Critical Chain

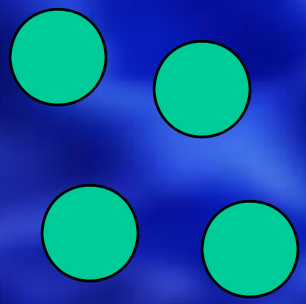
Project Management

Project Management undesirable effects

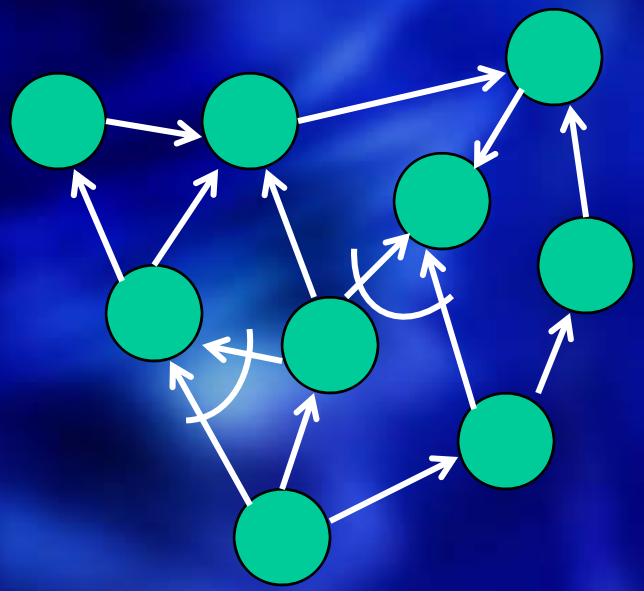
- Usually original due dates are not met
- There are too many changes
- Too often resources are not available when needed (even when promised).
- There are fights over priorities between projects
- There are budget over-runs

Complexity

system A



system B



Fundamental belief:

There are no complex systems in reality.

- **COMMON PRACTICE**

  The way to ensure that the project will finish on time is to try to make every task finish on time.

- **COMMON KNOWLEDGE**

  It is not important to complete each task on time, it is essential to complete the project on time.

- **CONCLUSION:**

  The common practice is local optima

COMMON PRACTICE

The way to ensure that the project will finish on time is to try to make every task finish on time.

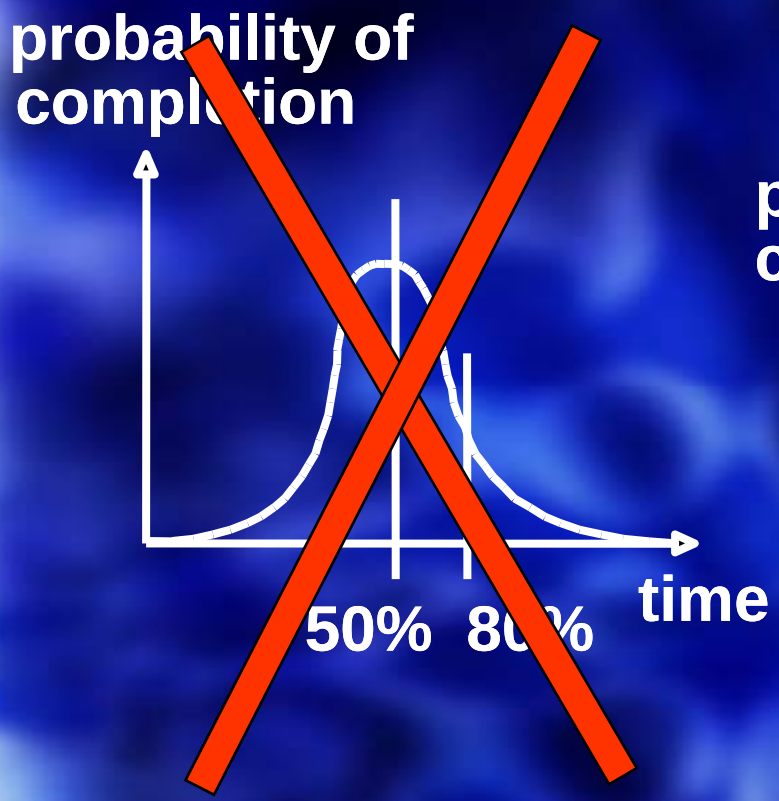
REALITY OF PROJECT:

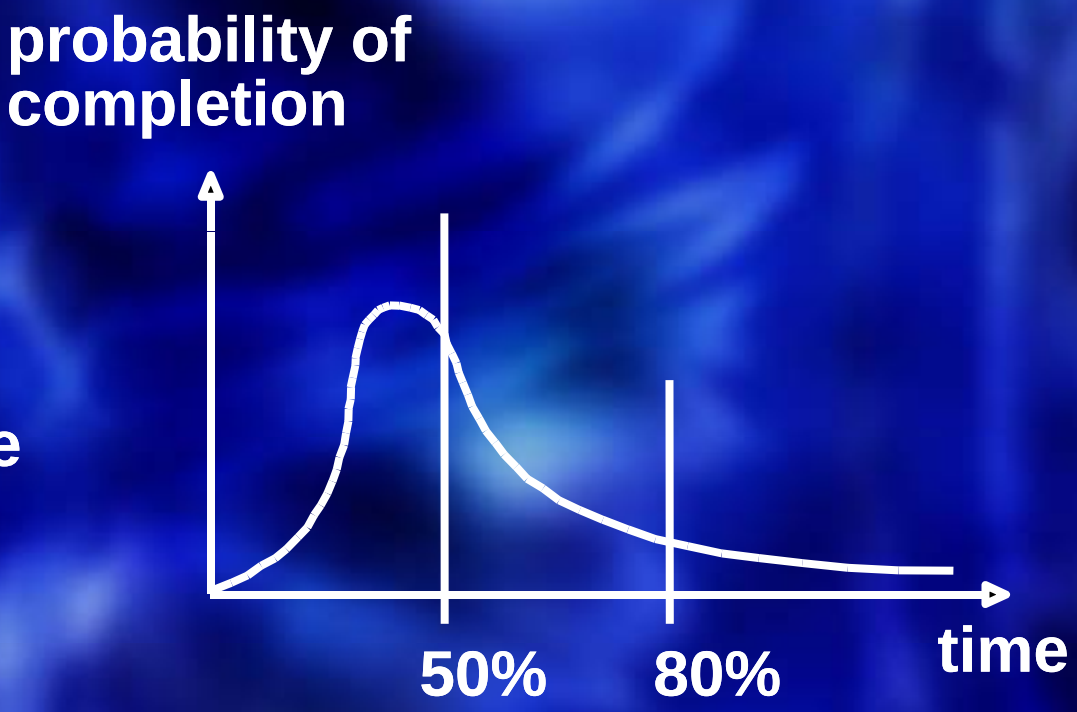
High uncertainty, therefore, tasks time cannot be determined - they can only be estimated.

