Change Control

What is Change Control?

Change Control is the recording, assessing, authorising and implementation of changes

Changes are anything that alters the project baseline

Changes arise from Fixing Defects or Bugs – generally funded by project contingency
New Requirements – generally requiring additional funding

A bug found during the course of delivering a project may lead to a **Problem Report**
The problem will typically be investigated and a solution proposed

An **Issue** is a problem that cannot be resolved within the project team
Issues are escalated – initially to the project Sponsor – for resolution

A problem together with a solution will often lead to a **Change Request**

Implemented change request(s) require a **Change Note** describing the change

Problems

During the execution of tasks problems will arise

If within the scope of the task, they are generally fixed during the course of task execution

If outside the scope of the task the task owner may raise a **Problem Report**

An authority then decides whether to authorise work to investigate the problem

In some cases the authority will decide not to investigate and closes the PR

The authority is usually a Team Leader or Technical Authority or Project Manager

If deciding to investigate the authority will **Assign** the PR to a suitable person to investigate

The investigator first makes a rough assessment of the effort required to investigate

…giving the authority a means to assess the progress of the investigation

The investigator then investigates and devises and verifies a potential solution

Problem Reporting

The process is shown graphically, along with the workflow **States**

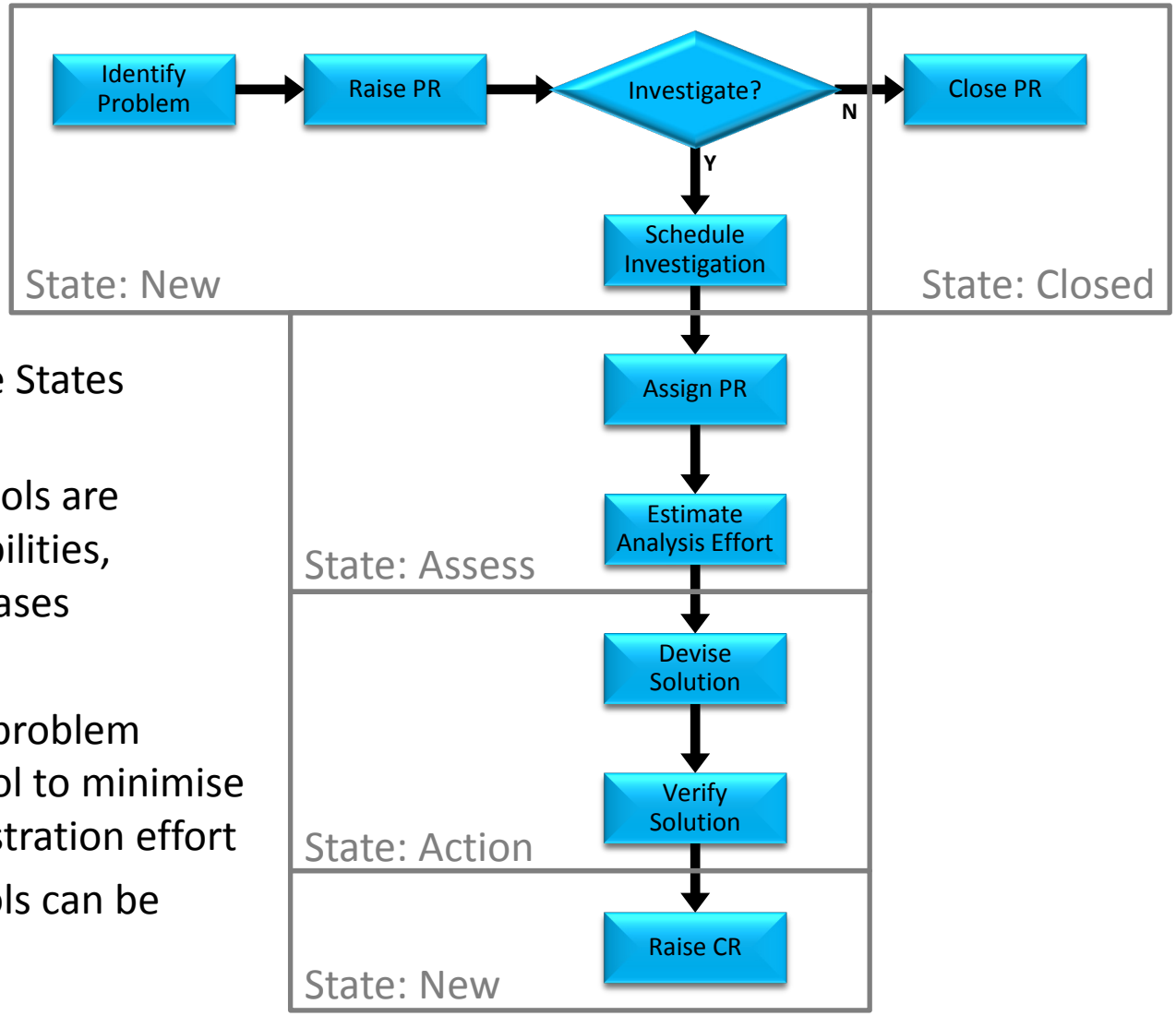
A **Problem Reporting Tool** implements these States

