



ARCHITECTING PROJECT MANAGEMENT

for Enterprise Agility...

July 14 to 16, 2016,

NIMHANS Convention Centre, Bengaluru

Technology – a horse rider for High Value Engineering Centre

Leverage of Technologies

Paper ID: PMIBC_16_3_002

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ABSTRACT

Any project success is flavored more, only if there is hand in hand seamless project execution either through a co-located project team or a virtual project team.

Current market scenario however compels having virtual low cost and in par qualities as back end support to maintain market pace and competition. This keenly many in the western world follow. These back end support offices leverage high value engineering skills scaled up with low cost compared to their western counterparts. Such support offices are majorly located in and around Asia region.

Now, the horse rider, yes, the key driver to supplement a seamless project execution in such a model is achievable, if an extensive collaboration/ communication/ confidence/ control between two or more offices sitting geographically and demographically away are honored unanimously.

In the corollary, the technological innovations are helping companies to run work sharing the projects for the client to see a single channel workflow (despite work being carried out from multiple locations in 24x7 environment to meet aggressive schedules and synergizing talents across world). These ever growing technologies are indiscriminately helping us to settle the humane differences to a larger extent, provided we use them with due diligence.

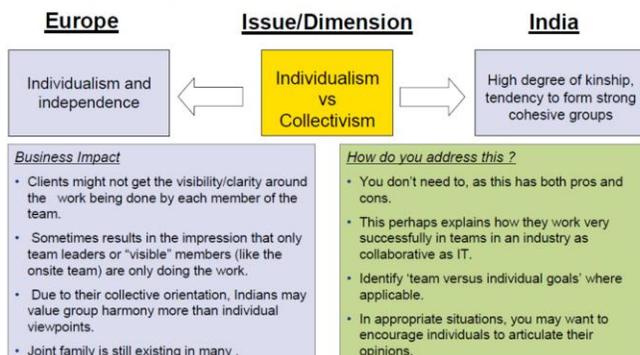
Taking the above model, we in this paper shall identify the practical cause, effects followed up with a resonance of solution to rely and apply, based on real project experiences.

INTRODUCTION

Leveraging workforces and knowledge across the globe had compelled organizations to share work across the countries. Current market trend predicts such a scenario to sustain in the longer run. Successful execution of this model shall bring in a class of commercial and human relations as a whole that any organization shall be proud of. At the same time, organizations also aim to curtail hurdles that get imbibed in such mode of functioning. Each company derives their own practices, procedures, systems, protocols to serve and mitigate these hurdles, as there is no 'one window solution' to curb the huddles.

This is mainly because of two attributes, which the author strongly feels to be focused. Foremost is the 'Human resilient' attitude and immediate next is the 'Technology', which virtually binds the globe. These focal points are deliberated with upholding experiences to show how innovatively these can be addressed. An attempt to convolve and generate flow of actions for the present and to capture work processes for near future is also been made.

What does this mean to you?



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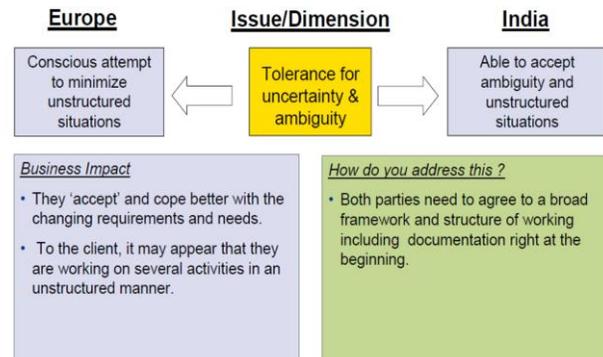


Figure 1: What does this mean to you?

DETAILS OF THE PAPER

The first and (in) finite focus – Human resilient attitude.

A nearby definition of attitude is (which reasonably suits the topic), *“A way of thinking, and they shape how we relate to the world both in work and outside of work”*.

Psychologists segregate attitude under three broad spectrums, namely Affective, Behavioral, and Cognitive. These factors are closely knitted to one another as the way things are perceived naturally. Keeping intact this brief definition, lets ponder in the below sub-heading

CHANGE AND HOW INEVITABLE IT IS.