CONCLUSION:

The Common practice turns estimations into commitments.

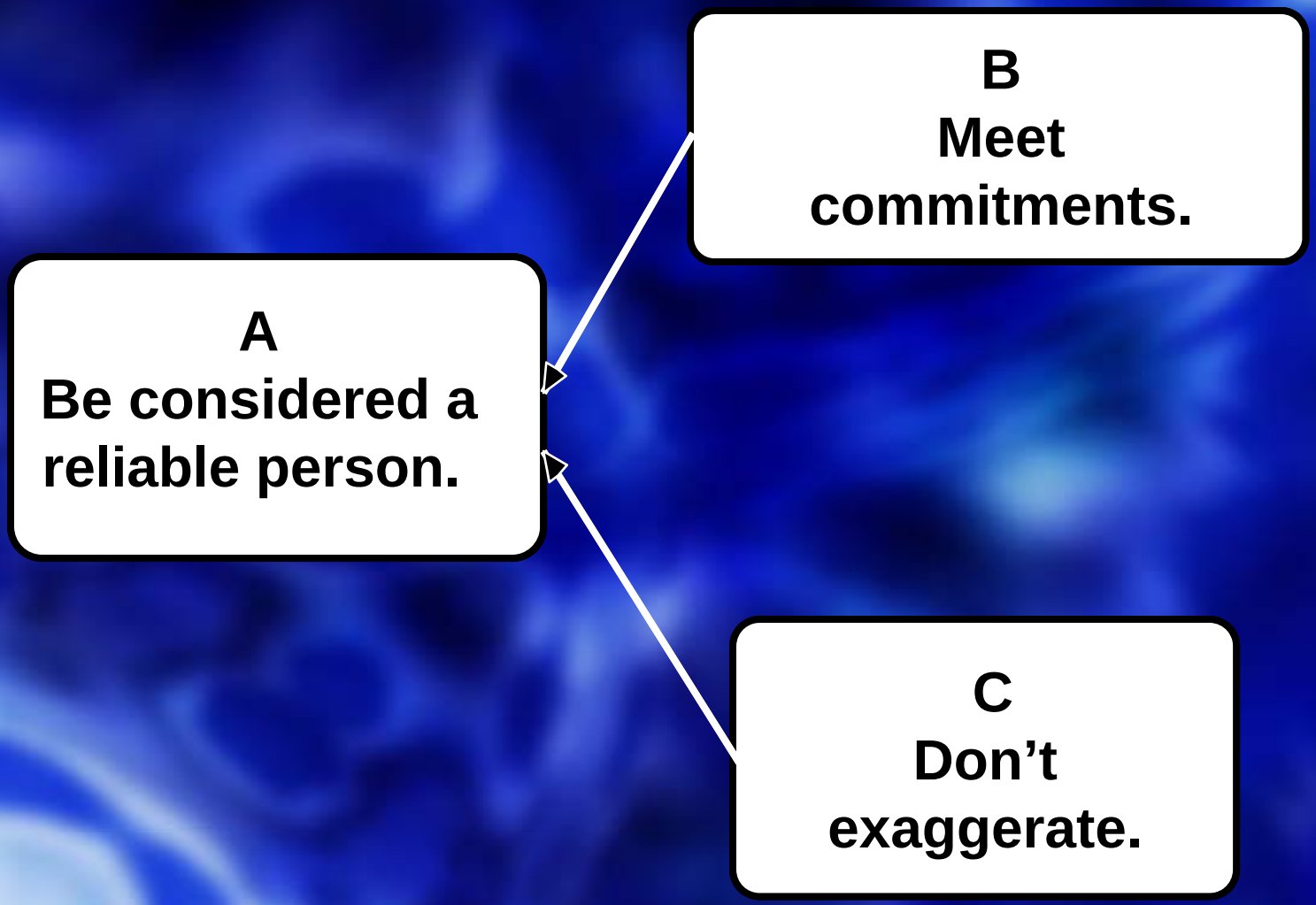
Estimation





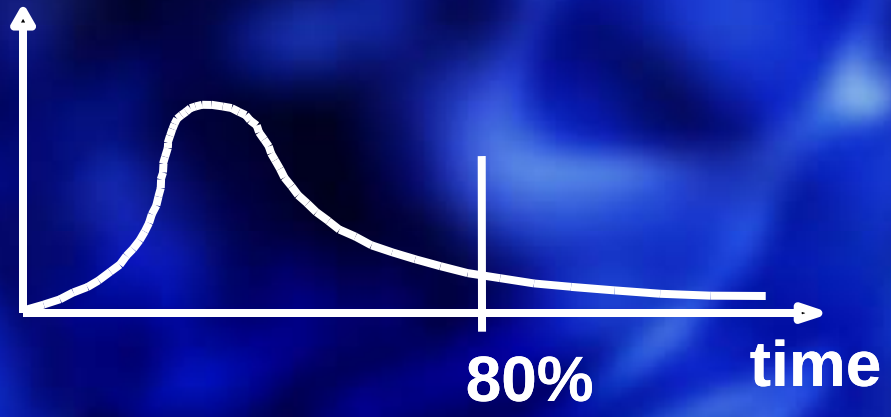
The higher the uncertainty the bigger the tail!

Why are people so reluctant to give estimations?



Why are people so reluctant to give estimations?

Because...



A
Be considered a reliable person.

B
Meet commitments.

