



Ministry
of Defence



Software Estimation

Is the problem solved ?

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CAAS

Content

- Difference between Software and Hardware estimation
- Why we think it is difficult to estimate software cost (Myths, Perception, Facts and Reality)
- The software engineering problems
- Software sizing
- Software life cycle
- Problem makers (is it integration, system engineers, software designers, developers, testers, project managers or the requirements)
- Summary

This is my personal view and does not represent
views of the Ministry of Defence

Software Estimation-Why is it different to Hardware ?

- Software engineering is a new discipline compared to civil/mechanical/electrical
- Software weigh nothing
- Software is invisible
- It always increases
- Software is intangible
- Complexity
- Conformity
- Software is malleable – can be shaped to do anything

Why we think it is difficult to estimate software cost (Myths, perception and facts)

1. Software is difficult to understand
2. Software estimation is a black art
3. Software costs are estimated under systems cost
4. Software cannot be measured in any form, therefore difficult to estimate the cost
5. Software is added as a Risk
6. Systems are driven by software
7. Increasing resources will increase the productivity
8. Software does not get obsolete

Software Engineering Problems (Software Crisis)

- First used in 1968 NATO Conference on software engineering
 - Unreliable
 - Delivered late
 - Prohibitive in terms of modification costs
 - Impossible to maintain
 - Performing at an inadequate level
 - “Surprise : It is still with us today in some form or the other !!!!”
- Each of these complaints can be traced to the inability to define the requirements
- Inability to estimate with accuracy the cost, resources and schedule required for a software project
 - Exceeding budget cost

Software Sizing

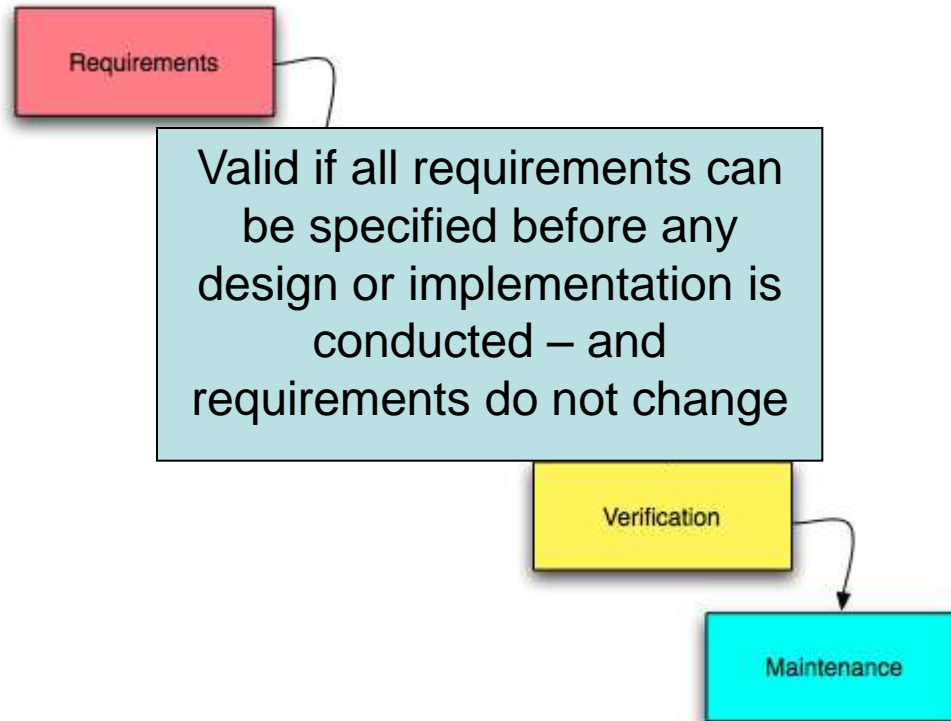
- It is the quantification of effort required
- One of the key cost drivers
- Various methods are used to determine software sizes
 - Function Points
 - SLOC
 - IFPUG
 - COSMIC
 - Object points etc

