Scheduling Best Practice

Monitor and Remedy Dangling Activities

By Farid Saddik

While it is generally considered a best practice that a project CPM schedule has only one start activity (an activity with no predecessors representing the first activity in the schedule) and one end activity (an activity with no successors representing the last activity in the schedule) with no other open activities, project schedules are often not evaluated for dangling activities.

Dangling activities plague many schedules, and their presence in an active schedule causes inaccuracies which potentially result in wrong critical paths and incorrect milestone and completion dates.

An activity with *dangling start* is an activity which has at least one predecessor activity, but none of its predecessor relationships is of the type Finish-*to-Start* or Start-*to-Start*. In the example below (Figure 1), activity C is an activity with dangling start as it only has a start-to-finish predecessor (rare) and a finish-to-finish predecessor, but no start-*to-start* or finish-*to-start* predecessor(s). Note that successor relationships do not affect the outcome of dangling start evaluations. Dangling start activities behave functionally the same as open start activities (no predecessor).

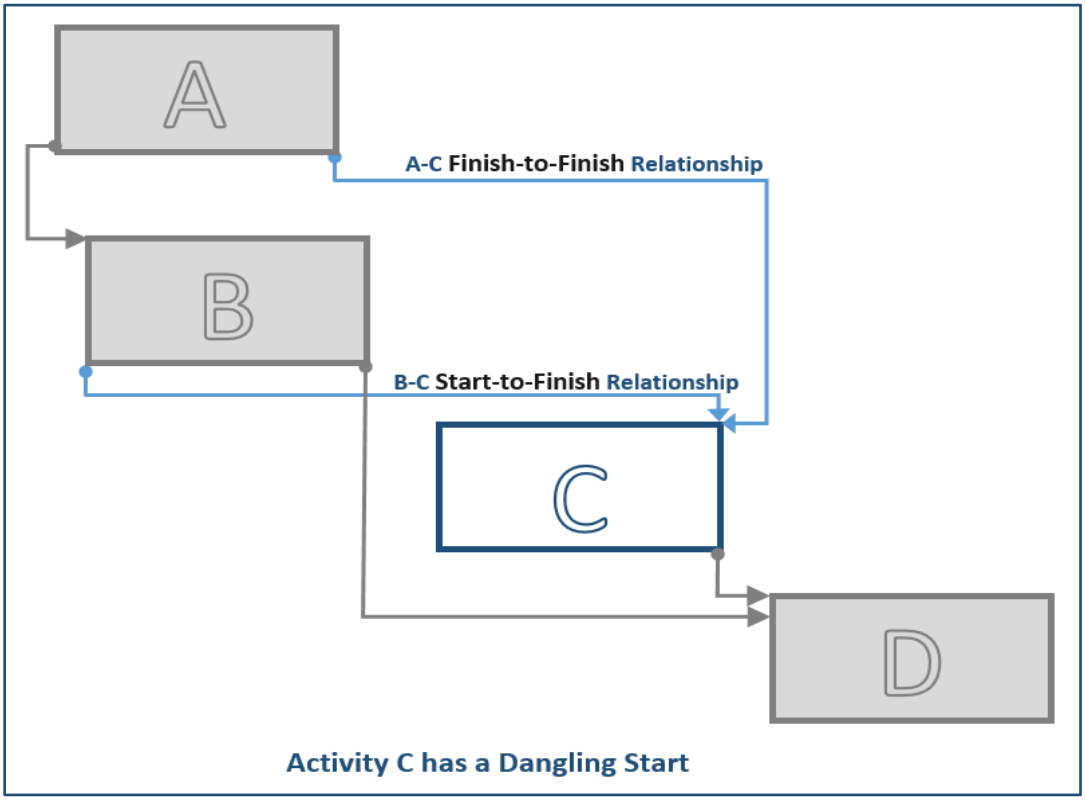

Figure 1

An activity with *dangling finish* is an activity which has at least one successor activity, but none of its successor relationships is of the type *Finish-to*-Start or *Finish-to*-Finish. In the example below (Figure 2), activity C is an activity with dangling finish as it only has a start-to-start successor and a start-to-finish successor, but no *finish-to*-start or *finish-to*-finish successor(s). Note that predecessor relationships do not affect the outcome of dangling finish evaluations. Dangling finish activities behave functionally the same as open finish activities (no successor).

