Relationship Driven CPM

RDCPM®, the Relationship Diagramming Method (RDM) variation of the Critical Path Method of schedule analysis focuses on the reason for the relationship between activities and the reason for their overlap[1]. It is distinguished from the Precedence version of CPM (PDM) developed by Dr. John Fondahl in 1961[2] by the inclusion of significant additional information. The key additions include:

- Events and event codes

- The reason/why restraint code to define why a restraint has been placed between two activities plus relationship codes to provide additional information. Restraint durations may be independent of, or dependent upon work in the preceding activity.

- Duration codes to define the basis of the duration and how it should be used in calculations. RDM calculations consider the duration assigned to an activity to be a minimum and not fixed duration. This is modifiable on an activity to activity basis and in influenced by the types of link used.

- Additional and expanded types of restraint between activities

Some of the distinguishing features of RD-CPM include:

- The creation of events at the beginning and end of each activity. Events may also be created during an activity and independent of activities. Events mid way through an activity may be positioned by time or by the amount of work completed.

- Independent events may have logical rules: eg, start as soon as one predecessor is complete (similar to the Micro Planner 'Reverse Logic' event). The RDM methodology offers a range of other options to determine the calculations and recognises the possibility for logical loops.

- Relationships connect events and the reason for any relationship durations (lags) are defined. Complex relationships can be established such as 'Start Activity B 3 days after Activity A is 50% complete.

- A sophisticated range of links are available extending beyond the simple SS and FF of a PDM network.

- Relationships can be 'physical' or 'resource' based. Activities have codes assigned to indicate the resource used as well as the location of the work being performed. As a result, rules may be written to set the Link Category to *Physical* for a transfer from one craft resource to another at the same location, and to *Resource* for a transfer from one location to another utilizing the same resource. Consequently:
  - o Reports can be prepared highlighting a hand-off from one subcontractor to another, highlighting the need for additional supervision by the general contractor.
  - o Alternatively, the user may implement a global change setting a two day lag for each Finish-to-Start restraint, whenever the masonry subcontractor changes location to account for the tearing down and rebuilding of scaffolds.

The RDM system is certainly more robust and mathematically sound than the PDM variant of CPM and offers significantly more flexibility and sophistication the Arrow Diagramming Method (ADM) developed by Kelley and Walker in 1957[2].

To avoid another problem with PDM, the inconsistency in its implementation by software developers, RDCPM® is a controlled certification mark for implementation of the Relationship Diagramming variation of the Critical Path Method of schedule analysis. The certification mark, as intended to be used by authorised persons, certifies that entities that offer goods and services have adhered to a set of developed standards.

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1   For more on RDCPM® see: http://www.fplotnick.com/rdcpm

2   See: *A Brief History of Scheduling*: https://mosaicprojects.com.au/PDF_Papers/P042_History_of_Scheduing.pdf

The evolution of CPM to incorporate and understand these important relationships has the potential to allow project planners and schedulers to achieve more accurate project plans that better model the real world. The challenge is making effective use of the increased sophistication in RDCPM®.
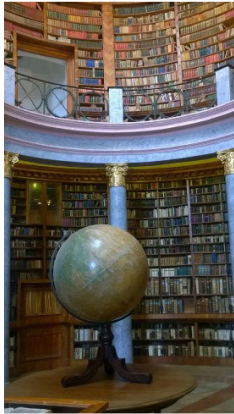
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For more information on scheduling and planning,
visit Mosaic's scheduling home page at:
https://mosaicprojects.com.au/PMKI-SCH.php