal framework established
 - Work not completed within contract period.
 - Contract abandoned.

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Project Examples – Planning Cadastre - Ethiopia (Cont.)

- What to do/ not to do again
 - Provide clear terms of reference “To provide a public inventory of land uniquely identified with outlines of the property giving size, value and legal rights”
 - Provide legal framework which allows issuing of title deeds after registration/resolution of any disputes
 - Install steering committee with powers to co-ordinate and supervise.
 - Establish pilot area to sample the system proposed.
 - Maintain constant public awareness campaign.
- Comments / conclusions
 - Many stakeholders involved in land issues.
 - Scope needs clear definition
 - Legal framework required before start

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Project Examples – Completion Cadastre – Negev

- Project details
 - Set up new cadastre for Negev in Israel
- Scope
 - Survey existing boundaries and Ground markers establish new Co-ordinated references
- Other details – value, participants
 - Work done by local Surveyors 2008 to 2010
 - Contract sponsor - Local government Dept
- Management circumstances
 - Reports to a Steering Committee

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Project Examples – Completion Cadastre – Negev (cont.)

- What went well
 - Clear brief from steering committee
 - Trial area to establish validity
 - Existing maps digitised successfully
 - Area of Negev chosen to minimise boundary disputes
- What went less well
 - Very few physical beacons (authentic points) available
 - Existing maps found to have significant errors
 - No legal framework for replacing existing defined legal boundaries.

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Project Examples – Completion Cadastre – Negev (cont.)

- What to do/ not to do again
- Comments / conclusions
 - The project is not yet complete

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Case Study

- Cadastre 1
 - Existing records for land tenure and taxation based on old large scale maps
 - How can these maps be legally updated to match current digital technology
 - Project Initiation
 - Project Planning
 - Project Execution
 - Project Monitoring
 - Project Completion

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Case Study

- Cadastre 2
 - How is movement of the earth relative to spatial coordinates dealt with?
 - Project Initiation
 - Project Planning
 - Project Execution
 - Project Monitoring
 - Project Completion

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Further Papers for 10.3

- Target examples of Best practice
 - Procurement
 - Risk
 - Communications
 - Quality
 - Cost Management
- Other topics?

Where can skills be improved?

- Organisation Level
- Project level
- Individual level

- Change seen in Construction now occurring in Surveying

Conclusion

- **Success and Failure**
 - Applies to all types of projects
 - Applies to all stages of projects
 - Particularly applies to Initiation and Planning Stages
- **Project management is an attempt to learn from experience and give guidelines to minimising failure**

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Project Examples – Execution Railway Station

- **Project details**
 - Rebuilding a major Railway Station, Victoria, Australia
- **Scope**
 - PPP re-development of station and management of operation for 30 years
- **Other details – value, participants**
 - Construction due to be complete by April 2005
- **Management circumstances**
 - Master plan released in 2001
 - Concession signed in July 2002
 - Contractor appointed August 2002
 - By end of 2004 losses of \$100+m forecast by developer due to delays

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Project Examples – Execution Railway Station (cont.),

- What went badly
 - First and largest PPP project in Victoria
 - 60,000 commuters per day to be maintained
 - Innovative, complicated, prize winning roof
 - 15 months delay
- What went well
 - Most project objectives achieved
 - A global agreement was reached where all parties contributed. Legal costs (potentially \$200m) avoided

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Project Examples – Execution Railway Station (cont.),

- What to do/ not to do again
 - Too much of total risk transferred to contractor
 - Lack of experience in this form of contract
 - Inflexible management led to disputes and litigation
- Comments / conclusions
 - Execution stage was not properly managed and Risks collectively addressed.

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