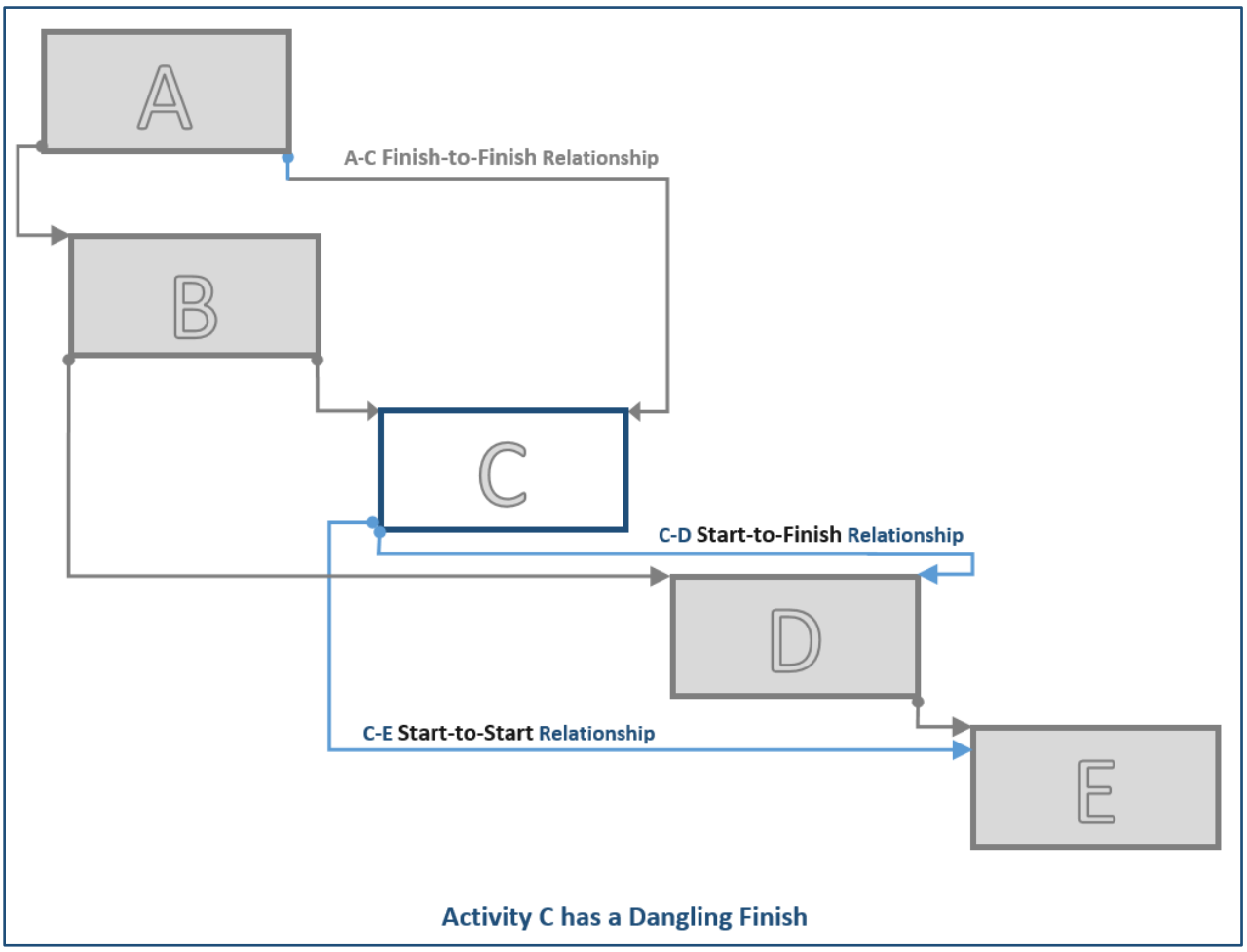

Figure 2

It is also possible, and unfortunately not as rare as one might hope, for an activity to have both a dangling start and a dangling finish when a combination of the two cases above occurs. In the example below (Figure 3), activity C is an activity with dangling start as it only has a start-to-finish predecessor and a finish-to-finish predecessor, but no start-to-start or finish-to-start predecessor(s). It is also an activity with dangling finish as it only has a start-to-start successor and a start-to-finish successor, but no finish-to-start or finish-to-finish successor(s).