Tools may define alternative States

Many Problem Reporting Tools are available with varying capabilities, but all are essentially databases

Use the same database for problem reporting and change control to minimise documentation and administration effort

Most problem reporting tools can be setup in this manner



Issues

An **Issue** is a problem that cannot be resolved by the project team

Issues are escalated – initially to the project Sponsor – for assistance

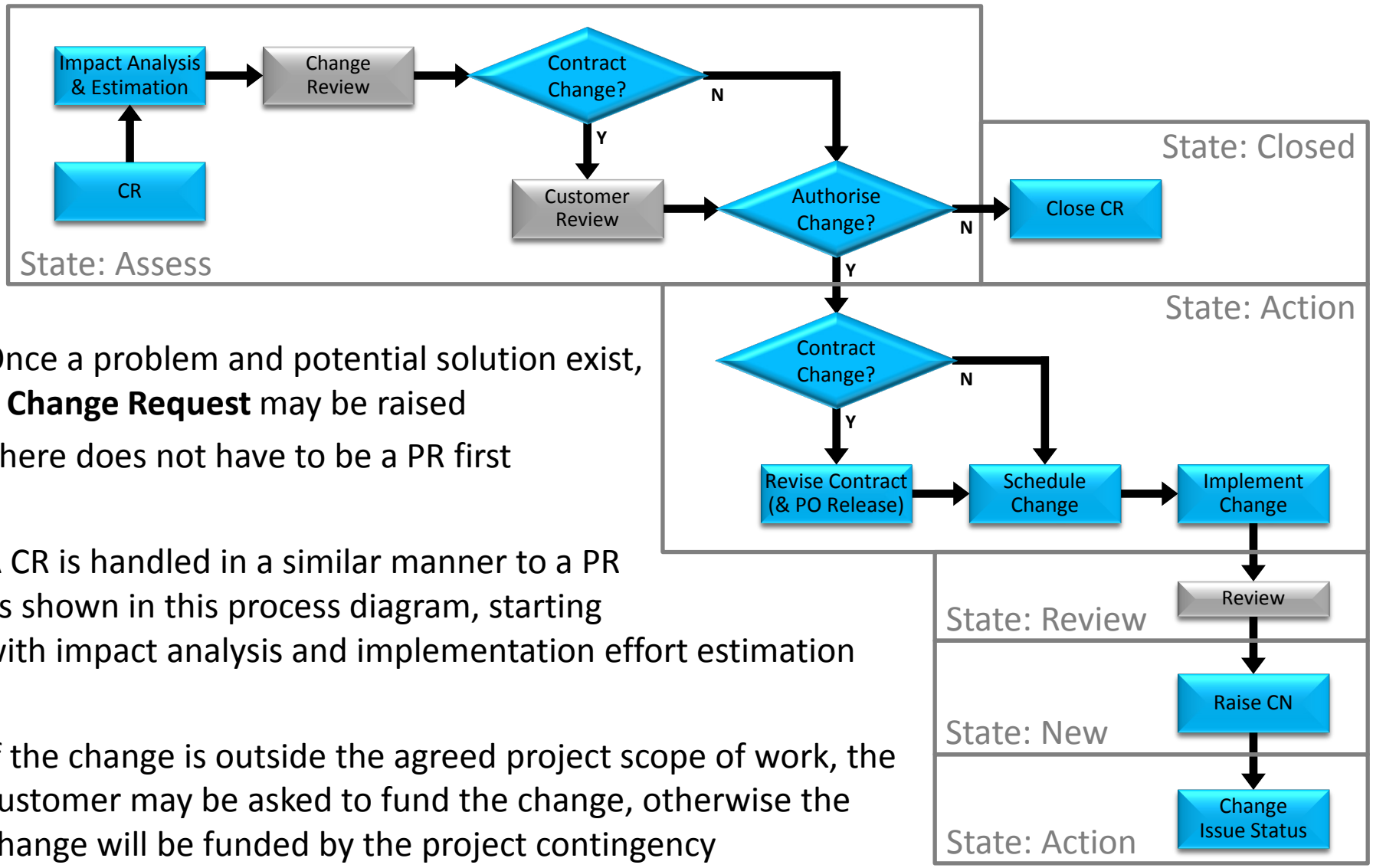
Most problems should be resolvable by the project team, so Issues should be few in number