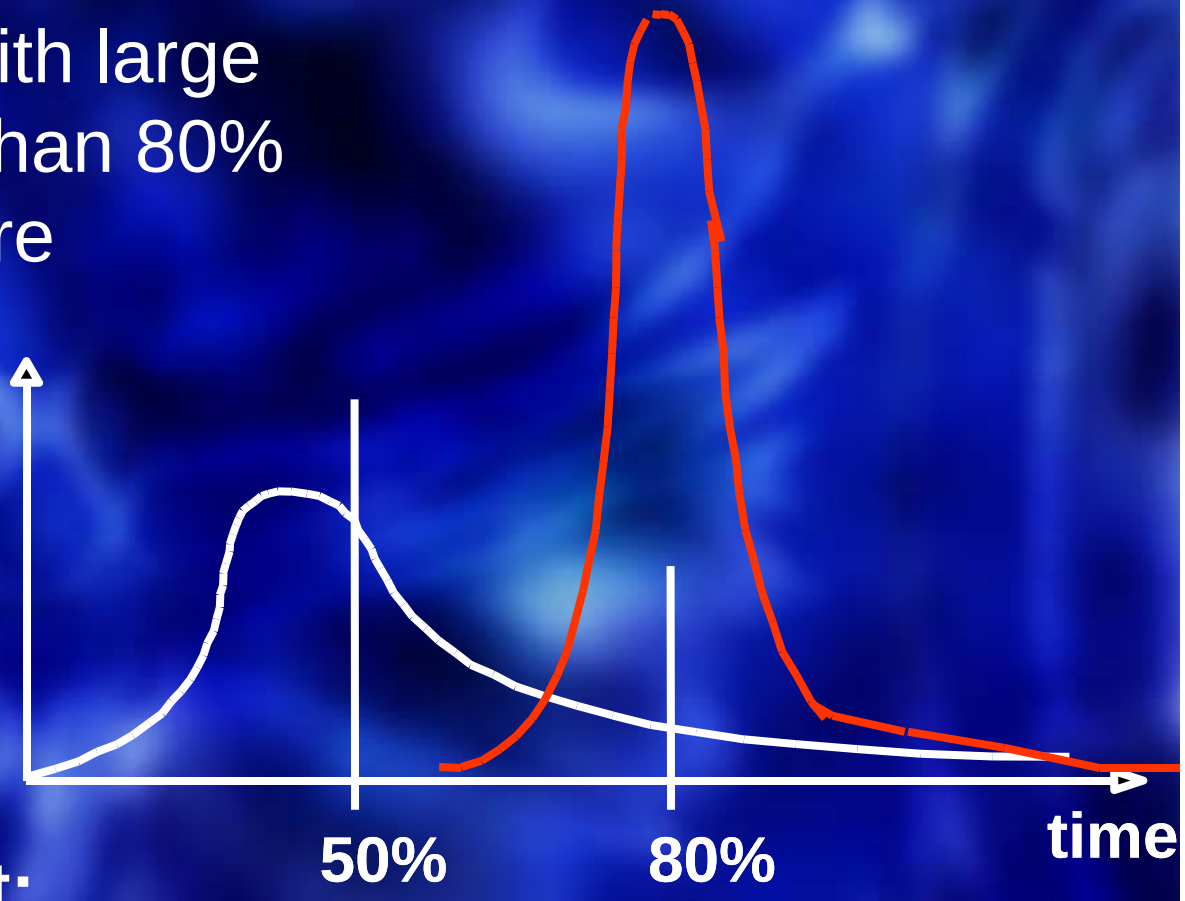
C
Don't exaggerate.

D
Choose estimates higher than 80%.

D'
Choose estimates close to 50%

The Devastating Common Solution

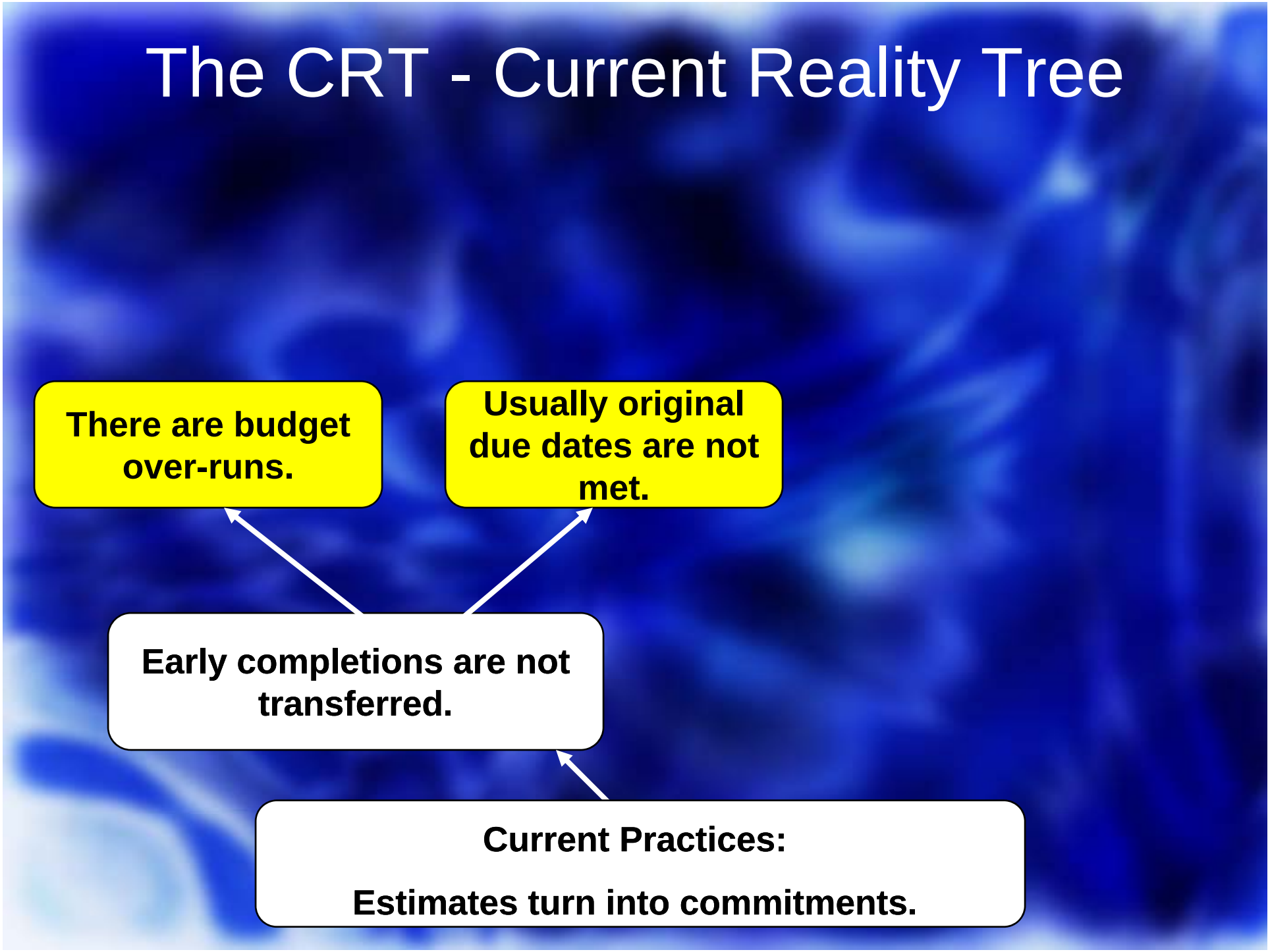
In environments with large unknowns, more than 80% of the estimates are "accurate"



