Project Management for PhD Students

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Lecture 14

Project Scheduling

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Project Scheduling

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- A project schedule is an indispensable tool
  - If used properly
- Building it forces you into thinking about:
  - All the things you need to do
  - Their inter-relationships
  - The time each will take
  - What each one will be used for

Project Scheduling

- Identify all the major tasks
- Break these down into sub-tasks
- In software development projects, a useful input for this exercise is a system specification
  - A task for each functional block and each data-structure
  - Tasks for analysis, design, implementation, test, integration, and documentation, system testing and evaluation, documentation and report writing

Project Scheduling

- For each task and subtask
  - estimate how much effort you expect it to take (hours) and over what period you will spread that effort (days): this is the task effort & duration
  - identify the required inputs – information, software, hardware, and, most important of all, the results of other tasks in your project
  - Identify the expected outputs
  - Identify a course of action to take if the task fails for some reason (*e.g.* the software or hardware doesn't arrive in time)

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- Identify the sequence in which you should do each task
- Consider the relationships between each task
  - The use of the output of one task as the input to another

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- Project management tools usually represent a finished schedule in one of two ways
  - PERT chart
  - Gantt chart

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- PERT: Program Evaluation Review Technique
  - Represents each task/subtask as a box containing its identity, duration, effort, start date, and end date (among other things)
  - It displays not only project timings but also the relationships among tasks (by arrows joining the tasks)
  - It identifies the tasks to be completed before others can begin and it identifies **the critical path: the sequence of tasks with the longest completion time**
    - » The critical path is important as it defines the absolute minimum time needed to complete the project
    - » The critical path can change as task start-dates and durations are changed

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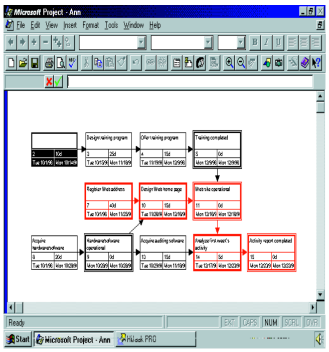

Figure 1: An Example of a PERT Chart. The Critical Path is shown in red.
(Source: *Computing Essentials*, T. O'Leary & L. O'Leary, McGraw Hill, 1999)

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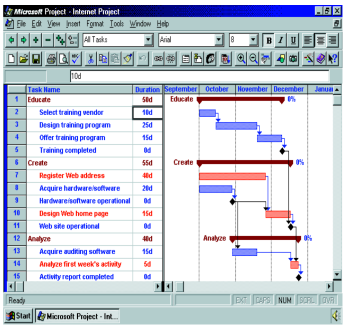

Figure 2: An Example of a GANTT Chart. The Critical Path is shown in red. (Source: *Computing Essentials*, T. O'Leary & L. O'Leary, McGraw Hill, 1999).

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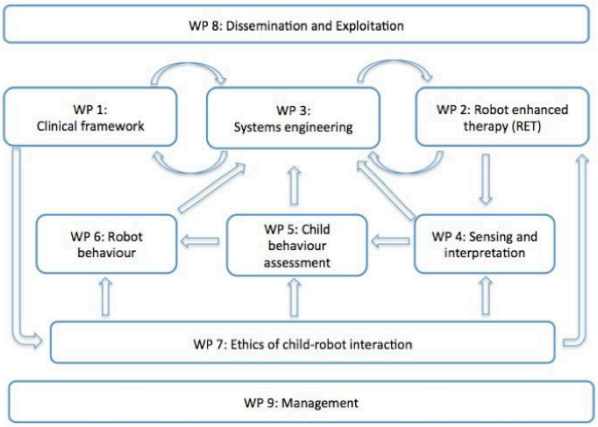

