



Overview of project planning approach & challenges faced by Planning professional in infrastructure sector.

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by:

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Brief Intro of myself & my presentation

- 9 years of experience in infrastructure planning in Asia – Singapore, India & Malaysia.
- Area of Focus: Tender planning, project planning and management, Delay Analysis.
- Key projects involved:
 - Changi East, Changi Airport Group, Singapore.
 - T209, Lentor MRT Station, Singapore.
 - SGEDT Railway line, Malaysia.
 - Bangalore Metro, India.
- Your Takeaway from this presentation:
 - Study about the Planning Professional approach (50+ survey data from across the world)
 - Importance of Big Data & Data Management.
 - A Case Study “A case of unforeseen Delay Event – TIA & As built Analysis – METRO PROJECT in SINGAPORE.

Inspiration for this study!



David Parkins

“We need to find it, Extract it, Refine it, Distribute it and use it to drive the economic prosperity.” *Dr. Andrew Seit.*

“Historical Data & Productive Data has a greater role in the construction industry”

Introduction.

- Government budgetary outlay for infrastructure development ranges from 6-9% of its GDP.
- Construction sector involves several stakeholders – Financial institutions, govt agencies, Employer, Public, consultants, sub-con & main con.
- **Project success = project completion time + budgeted cost.**

For an example say a project of worth US \$8 billion, the expected average cost of delay = \$370 million per year or about \$1 million per day, benefit short falls are consequences of delay, because delay results in later opening dates and thus extra months or even years without generating projected revenues (Flyvbjerg, 2007).

Poor Planning Results in

- Cost Over Run.
- Delayed Completion.
- Increased period for debt repayment.
- Late commissioning of the project.

Steps towards Realistic Planning Approach.

- Apart from all the scheduling aspects of software, we are supposed to give due considerations to constraints.

Constraint Type	A case by Example	Planning Measures
Resource Constraint.	A tunnel works milestone was approaching to be completed, but a activity called bracket installation was to be completed and there was shortage of brackets, as its custom made thus it leads to delivery late by 4 Weeks. The milestone got delayed 4 weeks.	An estimate of "Lead Resources" quantity and arrival time was neglected. An experienced planner keeps tab on "lead Resources"
Information Constraint.	An crucial activity of relocation of cables was not scheduled in the program. A project manager had to reschedule entire excavation activity by a month.	Significant activities succeeding major activity must be scheduled in the program.
Environment Constraint.	An construction activity nearby hospital is avoided during night time, thus scheduling such activity for 24 hours work time in the baseline stage lead to delay.	Intrinsic details are to be address and alternative strategy to be put in place.
Policy Constraint.	Most common constraint faced by planners are the delay in authority approvals which do take higher amount of time than planned.	Lack of understanding of historic data. Planner needs keep historic records of authority turn up.
Productivity Constraints.	Under-estimating or Over estimating of machinery and manpower resources needed to complete a task. Underestimating leads to delay in completion, over-estimating leads to excessive idling of resources.	Optimum planning is done only by communicating with stake holder of the activity.

Steps towards Realistic Planning.

After giving due consideration to constraint parameters listed in the table above!

- Give adequate consideration to the uncertainty in the progress arising out of negligence./ Non Compliance./ Un-productive work.

<u>Sequence 1</u>	<u>Sequence 2</u>
Design Approval & Mock Up Approval	Design Approval & Mock Up Approval
Material Procurement	Material Procurement
Delivery	Delivery
Inspection of delivery/Application	Application/ Installation.
Application/ Installation.	



