A New Concept of Project Robust Schedule – Use of Buffers

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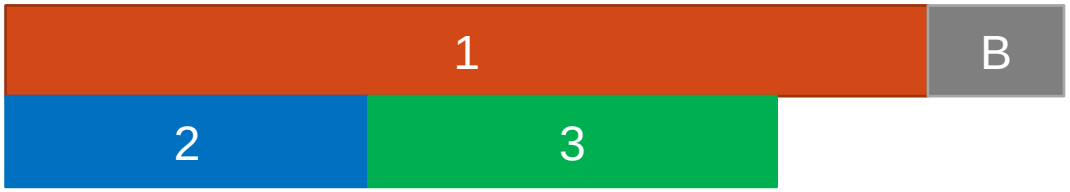
Project scheduling - buffers

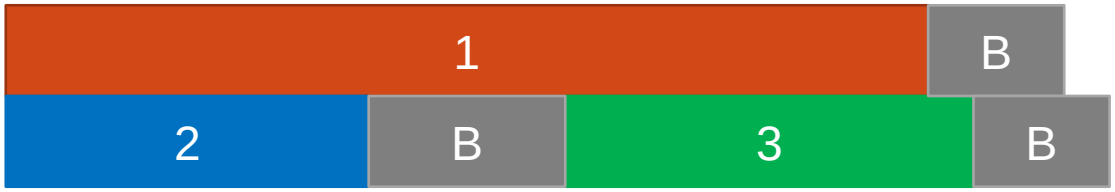
- Project planned schedule time shoudl be:
  - short (competitiveness)
  - fairly certain to be the actual schedule
    - reliability
    - multiproject management
- Buffers:
  - unknown to the task executors
  - known to the managament
  - allow to achieve the second objective, but are in conflict with the first one.

Buffers – time management

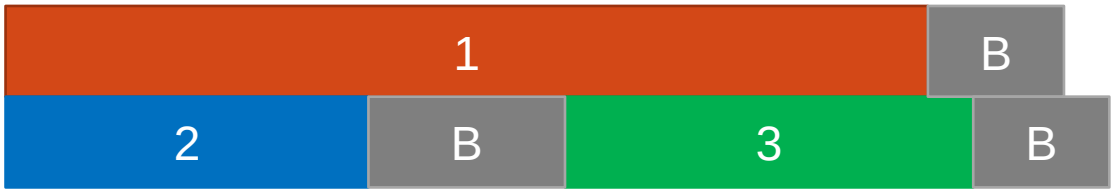
- A buffer may protect only the project end (customer oriented approach)



- A buffer may protect each activitty or important milestones (multiproject management approach):



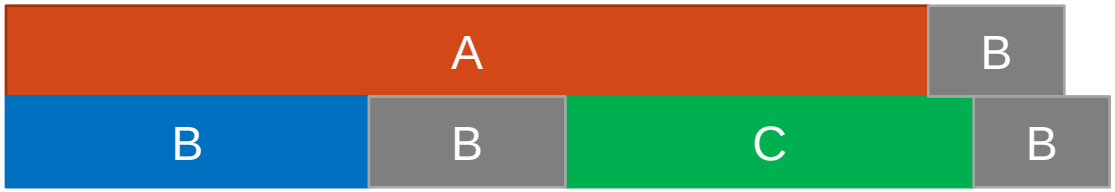
Buffers – multiproject management



Resource for	Schedule known to resources	Schedule known to management
1	1-10	1-12
2	1-4	1-6
3	7-11	7-13

Question:

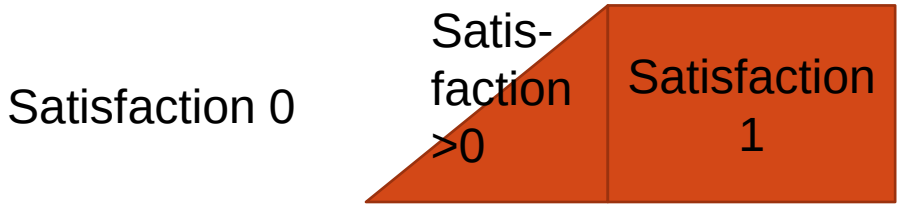
- The buffers size??????????????



- May depend on the features of
  - activities
  - project stage
  - project network
  - resources
  - etc.

Proposed approach

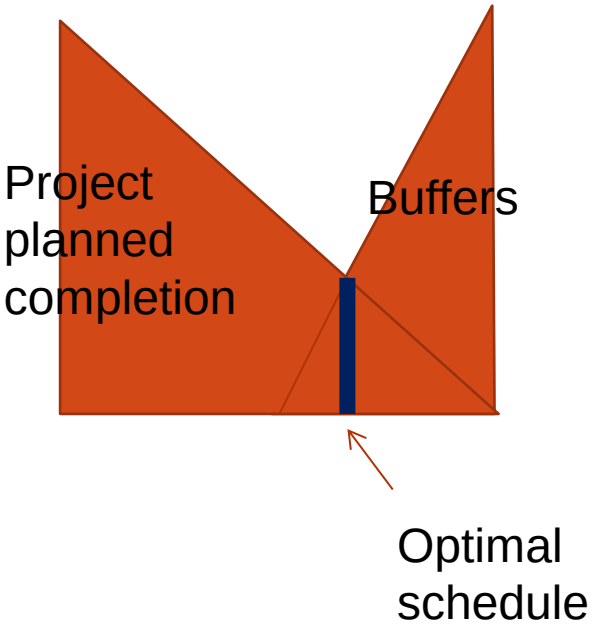
- The experts give the membership function for the buffer after (each) activity and/or milestone



- Another expert give the membership function for the project completion time:

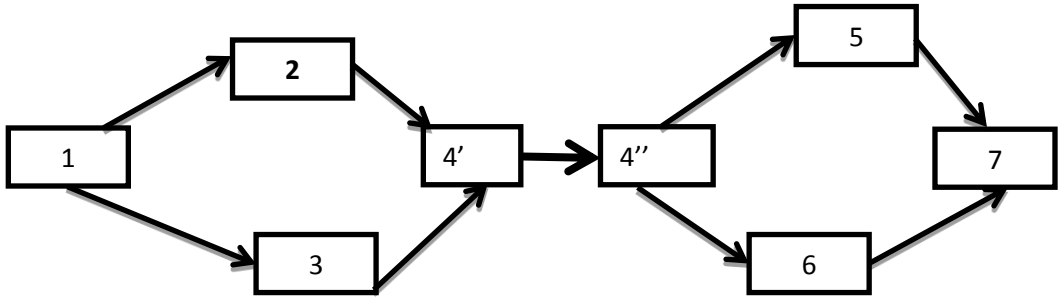
Objective function

- We maximise the minimum of all the satisfaction degrees



How to get the optimal schedule?

- Mixed integer linear program
- An example – total satisfaction degree 0,3



s12	*s13*	*s24*	*s34*	*s45*	*s46*	*s57*	*s67*	*s44*	*d*
1	1	1	0	0	1	2	2	0	18
2	2	6	4	4	5	3	3	8	50
1,41	1,56	2,54	1,39	7,16	3	5,37	3,63	2,4	29,89
0,56	0,41	0,34	0,3	1	0,5	1	1	0,3	0,56

Thank you!

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