Trigger to this paper started with this particular provoking quote from Carlos Slim. He says, **“on this new wave of technology, you cannot do it all yourself, you have to form alliances”**. Being aware that driving together with the wind brings in better results, it invariably carries encouraging challenges with it.

Both “Change” and “Attitude” results in a very agile outcome instantaneously. This outcome carries challenges internally and externally to a person/ a project/ a department/ a company and it is left to that entity on how to overcome these challenges.

The set of attributes for a new team to align as prescribed in the Tuckman model is more relevant here. Various stages of changes that go through this transformation are aptly defined by *Intercultural Development Continuum* model as defined below.

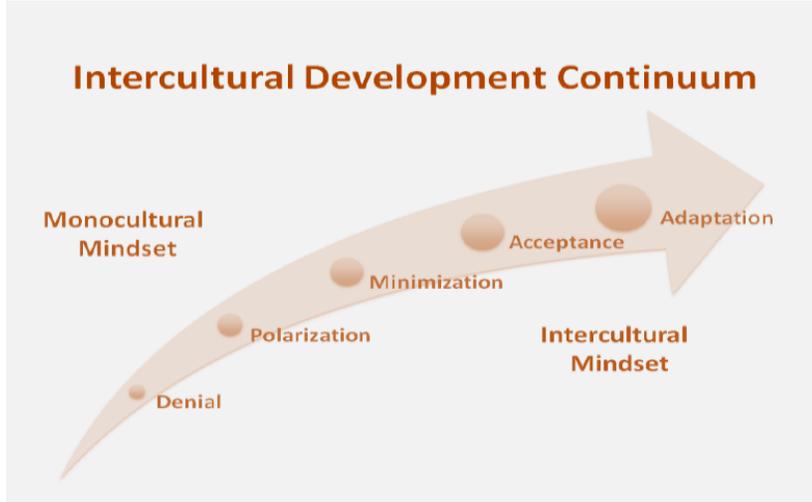


Figure2: Intercultural transformation.

TECHNOLOGY – THE HELPING HAND.

Technological advances are bringing in greater flexibility in breaking the above soft issues to a larger extent. Way back in 2000, when many organizations started projects by sharing work with their overseas offices, there was a kind of imbalance the company had to go through. This mostly attributed to the behavioural approach of personnel at the prime office. The author likes to term this as 'human touches'. Mostly the team were very insensitive to the other side for many reasons. Some imminent reasons:

- Project team didn't like personnel loaded in their work sharing office/s.
- Local and expat did not blend together.
- Locals felt like 'left out'.
- Projects complain about work performance.
- Team member clash in work deliverables.
- Uses of words were not appropriate.
- Destroyed self esteem.

Evolution.

Turning back in 2003-04, the requirement of having high value engineering skill sets are offset for a greater cost margins for winning jobs. There were competitions, market shares, market sentiments, market capitalisation through stock exchanges and a whole lot of other tangible results that contributed to these 'empirical' handshakes. These initial attributes were tested and tasted uniformly throughout the competition market in the western world. It probably resulted in rationalisation of carrying out engineering by choosing high value engineering teams available

in the Asian regions, specifically India and Philippines where the outflow of engineers are comparatively high. Majority of the western engineering organizations opened or expanded their offices at multiple cities say at New Delhi/ Mumbai/ Bangalore/ Chennai/ Hyderabad/ Manila/ Cebu.

With economic surges, cost break-even quickly cropped in. Utilisation of sharing work with other offices in Asia to out beat the market was becoming a compulsion rather than mere eyewash.

COOs of each of these cost centres were betting more on cost Benefits. But no sooner, the management had to turn around for other major contributing factors such as Market sustainability, Resource flexibility and levelled workload, 24X7 project executions. Figure – 3 below explains the trending of effort sharing between lead and its supporting offices. This is typical, but reflected in most of the companies in the EPC world.