Non-productive/ Non Compliance

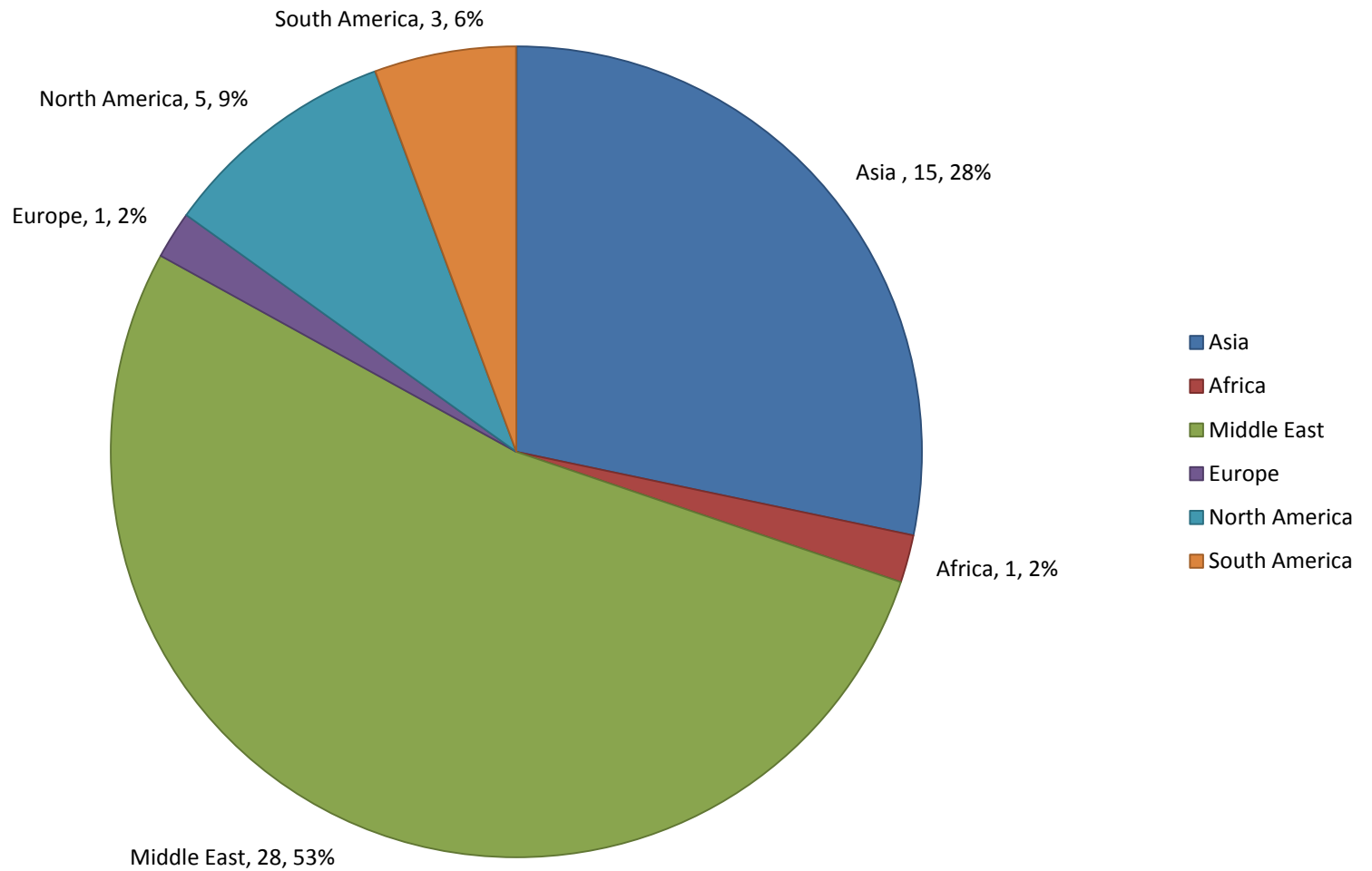
Steps towards Realistic Planning.

- Visualize the working space, 4D BIM model, to avoid any space constraint. As major projects involved coordination with several interfacing contract packages.
- Account adequate risk to the Total Float. (Give some Buffer).
- Don't give up or lost in the middle path, be alert to project changes, act on right time and right situation, communicate with all stake holders.

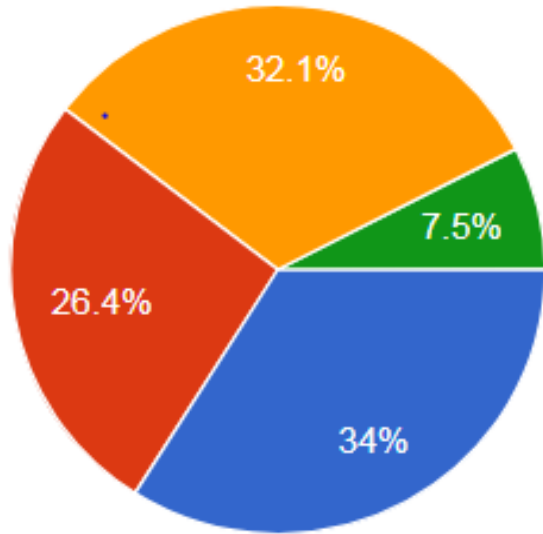
Understanding the Approach & Challenges of Planners/Schedulers.

- To understand the professionals approach in planning, scheduling, monitoring and their way in dealing with constraints and delay.
- An research analysis method of Questionnaire surveying and Online Interviewing was done using online surveying tools.
- **Survey Respondents:** The survey respondents were experienced "Planning Professionals" from different countries ranging from different demographics such as Peru, Colombia and Brazil South America, Canada in North America and from several countries in Asia and Middle East.
- Most of our respondent was from Middle East and Asia.
- **Number of Respondents: 53.**

Results & Analysis.

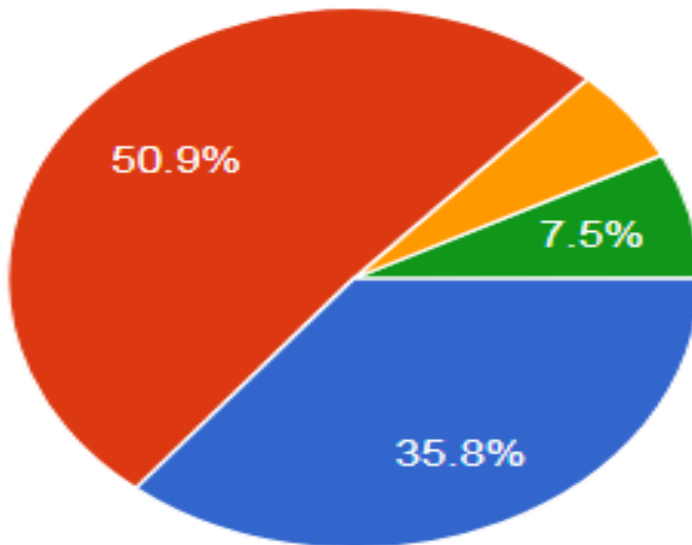


Industry background of the respondents.



