

EXECUTIVE ENGINEER

Managing multidisciplinary engineering

by Paul Sancandi

Why is managing the successful delivery of the engineering design and design related services for infrastructure or building projects within a multidisciplinary engineering environment, such a major challenge for engineering firms in today's economic environment?

Multidisciplinary engineering firms are expanding their portfolio of engineering services as well as seeking to diversify and increase their revenue streams. In order to generate a good return, each business stream within the multidisciplinary environment will be given its own set of key performance indicators (KPIs) set by management, and as such the focus by each business stream is to achieve these KPIs.

So what happens when several business streams have to work together on the same project? In today's competitive environment, consulting fee levels are being squeezed to a point that the level of service and the deliverables are all under real pressure to be delivered by the individual business streams to meet their own KPIs. Internal leadership, management and coordination between the various business streams is sometimes not properly allowed for by the multidisciplinary engineering firm in preparing their bid or it is incorrectly assumed that the team will just do it as part of their work.

I have observed that if it is not properly allowed for in the bid, people will assume someone else in another group will do the management tasks and also carry the time cost on the project.

If multidisciplinary engineering firms are going to achieve superior outcomes for both their clients and their own business, they cannot afford to manage design delivery and services across several business streams haphazardly and expect consistent results. They must manage the design of their projects by ensuring they have formalised project management procedures that are primarily focused on enhancing the engineering design process.

For infrastructure and building projects that involve a number of engineering business streams, successfully managing the design throughout the entire project life cycle can represent the difference between a superior outcome for the project in terms of quality, timing, cost, value and return to the engineering firm's own business, or failure, given both the complexity of infrastructure and building projects and level of consulting fees in today's environment.



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Some clients have expressed their view to me that a "one stop shop" does not work, as their experience has been that there is in fact better coordination and communication having individual engineering disciplines delivered by individual engineering consultant firms. This does not have to be the case. In my experience, it can work and work well. But multidisciplinary engineering design needs a careful type of management to make it work.

Based on my experience on many large and complex projects both here in Asia and the Middle East, whether the multidisciplinary engineering consultant is the lead consultant of

an infrastructure project or is under the direction of a lead consultant such as an architect in a building project, the multidisciplinary engineering firm should ideally have the following in place to ensure the best chance of success:

- A well-defined functional design brief from the owner or developer and a detailed project budget and program.
- Detailed scope of services and deliverables for both the technical requirements as well as the design management requirements for each engineering design disciplines.
- Well-defined and detailed procedures for managing design that are simply a normal part of the engineering services for all the relevant stages of the services for each of engineering design disciplines. These should be defined both at project level as well as at the engineering firm's in-house level.
- Clear roles and responsibilities for the lead consultant and for each of the engineering design disciplines.
- A designated and suitably experienced and qualified in house engineering design manager whose only task, at least for major projects, is to manage the delivery of the entire multidisciplinary engineering design team in accordance with the standard procedures for managing design at both the project and in-house levels.
- The engineering design manager must have the full support of the engineering firm's project director and must have clear and accepted management authority across all the various in-house engineering disciplines and business streams as related to the design.

The above will go a long way to managing and delivering multidisciplinary engineering design for success. ■

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