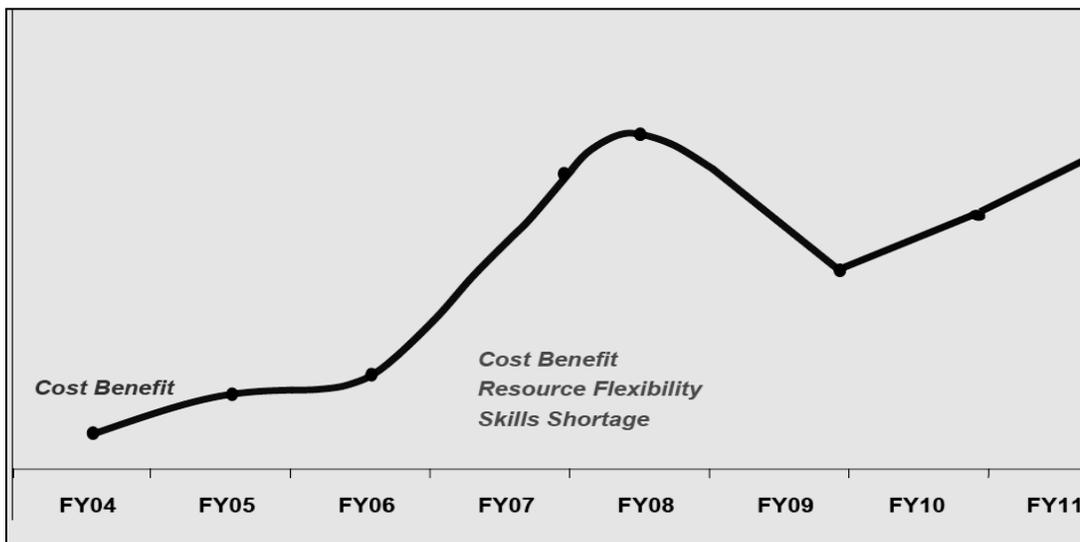


Figure – 3 Work effort transfer trend.

Challenges.

Step increase in the effort sharing between offices had soft and hard issues.

Some of the soft issues are

- Culture.
- Climate.
- Language barriers –resulting lesser communications
- Variation in wage scales, allowances, living conditions
- Complex interfaces for seamless communications
- Lack of roles and responsibility

- Co-ordination with counterparts – Perceived as additional responsibility.
- Unfamiliarity with client standards/ requirements.
- Perception of work quality.

On an average it takes more than 5-6 months between the offices to align and then to sustain as described below.

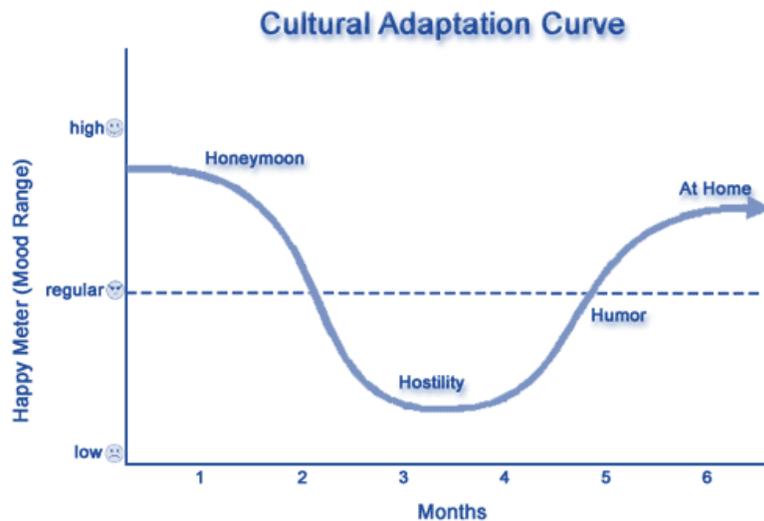


Figure 4: Cultural adaptation curve.

The hard issues are disparity in technical proficiencies and technological advances between prime and work sharing offices.

ON JOB EXPERIENCES...

The project was very prestigious as it was on an alliance working with a confidential client on a medium size EPCm projects.

During project proposal, there were a lot of deliberations/ requirements, contractual constraints, technology supplier meetings. Client insisted for a definitive cost estimate which then compromised for a $\pm 30\%$ ROM estimate (through a parametric estimation). The tender called for doing all the scope at one office. Multiple presentations/ discussions held with various client teams to convince of taking support from office back in India. Key engineering folks were flown from India to show up client and to bring in trust and confidence.

Finally, client nodded with a condition that the project needs to be executed SEAMLESSLY.

Now to move on...

With the in principle agreement from client, this was the first victory team were excited about. The real challenges were yet to begin.

Challenge 1: Prompting questions...

Sharing the work generally comes with the following key things in mind.