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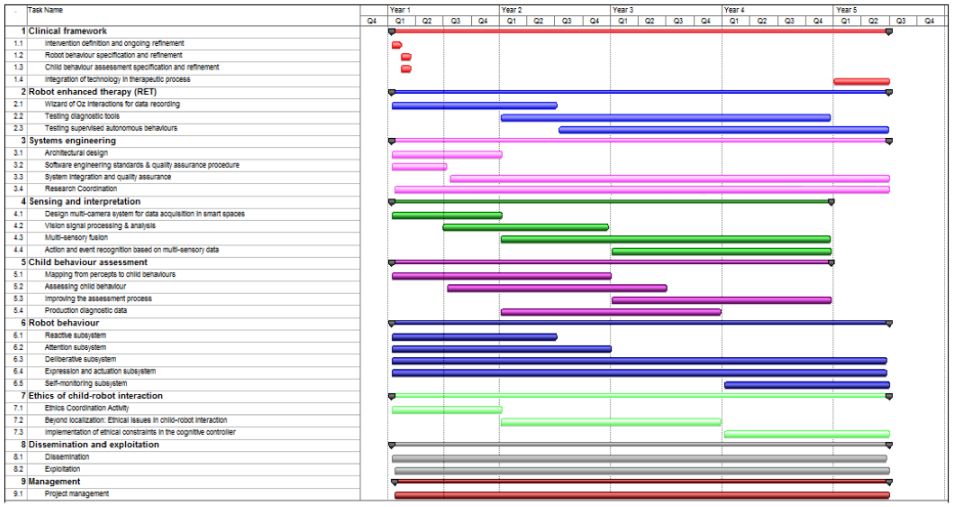

Task	Task Title	Start	End	Inputs	Outputs
T1.1	Intervention definition and ongoing refinement	1	2		D1.1(M2)
T1.2	Robot behaviour specification and refinement	2	3	D1.1(M2)	D1.2(M3)
T1.3	Child behaviour assessment specification and refinement	2	3	D1.1(M2)	D1.3(M3)
T1.4	Integration of technology in therapeutic process	48	54	D1.1(M2) D1.2(M3) D1.3(M3) D2.1(M18) D2.2(M36,M48) D7.1(M12) D7.2(M36)	D1.4(M54)
T2.1	Wizard of Oz interactions for data recording	1	18		D2.1(M12,18)
T2.2	Testing diagnostic tools	12	48	D5.4(M36)	D2.2(M36,48)
T2.3	Testing supervised autonomous behaviours	18	54	D2.1(M18) D2.2(M36,48) D3.3(M3,M6) D7.1(M12) D7.2(M24,36) D7.3(M48,54)	D2.3(M36,48,54)
T3.1	Architectural design	1	12		D3.1(M6)
T3.2	Software engineering standards and quality assurance procedures	1	6		D3.2(M6) D3.3(M3,6)
T3.3	System integration and quality assurance	6	54		D3.4(M12,24,36,48,54)
T3.4	Research coordination	1	54		
T4.1	Design multi-camera system for data acquisition in smart spaces	1	12		D4.1(12)
T4.2	Vision signal processing & analysis	6	24	D1.1(M2)	D4.2(M12,24)
T4.3	Multisensory fusion	12	48	D4.2(M12,24)	D4.3(M18,36,48)
T4.4	Action and event recognition based on multi-sensory data	24	48	D4.2(M12,24)	
T5.1	Mapping from percepts to child behaviour	1	24	D1.3(M3) D4.3(M18)	D5.1(M24)
T5.2	Assessing child behaviour	6	30	D1.3(M3) D2.1(M18) D4.3(M18,36,48) D5.1(M24)	D5.2(M30)
T5.3	Improving the assessment process	24	48	D5.2(M30)	D5.3(M48)
T5.4	Production of diagnostic data	12	36	D5.2(M30)	D5.4(M36)
T6.1	Reactive subsystem	1	18	D1.1(M2) D4.2(M12,24) D4.3(M8,36,48)	D6.1(M18)
T6.2	Attention subsystem	1	24	D1.1(M2) D1.3(M3) D4.2(M12,24) D4.3(M18,36,48)	D6.2(M24)
T6.3	Deliberative subsystem	1	54	D1.2(M3) D1.3(M3) D5.2(M30) D5.3(M48)	D6.3(M12,24,36,48,54)
T6.4	Expression and actuation subsystem	1	54	D1.1(M2)	D6.4(M12,24,36,48,54)
T6.5	Self-monitoring subsystem	36	54	D1.1(M2) D1.2(M3) D7.3(M48,54)	D6.5(M54)
T7.1	Ethics coordination activity	1	12		D7.1(M12)
T7.2	Beyond localization: ethical issues in child-robot interaction	12	36		D7.2(M24,36)
T7.3	Implementation of ethical constraints in the cognitive controller	36	54		D7.3(M42,54)
T8.1	Dissemination	1	54		D8.1(M1)
T8.2	Exploitation	1	54		
T9.1	Project management	1	54		D9.1(M6) D9.2(M18) D9.3(M30) D9.4(M42)