

Questions, Answers and Class Comments during lecture 3.

1. Why can't you figure out the length of the CP if you have an iteration?

The number of iterations is not actually shown in the CPM graph - one would have to represent each iteration as a separate task, which is not possible if you don't know the number of iterations.

2. Examples of design iterations in the experience of the class

- Data report design and database design - you have to build the database in order to produce the reports efficiently but you can't thoroughly design the database if you don't have a concrete idea of the reports to be produced.

- Coupled physical properties of chemicals (like ink viscosity) and design of the cavity and nozzle shape in the design of inkjet printers

- Design of offshore platforms. The positioning of "risers" on the transport vessel will affect the seagoing characteristics of the vessel, which is an input factor for the design, so you redesign the risers. You try to keep it to 2 or 3 iterations, but 10 iterations are not uncommon.

- When designing a ship, you basically have to assume the design before you design the details on displacement, power, drag, speed etc. When actually build, you have to revisit these characteristics (possibly due to physical / budget constraints) which may have second or 3rd order effects on other elements of the ship.

- Similarly, in the automotive industry, in designing the suspension for a platform vehicle, you assume a generic weight and the go back and refine your design as the actual weight is "frozen". This is in order to meet certain dynamic response targets of the suspension (settling time, admping etc...)

- In bidding for projects you are basically making an assumption on the project task durations and scheduling; there may be a delta between this assumption and the actual task durations and/or costs. This can be mitigated if you have done similar previous projects (historical data) but uncertainty remains.

Remark: When you have planned iteration, many times the development team doesn't put enough thought effort in the first iterations since they know that they'll be revisited anyway.

3. How do you know which tasks are really loops in the DSM.

- By rearranging the rows and columns
- For loops of length 2 (2 coupled tasks) you can recognize them in the DSM by symmetrical entries. This is not true for loops of length > 2 .

4. What do you ask people when you want to put together the DSM?

- You ask them what their required inputs are first. The reasoning is that people know much better what information they require to do their job, compared to their knowledge about the downstream usage of their outputs in the project by other tasks.

- Also ask who they think uses their information in order to check if they're taking into account downstream influences in their design work. Comment by Lisa: it would be an interesting project to ask people who they THINK uses their information downstream and then to map that against who ACTUALLY uses their information downstream. This might point to opportunities for process improvements and "project awareness" training.

Remark: The fact that in theory one downstream task uses the output of another upstream task doesn't necessarily mean that this happens in reality. Experiment shows that only 5% of this information transfer actually happens.

(What is the reference for this claim? Was this published?, please

advise.)

Pending question by Ion: Are information flow diagrams actually DSM's? - We'll clarify that point.