- When, What, Why, Who, How

When- to perform: During Pre-bid and bidding, Preliminary engineering and or Detail design

What- to perform: (a) Routine sharing of work – single or multiple disciplines, (b) Integrated work sharing – Preliminary by lead office & Detail design on a common platform by both offices, (c) Work Split – preliminary by lead office & Detail design with a split between offices.

Why- it is required: Integrated approach, Low lead office responsibility & Sub-contractor relationship – lower client scores.

Who- owns: Lead office Sales leads, Operation managers/ PM on both offices.

How-it starts: Low cost – high value centre approach

The team had to go through the full scale scope review with their Indian office (let us term now as “support office” for easy reference) and set right things under each of the above criteria.

By now, some solid work processes to strengthen the work sharing fundamentals were in place. The toughest of the entire work sharing process is to bring in the baselines aligned. The impact of trust is tested in every line of working between the two offices.

Commercial angle compelled for around 40% of the engineering scopes to be carried out by support office. The team who came in for the sales support with client was to be stationed for more than a week at the lead office to have this buy-in.

TECHNOLOGICAL DRIVERS- We understood how important technology shall play a role during this time. The entire bid document, which is close to 12 GB of data were kept in collaboration software called SharePoint. Each and every personnel to be working on the project were given access (read/ write/ edit) depending upon their involvement. Support office key engineering folks were physically present at lead office, but they ought to align with their next levels back in their support offices. The time difference was the bottleneck. They had to use video conferencing tools and screen sharing tools to enable the alignment with support offices.

Of course, e-mails and short messaging services were also conceived to bring in to a logical alignment between two offices. Work process as shown below (typical) represents the sequence of events that in general ought to be carried out by lead office intending to do work sharing.

The successful completion of initiation process paved way for 'SEAMLESS' pre-execution phase.

The next challenge is the Actual work execution. Let us see how we sailed this through and what technological tools helped us.