The term **Issue Tracking System** is also used in place of Problem Reporting Tool

Here, the term issue is used to mean problem, defect or bug

Issues can be managed using the same tool but take care to differentiate **Issues** for escalation

Changes



Once a problem and potential solution exist, a **Change Request** may be raised

There does not have to be a PR first

A CR is handled in a similar manner to a PR as shown in this process diagram, starting with impact analysis and implementation effort estimation

If the change is outside the agreed project scope of work, the customer may be asked to fund the change, otherwise the change will be funded by the project contingency

Control

The authority decision steps are important for control of budget and timing

Spend is controlled by authorising the amount of effort and who undertakes the work

Problem and change task timing is controlled to optimise both work flow and spend

Typically, it is from early in the implementation phase where the control of change along with the historical record is beneficial and worth the effort

As the number of problem reports and change requests increases it is often worth holding a **Change Control Meeting** – at a frequency to suit the volume of PRs and CRs

Change Control Meetings involve all interested parties and are decision making meetings

The decisions are: Accept or Reject, When and Who for each PR and CR

Change Control should cover all aspects of the project in a unified manner

A **Change Note** documents what change was implemented and can include multiple CRs

Classification

Classification is often used to aid decision making

Severity and **Priority** are typically used but often with varying definitions: examples below

Severity	Name	Meaning
1	Critical	A significant requirement is broken or blocking product use
2	Major	A requirement is not implemented
3	Minor	A requirement implementation may be improved
4	Nice to Have	An out of scope improvement WIBNIF (wouldn't it be nice if) item

Severity 1 and 2 are always fixed; Severity 3 may be fixed if budget permits

Severity 4 are usually only addressed with customer direction and additional funding

Priority	Name	Meaning
1	Immediate	As soon as possible (and before priority 2 & 3)
2	Normal	As scheduled (and after priority 1 and before priority 3)
3	Low	After all other tasks

Reporting

A standard format for reporting should be defined to avoid confusion and nugatory work

Problem Reports and Change Requests can easily number 100's and often 1,000's

Graphical reporting is recommended – use trends to indicate progress and completion

Most Problem Reporting tools include analysis and reporting which can provide a breakdown of PR assignment and area of work to aid tasking and resource management

Forecasting capability is often missing or weak and this may need additional analysis outside of the PR tool – fortunately almost all PR tools allow the PR list to be exported

Reporting Example

Project P1000 Example

PM Russell Taylor

Plan

21 Apr 2008	Start	Planned Completion	09 Aug 2010
5,760	Fix Hours Planned	Capacity	1,600
45%	Severity 0 to 2		8.00
Assumed Proportion			Planned Average Hours to Fix

Status @ 21 Apr 2010

Severity	Raised	SR	Open	SR
4 Nice to Have	134		94	
3 Minor	600		181	
2 Major	341		94	
1 Critical	333	837	60	205
0 Not Set	163		51	
Total	1,571		480	

