Project Management Forum

Eilat 2009

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
### 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.

---

#### 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- In many countries this has been replaced by management of specialist subcontractors.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.
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.
• Now many Technical Managers

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
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

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.
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

Project Management (cont)

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

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 2007
  – Roll out system late 2007
  – Announced in May 2008 – 3 years over-run, +$350m
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

May 2009 FIG Working Week

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
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.

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 planers, training given.
  – Programmes properly reviewed and adjusted

• What went badly
  – Little reported as going badly. Team and project very successful.
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

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
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

- 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

May 2009  FIG Working Week  27
**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.

---

**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.
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

May 2009 FIG Working Week 31

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.

May 2009 FIG Working Week 32
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

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
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

---

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.
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

---

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
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.

Project Examples – Completion Cadastre – Negev (cont.)

• What to do/ not to do again

• Comments / conclusions
  – The project is not yet complete
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

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
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

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
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

• 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.