- oil and Gas Industry
- Public Infrastructure
- Private Mixed use developments
- Transportation Infrastructure.

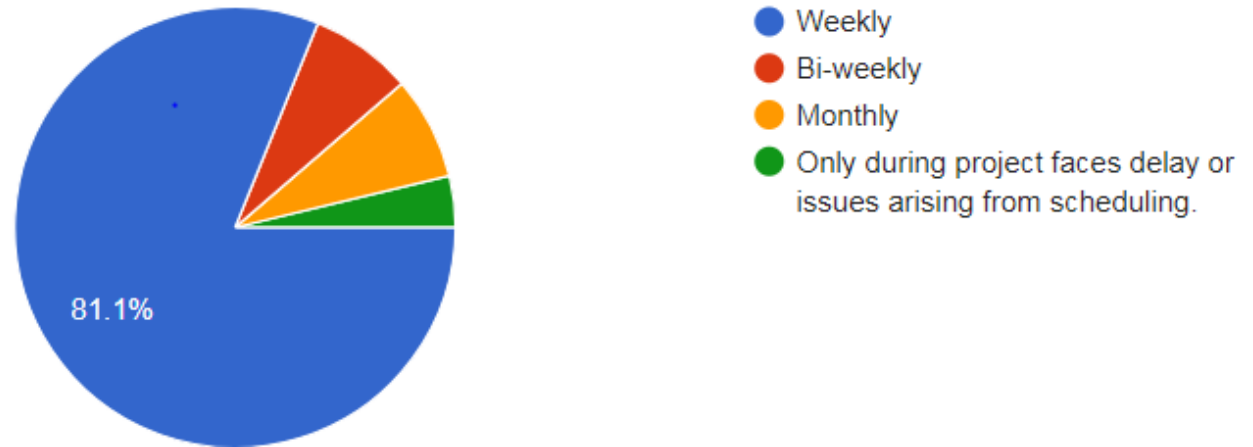
AGE GROUP



- 20-30
- 30-40
- 40-50
- 50-60

53 responses

Program Review by Project Managers / Team lead.



• *Majority of the respondents have come across a situation as such that their baseline was reviewed at least 3 times in a complete project lifecycle mostly due to the update in a scope of the project or due to the change in contractual, or due to complexity of the project.*

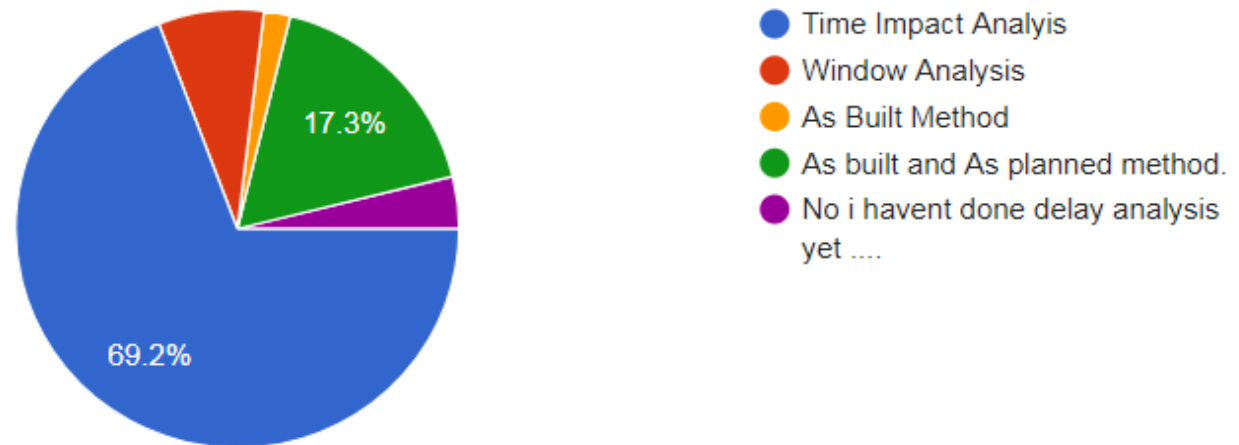
• **79%** of respondents have indicated that their the projects are monitored weekly by updating Physical S Curve, Financial S Curve, Major works trend charts, program updating.

69% of respondents have agreed to have performed Risk Analysis during the project lifecycle.

Contd.

- 85% of them are familiar delay analysis techniques.
- The majority of the respondents have agreed that their important and preferred delay analysis technique is Time Impact Analysis.

52 responses



- 59% of the respondents feel it is crucially important to keep all the data and records for better application.