



### Case Study:

Time Compression Technology.

A manufacturing company (Cox Aerospace Ltd) is involved in the design of a Digital Engine Control Unit housing, (DECU). This housing is currently designed using conventional hand drafting methods and manual model making skills, as the company is under a brief to design and supply a model to fit onto the prototype engine itself. The system of design is as efficient as possible with these processes after many years of honing the system. Cox is now preparing to implement a CAD design system and is seeking to exploit all potential time saving benefits that the sales people have alluded to.

Processes Involved:

- Conceptual design - 8 weeks
- Engineering design - 6 weeks
- Detail Drawings - 8 weeks
- Checking of Drawings - 4 weeks
- Model Making - 5 weeks
- Design Review - 1 day
- Incorporation of changes - 2 weeks
- Design Release - 1 day (an event)

From these times it is possible to produce a Gantt chart that will show these timings in sequence, and then we can graphically represent the differences between using old methods and using rapid product development methods.

With RPD there are four main time saving areas during the design process. The first is the detail drawings. As the drawings will now be being done on CAD the whole process is much smoother and easier to work. The checking of the drawings is also very fast, any re-drafting that is needed is almost instantaneous. Next the model making, as this is now an automated process, will almost definitely be out-sourced to an RP bureau, the time is reduced from five weeks to one to two weeks, taking a month off the design time. Because the detail drawings are CAD based, it is possible to start modeling before they are completely finished, as they can be added onto progressively. Therefore not only does the modeling start during the detail drawing stage, but it finishes at the same time as the detail drawing.

Yet again the CAD comes into play during the incorporation of changes stage, because this process can now be compressed. Any changes that do have to be made involve small amounts of work on the CAD package rather than a long drawn out drafting process.



## Outcome 1

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One big advantage with CAD is the way that the data can flow between stages easily. The detail drawings are improved versions of the engineering drawings, which themselves are just progressions of the conceptual designs. This process speeds up the initial design process by allowing the changes to be seen instantaneously between the stages.

However the designers at Cox are reluctant to agree to an shortening of the design period, 22 weeks at the moment, because they do not have first hand experience of the time saving abilities of CAD. Below are the improved timescales:

### Processes Involved:

- Conceptual design - 8 weeks
- Engineering design - 6 weeks
- Detail Drawings - 2 weeks
- Checking of Drawings - 1 week
- Model Making - 1 week
- Design Review - 1 day
- Incorporation of changes - 2 days
- Design Release - 0 days (an event)

Total time is 17