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Course: SEG 4105 Software Project Management

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Assignment #1

1) The beta distribution. Because choosing either Delphi or Blitz would involve more risks. Being conservative in a stage where you need to estimate an important component is better than being risky. Moreover, having an I&I process allows the LOC to be recalculated when needed. Therefore, as the beta distribution is the most conservative and we are using an I&I process, the best choice is to go with the beta distribution.
2) Given:
    - TDEV = Time to development (duration) in months.
    - E = Effort in staff-days = 250 staff-days
    - Size in KLOC
    - Semiattached formula: $E = 3.0 * Size^{1.05}$ and $TDEV = 2.5 * E^{0.35}$

    As the E in the formula uses staff-months, and assuming that a person works 23 days per month, 8 hours per day, we must first we must convert staff-days into staff-months by doing: 250 staff-months = 250/23 staff-months ≈ 10.9 staff-months.

    We have:

    $TDEV = 2.5 * 10.9^{0.35} \approx$ **5.77 months**

    $10.9 = 3.0 * Size^{1.05}$ -> Size ≈ **3.417 KLOC**

3) Yes. If the team has already successfully done a specific project, and the new project that is being requested is very similar to the first project, waterfall would work well enough. That's because the software is already well established and written and not many changes in the project will need to occur at all.

4) a) Firstly, not all the tasks can be done in parallel, some of them have to be done sequentially. Secondly, there's the learning curve. The more people you have, the more time you will spend in learning until the people become productive. Thirdly, communication. The more people you have, the more communication is needed between them. Therefore, a project has an organic duration that, even though more people are added, it cannot be reduced. Organic duration is the minimum time required to a project to be completed.

   b) It is similar to the answer above. Firstly, if the tasks that are holding back the project are sequential, adding more people wouldn't help. Secondly, as new people come in, they would have to learn and understand a lot of the project in order to start producing something, that takes time. Thirdly, coordinating a larger team is more difficult than coordinating a small one, thus, more communication would be needed.

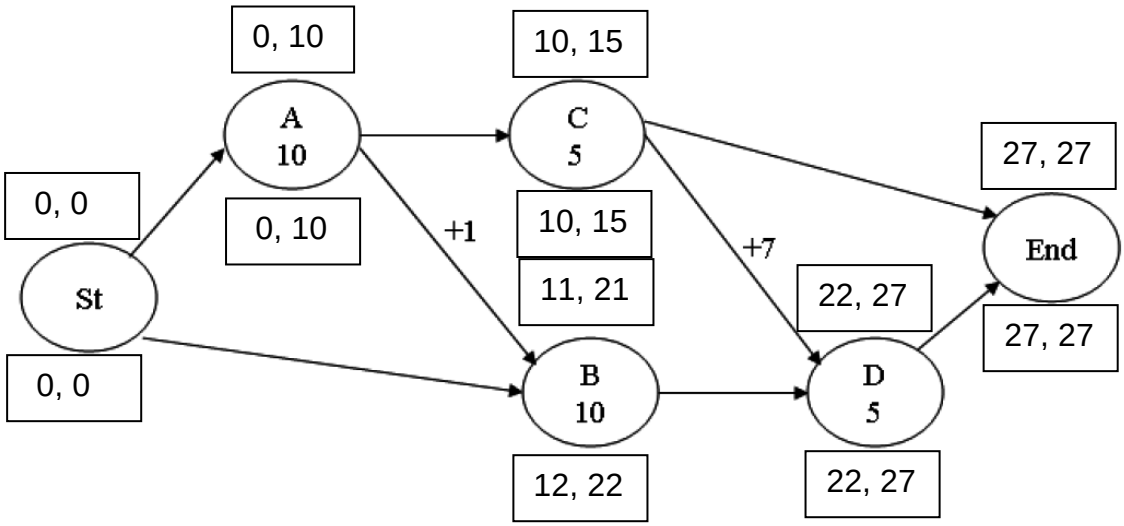
5) With planning, even though we will most likely aim at a wrong direction, it is not as wrong as without planning. That is, with proper initial planning we may have an inaccurate estimate up to a factor of 4, whereas without initial planning the inaccuracy is much bigger. "The plan itself meaning nothing, but the planning process gives us a lot knowledge about the direction more or less where we have to go to and we keep re-planning as we learn more and more about the project". [Shervin Shirmohammadi]

6) A death march is a project that the participants feel is destined to fail, or that requires a stretch of unsustainable overwork [1]. Maybe the team or management isn't up to it, or there aren't enough resources, or the requirements are illogical. Perhaps the executive or market reality outside will reject even the best product. For whatever reason, it's not going to succeed. People recognize it. It becomes a death march once people start to realize that their careers are better-suited by getting away from it than by continuing to work on it [2].

   Quite simply, a death march project is one whose "project parameters" exceed the norm by at least 50 percent. That is, the schedule has been compressed to less than half the amount; or the staff has been reduced to less than half the number; or the budged and associated resources have been cut in half; or the functionality, features, performance requirements, or other technical aspects of the project are twice what they would be under normal circumstances [3].

7) The Complexity Adjustment Factor's (CAF) formula is CAF = 0.65 + 0.01 * N. Where N is the weighted sum of all the 14 environmental factors. It assumes a +-35% inaccuracy in early estimates. For a given project, each of the 14 environmental factors is rated from 0 (no effect) to 5 (highly affects). Therefore, if we assume that the minimum value (0) was given to all the environmental factors, we have that CAF = 0.65 + 0.01 * 0 = 0.35, moreover, if we assume that the maximum value (5) was given to all the environmental factors, we have that CAF = 0.65 + 0.01 * (5 * 14) = 0.65 + 0.7 = 1.35. Consequently, we can conclude that CAF is essentially a +-35% accuracy multiplier.

8)



[1] Wikipedia. (2019). *Death march (project management)*. [online] Available at: https://en.wikipedia.org/wiki/Death_march_%28project_management%29 [Accessed 30 Sep. 2019].

[2] Quora. (2019). *What is it like to work on a death march software project?*. [online] Available at: https://www.quora.com/What-is-it-like-to-work-on-a-death-march-software-project [Accessed 30 Sep. 2019].

[3] Yourdon, E. (2019). *What is a Death March Project and Why Do They Happen? | Death March Defined | InformIT*. [online] Informit. Available at: http://www.informit.com/articles/article.aspx?p=169512 [Accessed 30 Sep. 2019].