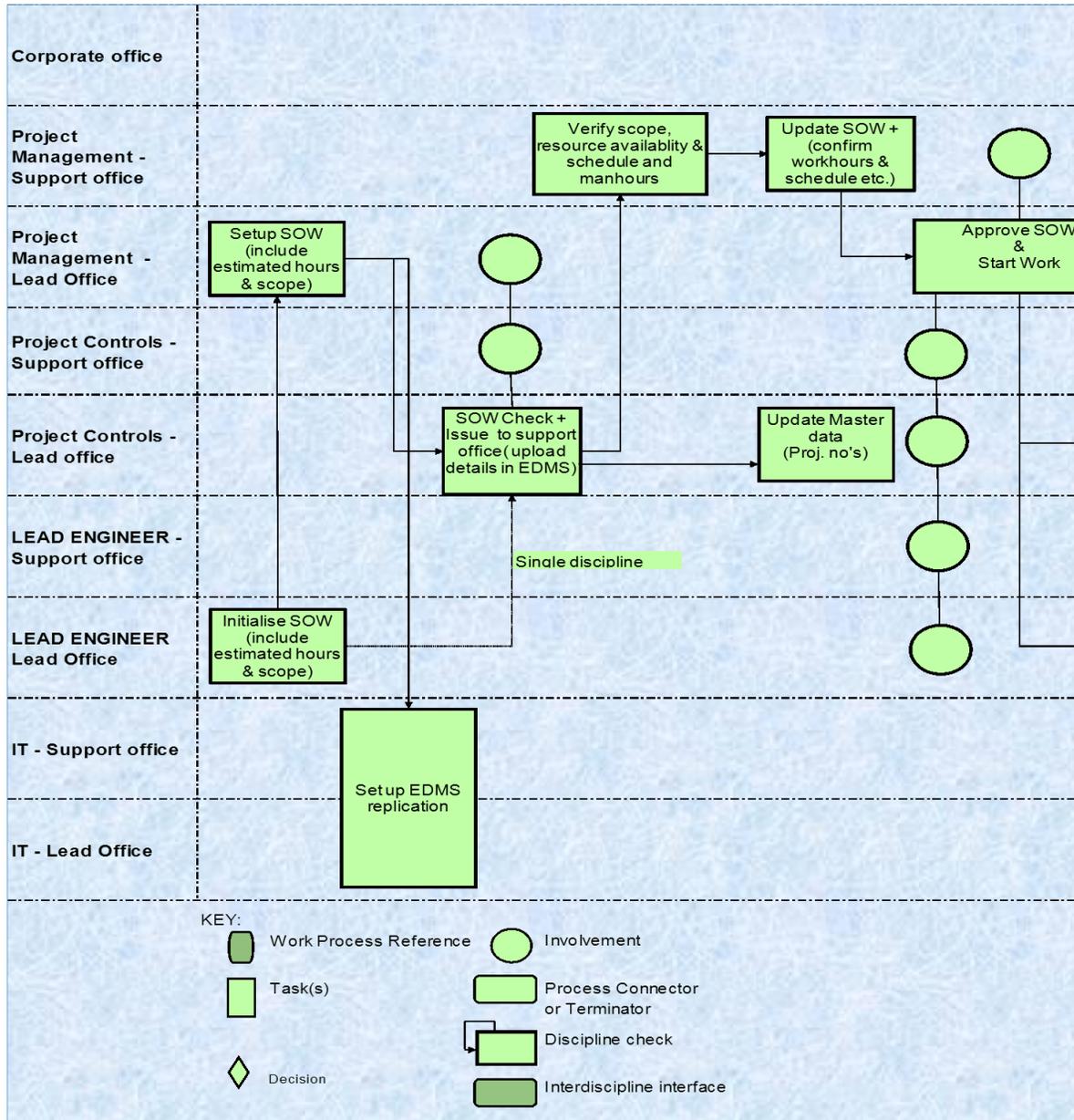


Figure 5: Initiation Process.

The initiation process is the one where both the offices work hand in hand with a bird's eye view on cost/ schedule/ quality/ communication/ reporting/ interfacing/ decision making and a lot more like. This attributes the base line for the work sharing model and needs to go through the complete cycle of checking right from Sales → Operations.

The management team also plays a crucial role in either sacrificing the margin levels to be reported overall or sharing the project overburdens cumulatively. A consolidated view is carefully taken, analyzed and reviewed and is vetted. The project controls on both the sides also play with this basis vetting of documents to report project team productivity at a later date. The author had prescribed a typical workflow between the two offices through Figure 5. The project scope or other attributes can vary depending upon the context of work that is expected to be shared, but the typical workflow remains intact as depicted.

Challenge 2: Set up and initiation...

The project initiation process at the support offices is generally a replica of what it is done in the lead office. Here comes the entire system of chaos spilled over at the support office. We had prepared an extensive checklist comprising of various brainstorming with the PM/PE from the support offices. The summary outcome of this checklist served as a resolution till the end of the project.

- A clear understanding of the project “drivers” – client background, client expectations, history of the project, project objectives, project challenges, project organisation.
- Team building with the lead office.
- A shared training session on project tools e.g. 3D platform, Electronic Data Management System (EDMS) and software specific to the project.
- Project visualisation by site visits.
- Identification and assimilation of project specific codes, standards and specifications.
- Understanding of client special requirements.
- Understanding the safety requirements specific to the plant and also the applicable national safety codes in general.
- Agreeing all document formats and presentation style and quirks.
- Agreeing split of work-scope and associated budgets for detailed design phase. Budgets must be separately assigned for activities of the relevant design disciplines along with project management, project support, cost & scheduling, Project Information Management (PIM), Quality Assurance (QA) and project accounting.
- Understanding each other’s work practices.
- Awareness of cultural issues and issues arising thereof.
- Finalise design criteria for each of the engineering discipline.
- Finalise design engineering work share plan.
- Discuss and finalise individual discipline checking procedure in both offices.
- Finalise change control procedure between both offices.
- Agree procedures for master mark-up, progress reporting etc.

