Multi-actor, multi-office and multi-discipline collaboration in an oil refinery FEED project

Freya Wang
30-10-2015
Content

1. Problem analysis
2. Methodologies
3. Research findings
4. Conclusions and recommendations
1. Problem Analysis

What obstacles exist in the team collaboration?
Discipline collaboration

17 disciplines:

• Engineering disciplines
• Supporting disciplines
• Management group
Globally distributed project team
Client-Fluor team integration

- FEED should capture and reflect the deep considerations and requirements from the client.

- Revamp: unforeseen site conditions, shutdowns and operational interfaces (client site operation and maintenance team).
2.

Methodology
Social network analysis

- Information input-output
- Problem solving
- Decision making
- Feedback and recognition

Open questions
Collaboration study in an oil refinery FEED project

- Workflow methodology
  - main work related activities
  - sequences and interdependencies
  - responsible disciplines

- Client Prime Contract
- CTR Service Contract
- Client/PRO
- Process Flow Diagram (PFD)
- Transposition

- PIP (Plot Plan)
  - Transposition
  - 3D Model
  - PIP, CSA, ECS
  - Material takeoff
- PRO (P&I diagrams)
  - P&I's
  - HSE HAZOP
  - HSE Hazardous Area Classification
- MEC (Equipment Datasheets)
  - Equipment List
  - MEC Long Lead Items Requisitions
  - Procurement RFQ's

- HSE
  - HAZID
  - HSE Design Specifications
  - MEC Material Selection Diagram (MSD)

- Estimating
  - Project Cost Estimation
  - EPC Phase
Workflow dependency

SOLL “as it should be” situation

IST “actual” situation

Social Network Survey
3.

Results

SOLL-IST
Collaboration study in an oil refinery FEED project

Discipline Overview
Collaboration study in an oil refinery FEED project
Collaboration study in an oil refinery FEED project

New Delhi

Refinery Site

Haarlem

US
Collaboration study in an oil refinery FEED project
Collaboration study in an oil refinery FEED project

Individual analysis

Graph showing collaboration data with clusters labeled Fluor Leads, Client Leads, and Normal engineers/Managers.
4. Conclusions and recommendations
Conclusion

• Diagnostic value ---- Team collaboration in the FEED phase

• Predictive value ---- Team collaboration in the EPC phase
Recommendations

- Pay special attention to:
  Civil and HSE
  Adapt HSE procedure and distribute HSE responsibility.
- Build-up relationship-oriented mindset
- Optimize Fluor and client team at refinery site
- Maintain key actors
- Develop and fulfill the coordinating role of project engineers
- Facilitate direct contact between the client and Fluor New Delhi project team.
- Examine the role and responsibility of Engineering Manager, alleviate the information load for this position.
- Involve key players earlier in the network
- Promote knowledge awareness among coworkers
Questions

Comments
Thank you very much!