Other key cost drivers are complexity and dependencies

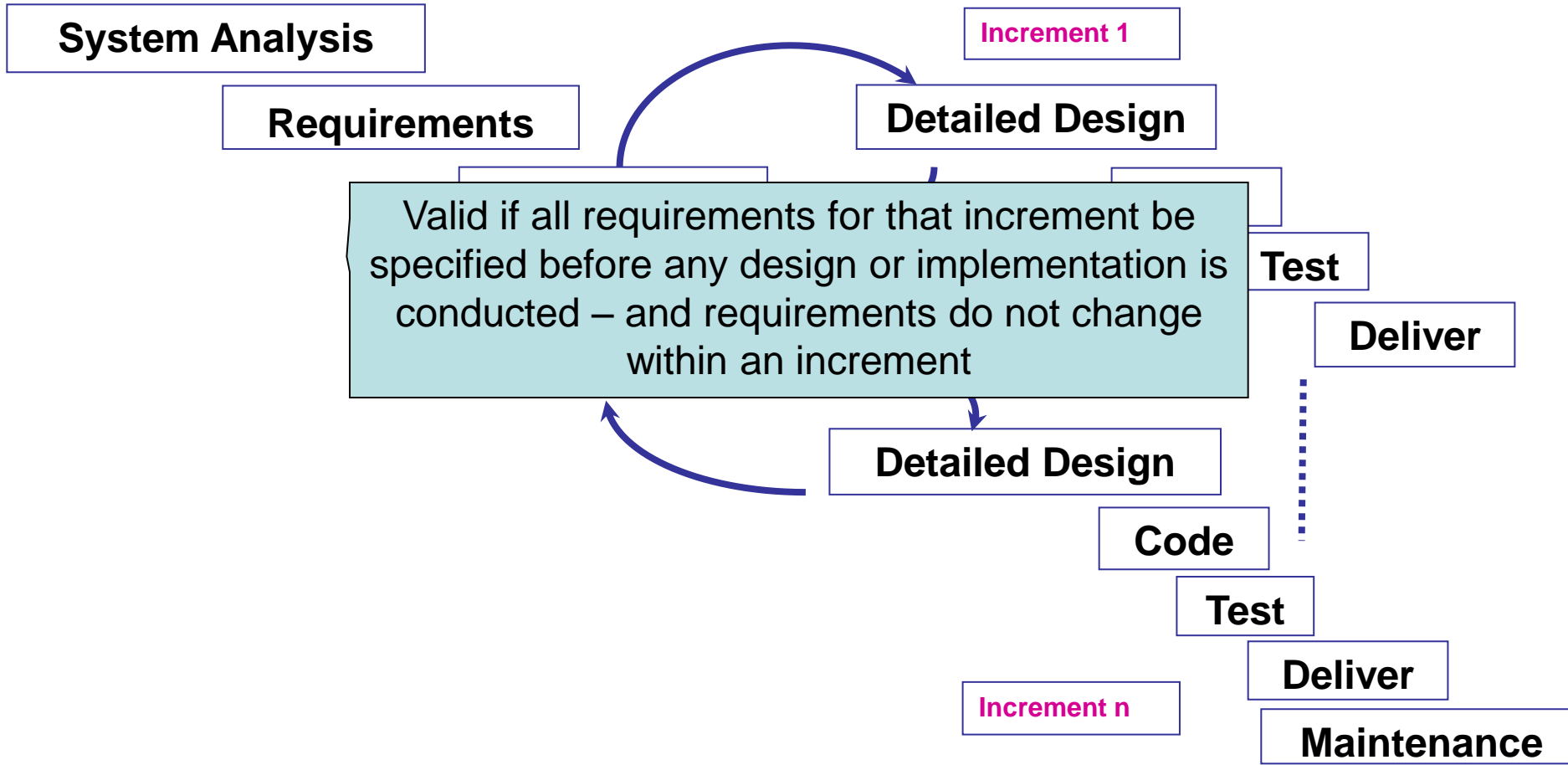
Software Development Life Cycle

- The complete lifetime of a software system from initial conception through to final obsolescence.
- Different Models
 - Code and Fix (Before software engineering)
 - Waterfall (Various derivatives available)
 - Agile
 - Prototyping
 - Incremental
 - Iterative
 - Evolutionary
 - Spiral