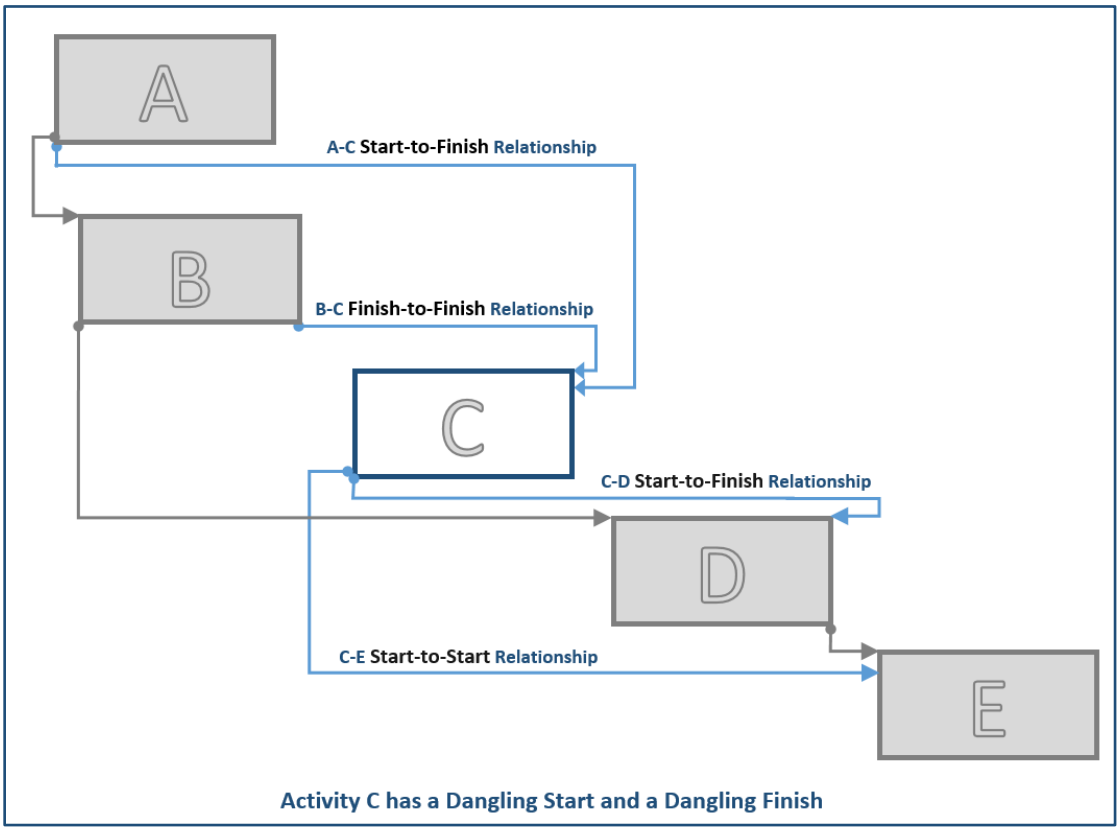

Figure 3

A primary reasons many schedules are plagued with dangling activities is the inability of leading scheduling applications to identify and list such activities. There are, however, several project controls and forensics analysis tools with various levels of capabilities to identify and list dangling activities.

Once identified, dangling start activities are remedied by adding appropriate predecessor relationships, and dangling finish activities are remedied by adding appropriate successor relationships.

It is worth noting that, forensically, dangling activities are almost always indicative of missing or defective logic. Additionally, dangling activities count by type is an important metric to trend in any schedule analysis.