The team also captured simultaneously the other below activities (*technology portion*) from each of the offices to gear up during this phase of the project,

- Agree on tracking progress for 3D and non-3D work.
- Decide on labour reporting of Support office –e.g. requirement of weekly labour reports.
- Finalise work order between lead office and Support office.
- Finalise software requirement for the project and decide on software versions to be used. Plan to procure upgrades, if necessary.
- Establish common platform for procurement of software to help secure lowest price on licenses or transferred copies. Check software availability in lead office for transfer of spare leases to Support office.
- Assess hardware specifications for sufficiency.
- Decide on whether separate VLAN is to be set up for this project.
- Plan for new circuits if required for the project or increase bandwidth of existing circuit. The new links / expansion must come in early for carrying out simulation and real time tests.
- Establish 3D data management, replication of live data between offices, reference data management, communication based on time difference between lead office and Support office. Take into account summer and winter time variation at the location of lead office. There may be no variation of summer and winter time in Support office. For European offices, half of the working day overlaps, thus making this choice more complex.
- Test the communication links between the two offices, particularly the live replication of 3-D models and information transfer through the EDMS. The back-up WAN link can also be tested at the same time for its ability to connect following a failure of the main link. A written back-up plan must be in place to follow whenever the primary WAN link fails.
- Commence daily test file transfers of review sessions as soon as the link is functional between the lead office and Support office. For some offices, the circuit may need to be upgraded or fine-tuned to deliver improved throughput.
- Expand the test to maximum size of the review files expected during the project and transfer daily at scheduled transfer window times to simulate actual work process. Work out bugs during the test.
- Test videoconference connectivity.
- Set up isolated secured area for the project in Support office, if required.
- Discuss if setting up of a project Intranet web page would be a good idea

Challenge 3: Execution, Monitoring... communication is the key!

Success of this challenge depends on how well the issues in challenges 1 and 2 have been addressed. As the two teams commence the detailed design in parallel, proper communication at every level assumes great significance.

- Nominate interface project managers. This is the first key. They are going to be the drivers to sustain the project executions in work sharing models. *We failed to see this key role but realised in the mid way.*
- Communication is the next and important key. *Daily phone calls between the project team are to be made compulsory. It can be a simple hello to a chaos shout. But communication on a daily basis should be there! There were team resistance on both the sides. We persuaded initially. Subsequently, we see that there was more trust building up in the teams.*
- E-mail is not necessarily the best communication method. The project team at both offices must encourage frequent tele-conferences and videoconferences between the discipline leads. *By doing this, the quantity of daily E-mails and the possible misunderstanding between the leads was reduced considerably.*
- Discipline managers from both offices should also communicate with each other and if required join in project videoconference calls involving their staff. *We had issues that were not getting resolved and have to wait every time the project team to intervene. It multiplied with schedule delays and quality of deliverables.*
- At the project sponsor level (over and above the project teams), communication channels should be open between the senior management of both offices. It is expected that communication at this level shall be supportive, open and honest without being defensive. *We initiated this after due perseverance from the project team on both the offices.*

TECHNOLOGICAL SUPPORTS

On such a model of project execution, this is really the backbone of the project execution and monitoring. Without this, there are no virtual offices or co-located offices. We had Smart Plant Foundation for the integrated services (The data will be replicated instantaneously and live data will be available at all locations) and workflow management as shown in figure – 6 below.