Real impact:

Delays are transferred to next tasks in full, gains are not transferred to next tasks.

The CRT - Current Reality Tree



Multi Project Environment

Resources are engaged in more than one project at the same time.

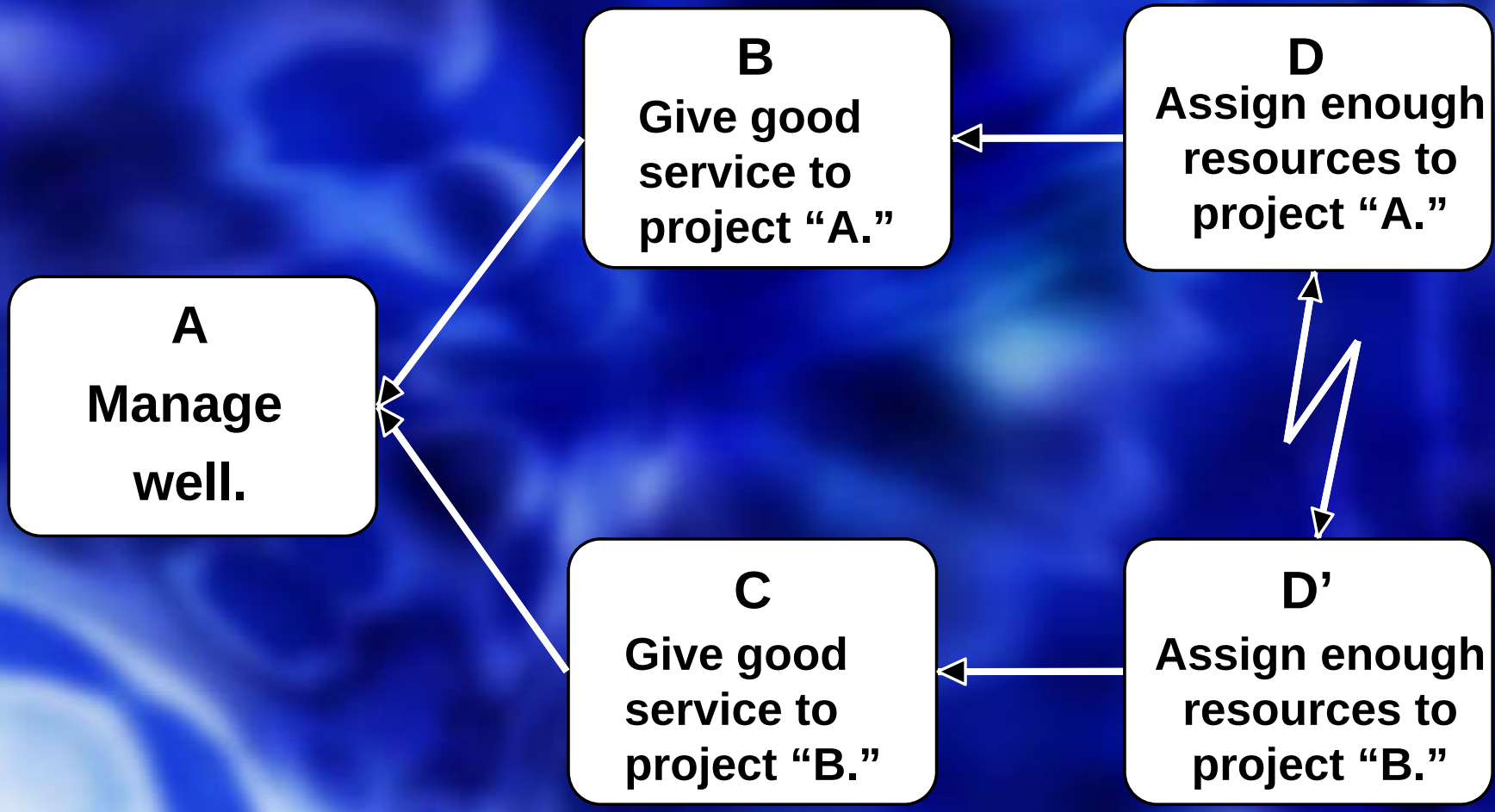
Organization structure is a matrix of project managers and resource managers.

Project manager - full responsibility for the project but the resources do not report to him/her.

Resource manager - have to service many bosses.

Multi Project Environment

The reality of a Resource manager



Multi Project Environment

The reality of a Resource manager:

The project managers behave according to the current practice and hence put pressure to get more resources immediately!