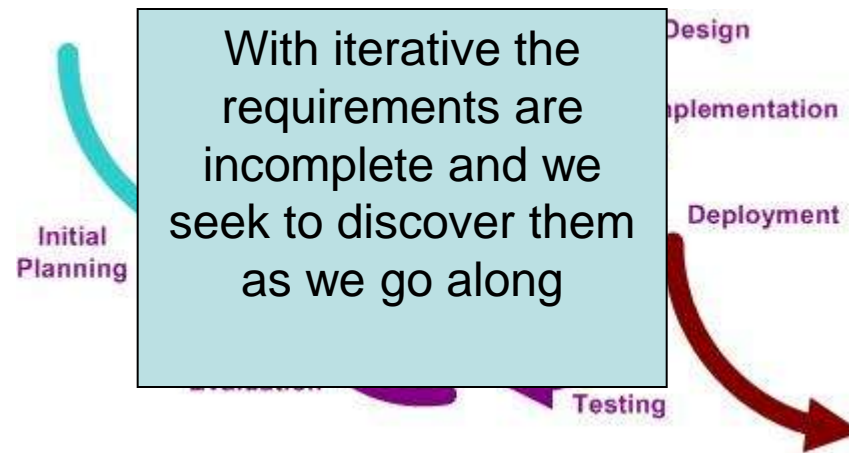
Waterfall



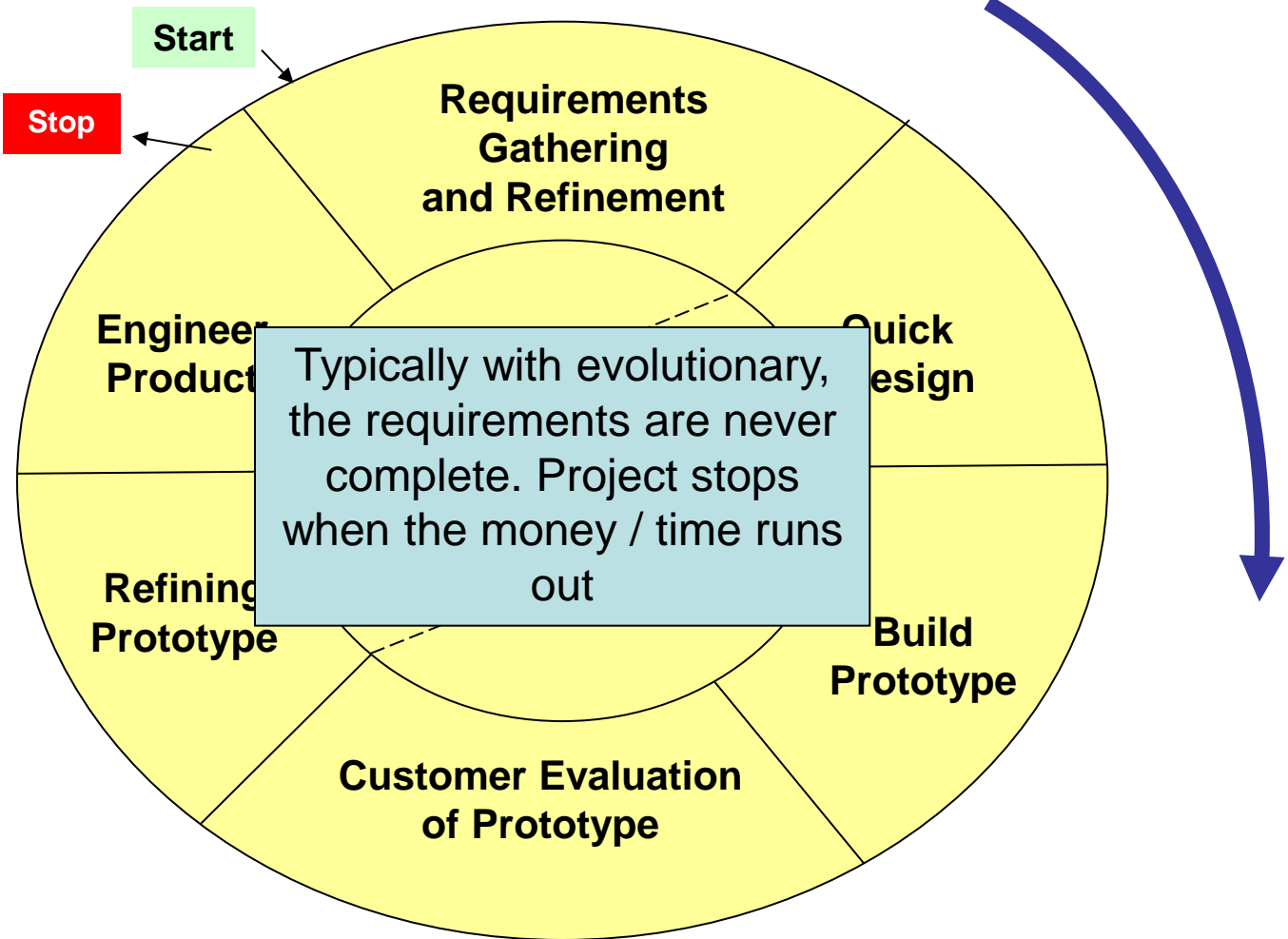
Incremental



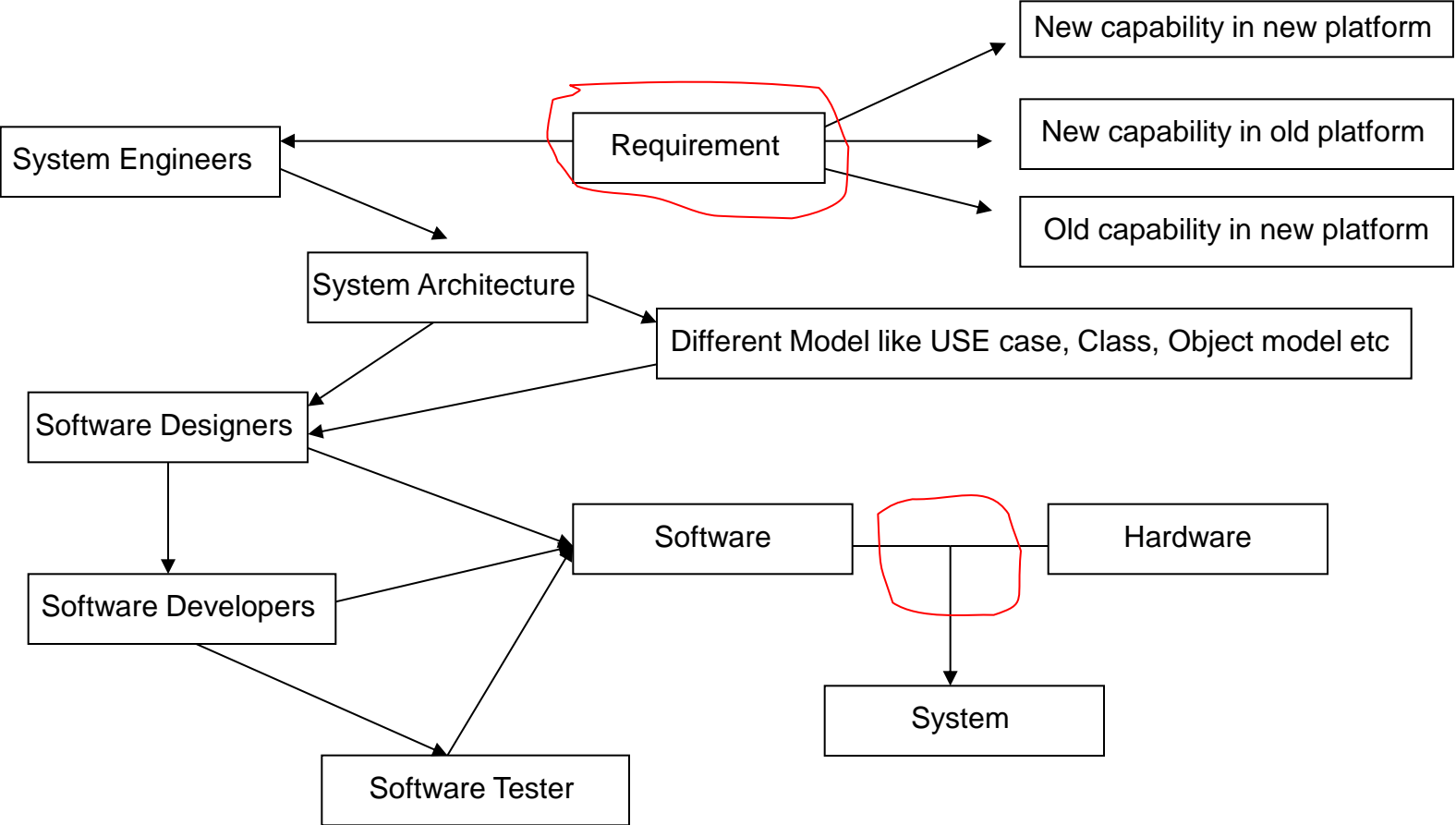
Iterative



Evolutionary



Software Estimating – Where is the problem ?



Parametric Approach

- Parametric estimating is building estimates based on CER's
- With available sizing matrix and software development standards its relatively easy to create CER's
- Tools such as SEER SEM, PRICE, COCOMO is used widely to estimate software cost.

The problem is not in the way that we estimate as we have

- Approved sizing standards
- Approved Software development life cycle
- Understanding of how software works

Software estimating issue is similar to that of any hardware estimating

One of the problem why the software projects fail is due to the uncertainty around project requirements