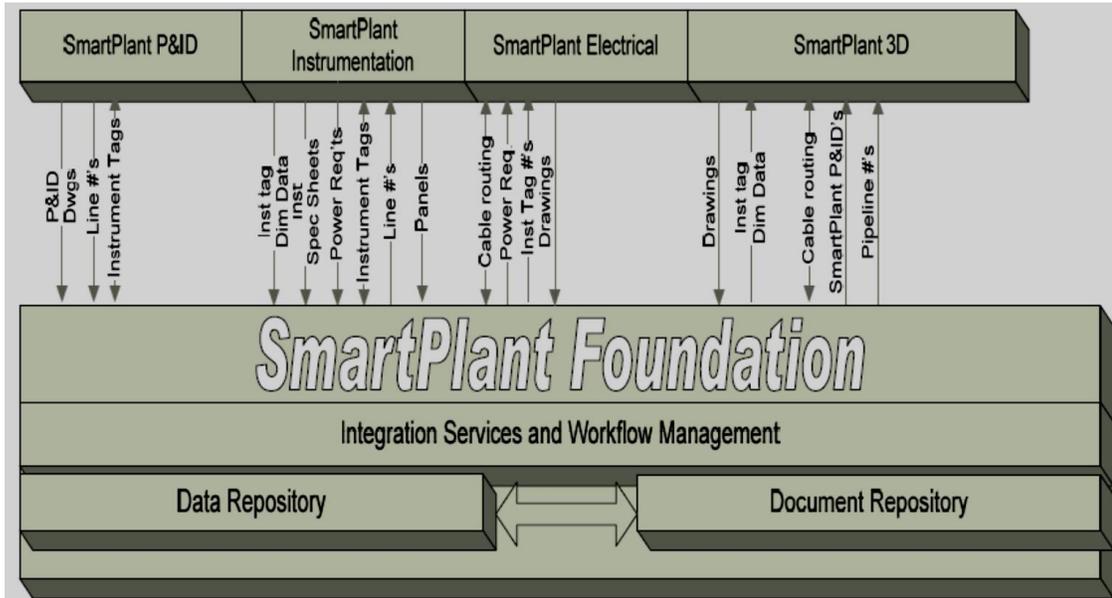


Figure – 6: Integrated workflow.

On an overall scale the integration of data/ work flow were controlled more maturely through the technological advancements the organization had bought in and developed in house. The data management finally took the shape as the one below (Figure – 7). We extracted exemplifying reports to support and sustain the project in its right pace. The various reports that we were able to get across from cloud based applications enable us to host applications on Cloud and access them through internet wiki based networking tool for project based common communication. This helped the team all in one go at the same level of understanding.

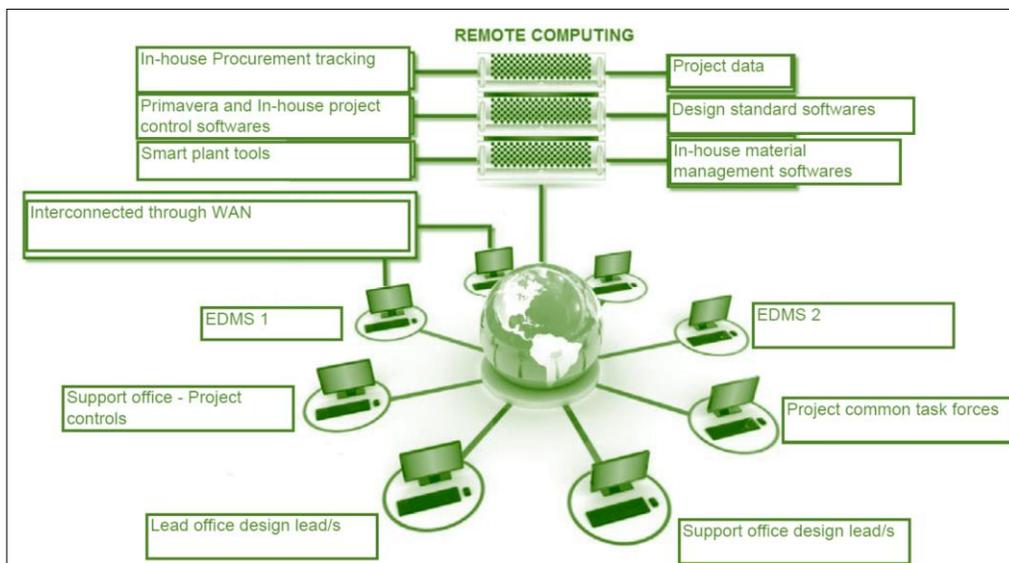


Figure – 7: Data management.

Challenge 4: To control and to sustain...

With such a model in place, we ought to bring in a methodology to control the project changes. The project was nearing to 36 months duration. The team sizes on both the offices were in the ratio of 60:40. The heavy industry churning had brought in more changes and attritions also. The team members were volatile at some point of time. It becomes very essential to keep track of what has gone on the project as a history to the new entrant in the project.

Methodology followed - We therefore carefully designed a template called Engineering design guidelines (EDG). These EDG were developed and maintained by the discipline leads on the support offices. Any new entrant is asked to read this and take understanding on the project specific requirement from this. We actually saved a lot of interfacing efforts and clashes in quality and schedule with this small initiative. The EDG was loaded in the EDMS and every deliverable before it is issued to the lead office should pass through this EDG verification process (an electronic tick box) to ensure compliance with the lead office requirement. We sustained majority of the changes in the projects with meticulous use of these EDGs.

What we gained on a whole...

At the project close out session, we thanked and appreciated the team as a whole. We never justified by saying that the project was a 'Seamless' execution. But, yes the team learned on its side a lot apart from the real project. The best practice principles identified stayed with us as a base focus under this type of project execution.