Conflict resolution:

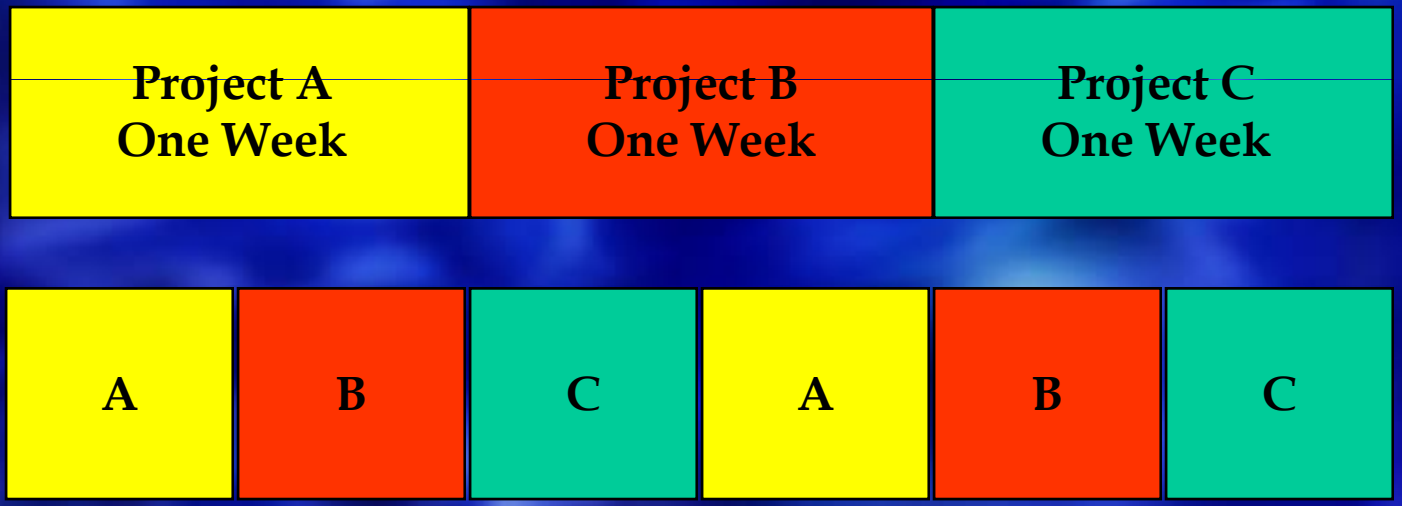
Assign resources according to the project managers' screaming

(whoever shouts the loudest)

Conflict resolution:

Assign resources according to the project managers' screaming

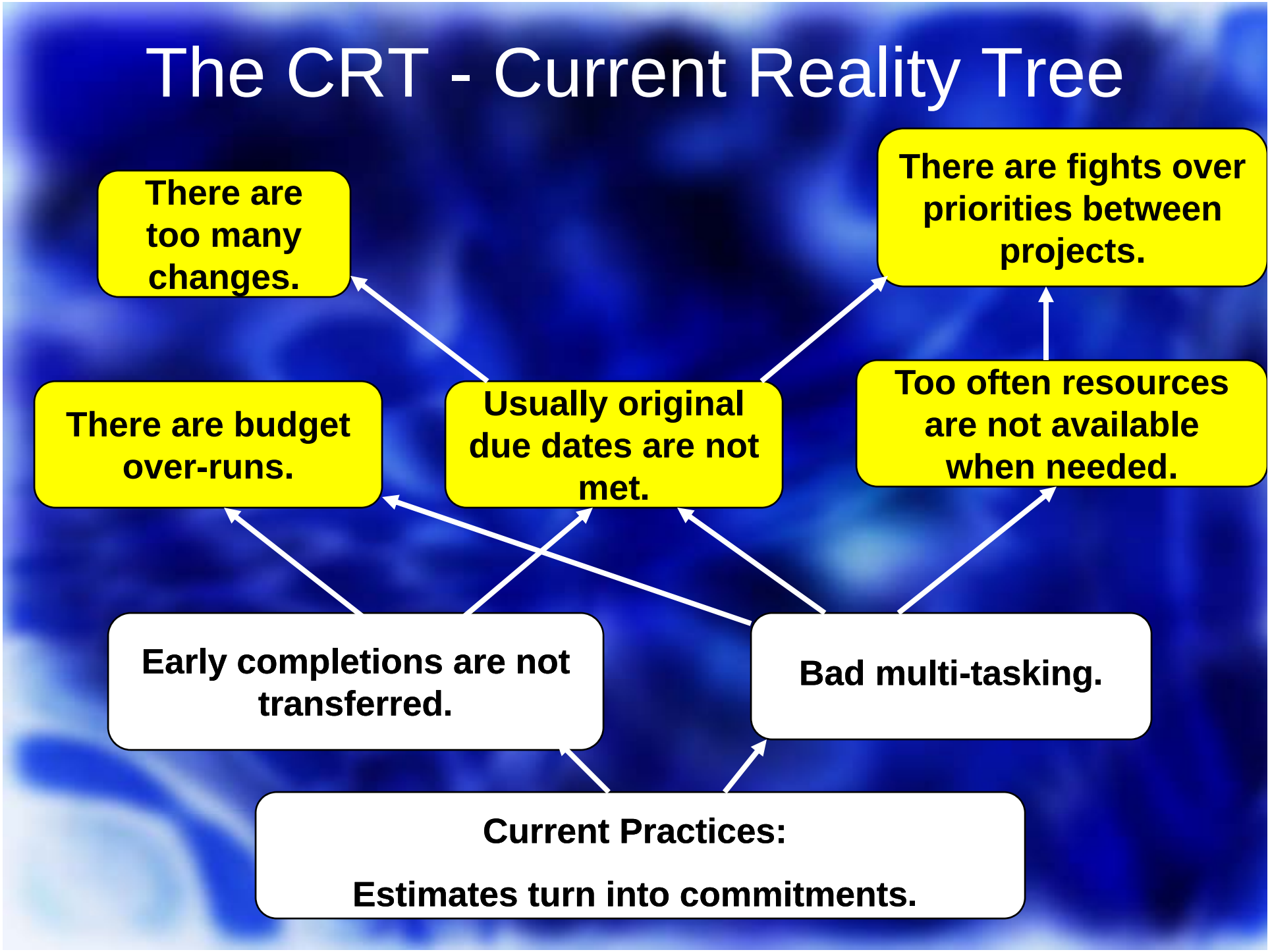
This leads to Bad Multi-Tasking



Conclusion:

Bad multi-tasking inflates lead times!

