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A Timeline Analysis can help Assess the Project Schedule

Anil Seth

The timelines or schedule estimations are done at project start when only the guess estimates are available. At times it is difficult for the project engineer to correctly identify the scheduled durations and predecessor or successor activities in a relationship. If the relationships are not adequate the project plan presented to client is designed for failure.

One of the effective ways of assessing the project schedule is THE TIMELINE ANALYSIS. The Timeline Analysis can be trend analysis, situation assessment or event prediction.

"We didn't lose the game; we just ran out of time."

- Vince Lombardi

The Licensor-Engineering-Procurement-Construction (L-EPC) Projects have an integrated basic engineering, detail engineering, procurement and construction schedule with several similar interrelated overlapping relationships within Licensors and detail engineering activities. Many times in such cases the backward and forward pass of schedule analysis becomes difficult. One of the best ways to interpret such schedule is to analyze the milestones relationship only, i.e. breaking the schedule into smaller independent modules in other words applying time line analysis concept.

The use of timeline analysis is to explore how and when the activities schedule will occur with a purpose of getting:

- 1. An initial understanding of the circumstances under which engineering acquires information.
- 2. An understanding of how schedule will spread within team members.
- 3. An understanding of the historical context in which current and future information will be interpreted and assimilated by project control.

The **picture A** displays a typical overall L-EPC schedule. The statistical interpretation of the Picture A is as follows:

# Projects	1
# Activities	1384
# Not Started	411



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Picture A

Imagine the role of a project engineer examining and checking the schedule which might be a software or manual output covering 1384 activities, 2702 relationships etc. Usually breaking the requirement into smaller achievable milestones gives a better checking control and yield good results. These milestones are not to be confused with project milestones these are smaller but independent modules.

If the Picture A schedule is examined under time line milestone analysis the checker sheet will look like Picture B.



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Picture B

Let us apply this technique on one requisition of HVAC (Heating Ventilation Air Conditioning) which we are considering as one of the engineering milestone.

3PDE1490	MR for Dosing Skids	120	04-Aug-10	20-Aug-10	556	
POE1500	MR for Inart Gas Generation Unit	15d	04-Aug-10	25-Aug-10	520	Avel 4L
POE1505	MR for Flare Stock Package	125	27-Aug-10	13-Sep-10	47d	120111
DPDE1535	MR for Fire Fighting Package	150	30-Aug-10	20-Stp-10	52d	
SPDE1520	MR for Chilling Unit	1.5d	23-Sep-10	14-Oct-10	484	\$7 \$7 WPR
8PDE1530	MR for HVAC Package	15d	24-Sep-10	14-Oct-10	1654	A and A a though
BPDE1525	MR for Molecular Sleve Dryer	1 5d	30-Sep-10	21-Oci-10	51d	05070212
PDE1510	MR for Liquid N2 Vaporiser	1.5d	15-Oct-10	05-Nov-10	53d	Collato la
BPDE1515	MR for Instrument Air Dryer	154	15-Oci-10	05-Nov-10	53d	MR BO 6 MODEL
BP0E1495	MR for Crane -	12d	12-Nov-10	30-Nov-10	67d	Aluba
Procurement	Engineering	1210	23-DcH10	28-545-11	700d	ודו סוודו
BPDE2066	PR for Effuent Treatment Plant with Disc Of	78	28-Oct-10	06-Nov-10	580d	0/12/10
BPCE2060	PR for Dosing Skida	7d	03-Nov-10	58-Nov-10	6724	2/07 9760 100 00 00 00 10
BPDE2065	PR for Inert Gas Gatoration Unit	7d	12-Nov-10	23-Nov-10	5694	TT LOUIS + OCTIV TESENE OUR 110
BPDE2075	PR for Flere Stock Package	7d	02-Dec-10	10-Dec-10	5556	H Layour A AOD A I

The following qualifies as requirement for this HVAC activity module:

- 1. Architectural drawings of building having HVAC.
- 2. Issuing Material requisition
- 3. Firefighting requirements layout.
- 4. Issuing Purchase requisition.
- 5. (60 %) Model Review.

There could be many more requirements like heat load inputs or refrigeration tonnage, sizing, etc but let us keep our list limited to five (project engineers may go for six or seven or more but the bottom line is keep it minimum yet adequate). The next step is to divide the list into **dependent** and **independent** activities following the occurrence distribution. The definition of dependent and independent activities is relative and is subject to time of occurrence.

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ependent Activity IME LINE

Occurrence Distribution

On classifying the list into **Dependent** and **Independent** activities, we have:

- 1. Architectural drawings of building having HVAC.
- 2. Issuing Material requisition
- 3. Firefighting requirements layout.
- 4. Issuing Purchase requisition.
- 5. (60 %) Model Review.

The next question is what are we looking for?

We are looking for correctness of schedule and hence correctness of achievable milestone, which in this case is HVAC Purchase Requisition. The occurrence distribution for HVAC will look like:



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Another question is, the PR above is defined as independent activity, HOW & WHY?

The PR date is already available in overall schedule and what we are looking for is analysis of time available to designer and engineers for meeting PR date.

Summarizing the approach:

STEP 1: Identifing the activities needing schedule review STEP2: Breaking the activity schedule into smaller independent modules. STEP3: Listing activities associated with independent module. STEP4: Segregate module into Independent & Dependent activities. STEP5: Frame the OCCURRENCE Distribution.

Last step is judging whether the timeframe taken by the scheduler matches the contractual needs.

The approach does not eliminate the back and forth checking of the overall schedule by engineering, procurement and construction team; it provides a way to analyze your milestones and helps project engineers in tuning the project needs.

If every analysis is done in order the LOG REPORT (SCHEDLOG) FOR the PROJECT prints

Activities with unsatisfied relationships.....0



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