Not only this, the team carried with them a lot of healthy lessons that can be implemented down immediately in to their next projects. The teams actually had become 'A TEAM' with some great friends in their other offices with whom they can rely on travel destination/. This explained a collaborative team completely. By this, year after year, the company grows and gains its strength as this is what the author can term as SEAMLESS!

CONCLUSION

Sharing work is inevitable. It is the current market trend through which majority of EPCM projects operate. Industry had felt the necessity and as a whole it is gearing up with a uniform tool to align the best practices gained out of experience.

Two aspects every of these project models to address from its inception and they are 'Human touches' and 'Technology'. At a right chord of these two, the project is to enjoy the success fruits in a galore. Best practice principles that are right take away for the readers are produced in Figure 8.

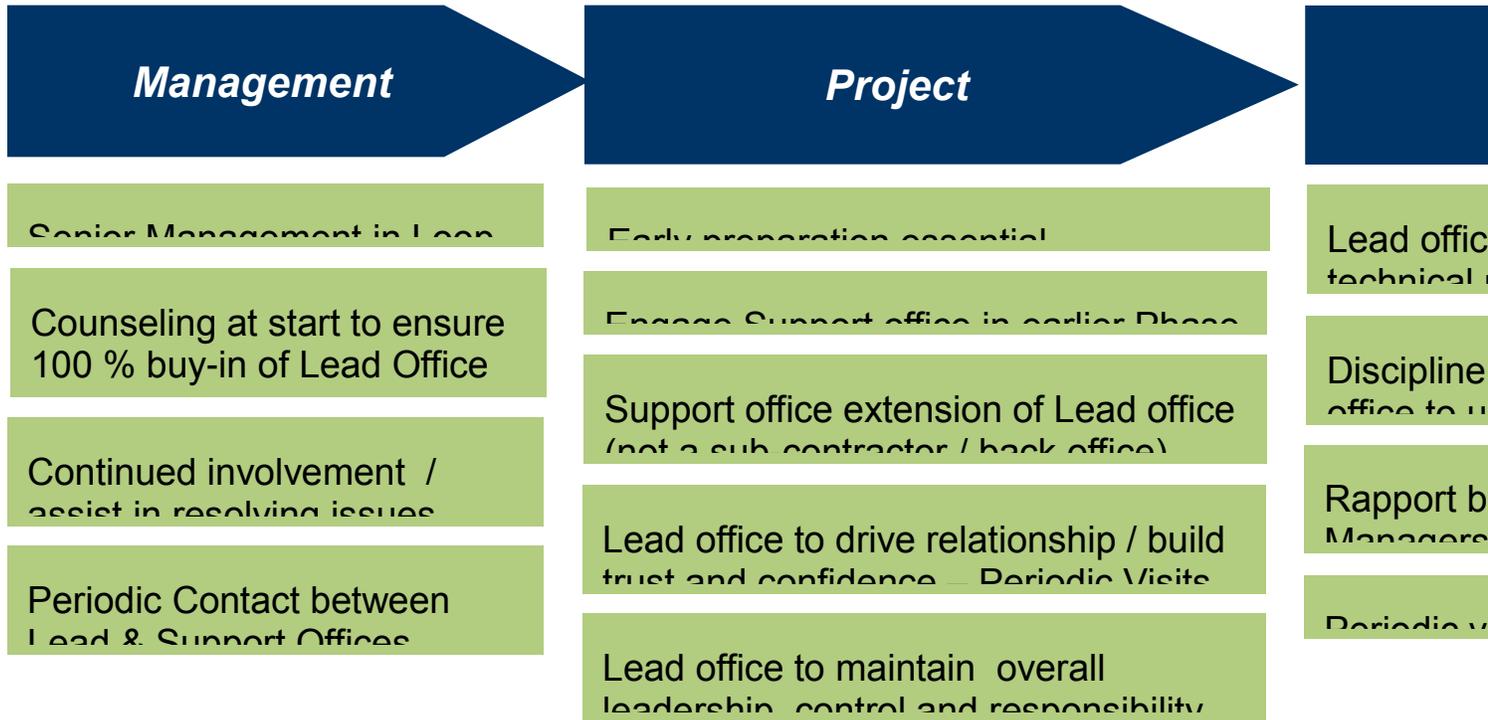


Figure – 8: Best Practice principles.

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