The CRT - Current Reality Tree



Conclusions:

We have demonstrated the Thinking Processes underlying the first question:

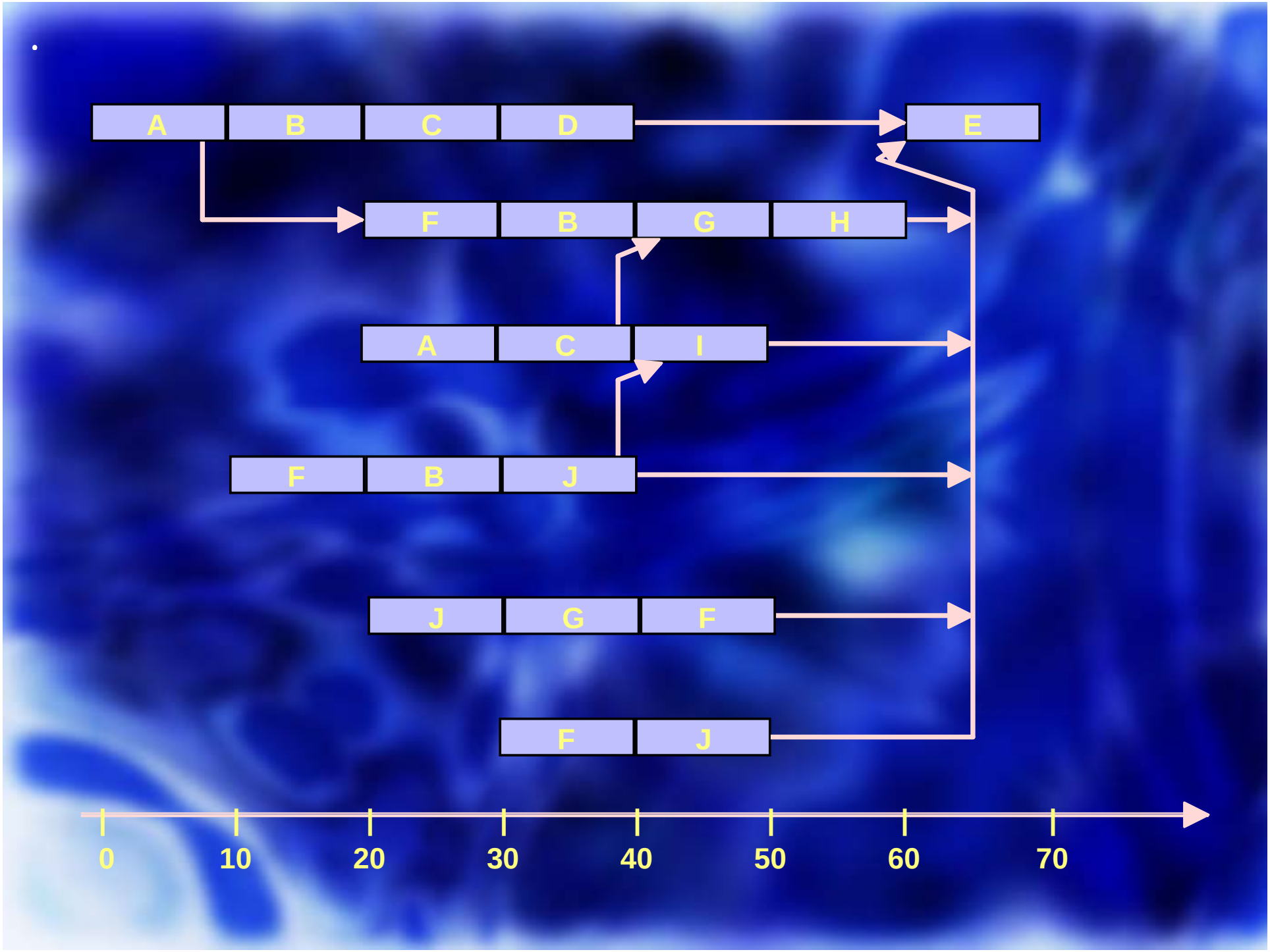
What to change?

Second question is, what is the solution?

What to change to?

The third question to be answered is:

How to cause the change?


A
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I
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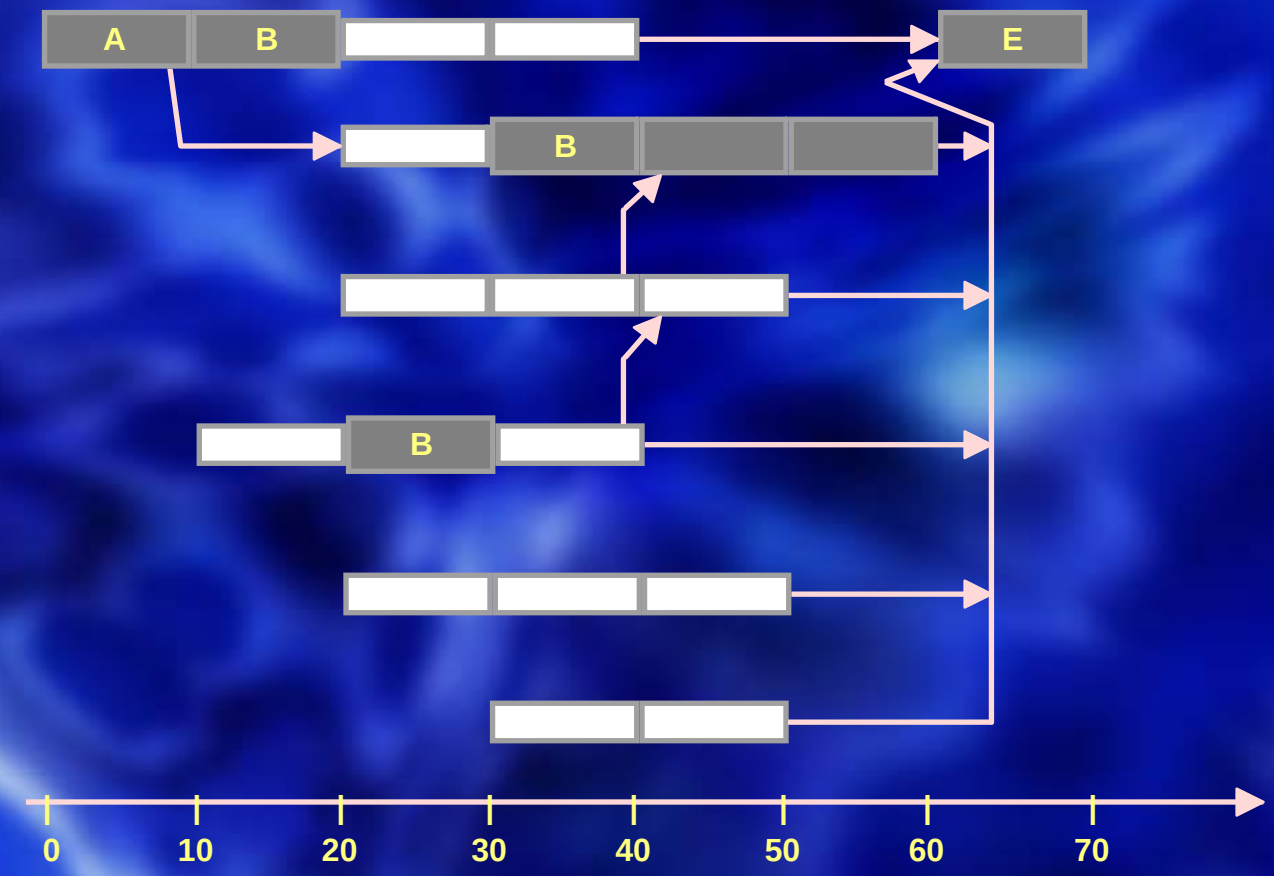
50
60
70

Step 1: IDENTIFY the system's constraint

Critical Chain: the longest chain of dependent tasks.



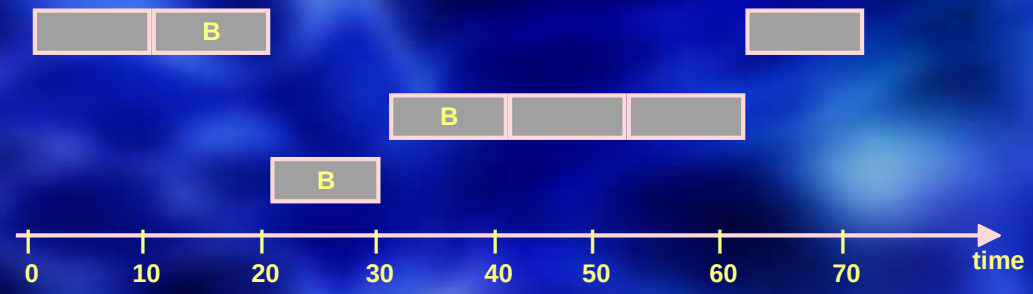
Step 2: Decide how to EXPLOIT the system's constraint.

Move the safeties from the tasks to the place where they protect the completion time of the project.

The Critical Chain

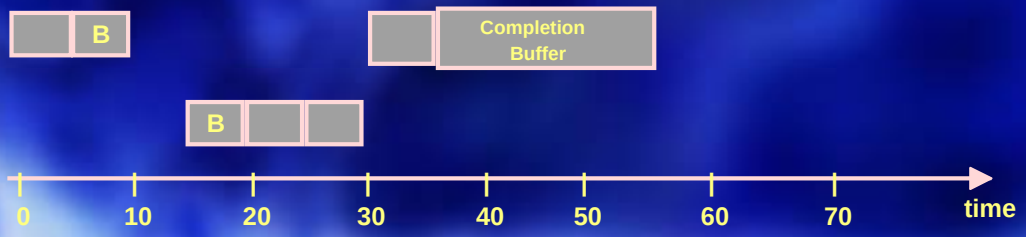
- Before -

moving the safety



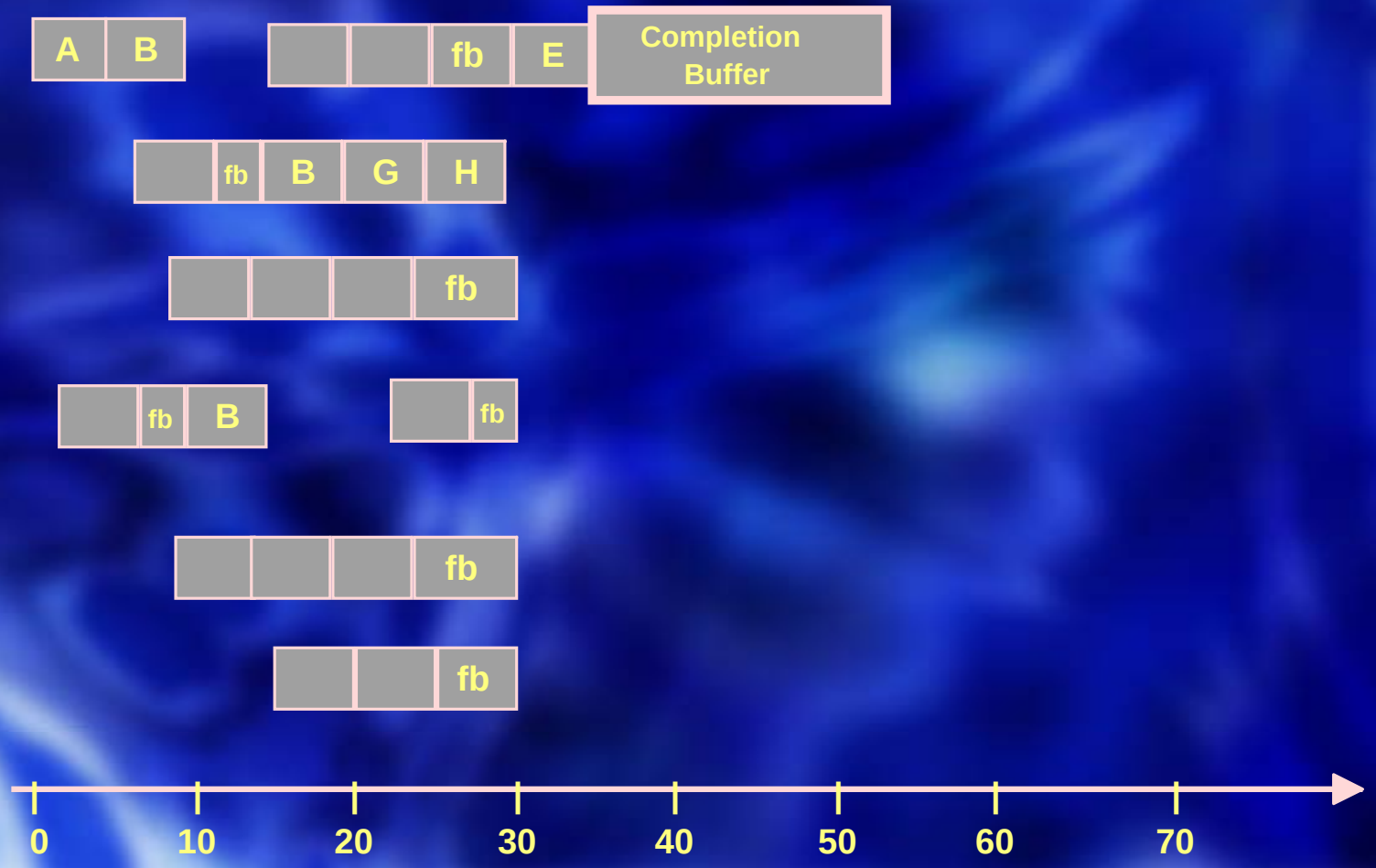
- After -

moving the safety



Step 3: SUBORDINATE everything else to the above decision.

Move safeties to protect the critical chain from disturbances occurring everywhere else.



The way to stop the bad-multi-tasking is by staggering the projects

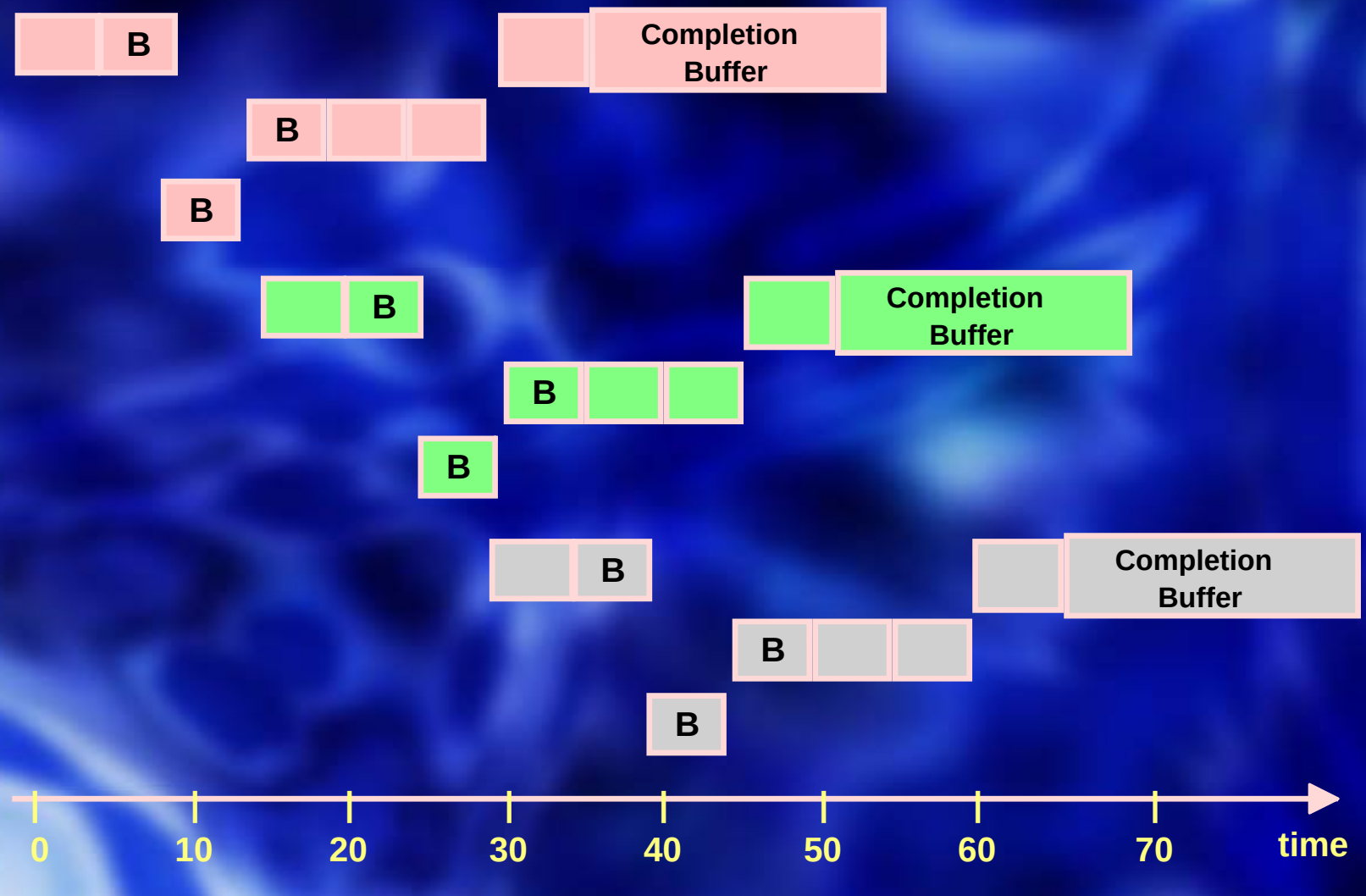
Questions to guide us in choosing the staggering point:

1. Where are the projects most likely to be stuck for the longest time?

2. Where are the projects most likely to cause bad multi-tasking?

3. Where is it most important to exploit the resources?

THREE STAGGERED PROJECTS



How do we set priorities?

BUFFER MANAGEMENT!

Judging the status of a project

- Percent of critical chain completion.

- Ratio between consumption of the completion buffer and critical chain already complete.

- Rate of consumption of the completion buffer.

Summary

It is not important to complete each task on time, it is essential to complete the project on time.

- Get consensus to rebuild each project PERT according to protected critical chain.

- Get consensus to stagger the projects according to a chosen DRUM.

- Put the mechanism to enable smooth buffer management.

Average Results:

- 90% of the projects are on time
- Project lead time is reduced by at least 30%
- The same resources manage to produce 50% more projects

Thank you!