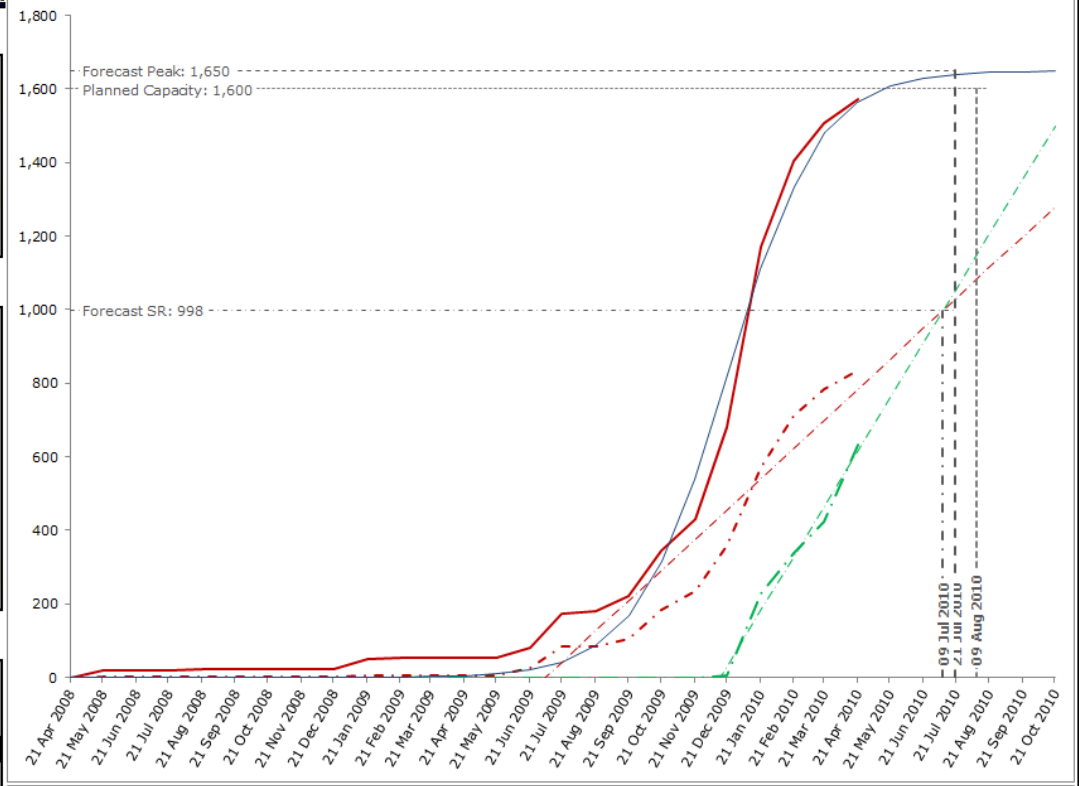
Actual	Average Hours to Fix	Forecast
3.75	Severity 0 to 2	4.00

Forecast

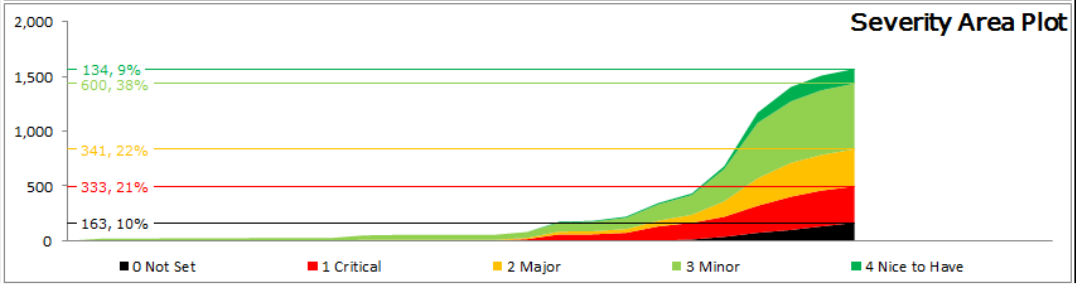
1,650	Peak PRs	Fix Hours Unused	1,669
Sales Release	0 to 2	Severity 0 to 3	Completion
09 Jul 2010			21 Jul 2010
-1.01 months	Planned Completion Date Delta		-0.62 months
	PRs		
366 PRs	205 Open	386	458 PRs
	161 To Find	72	
	Estimated Fix Hours		
1,464 Hours to Fix	820 Open	1,544	1,832 Hours to Fix
	644 To Find	288	
205	Planned Fix Hours Delta		-163

PRF v1.000

Problem Reports



Severity Area Plot



Plot Selector

Baseline Plan
- Capacity 1,600
- Completion 09 Aug 2010

Sales Release (SR) Def'n:
Severity 0 1 2 3

Status @ 21 Apr 2010
- Raised Total 1,571
- Raised SR Total 837
- Severity Area Plot: Totals
- Closed Total 1,091
- Closed SR Total 632
- Open Total 480
- Open SR Total 205

Forecasting
- Forecast Peak 1,650

Completion: S-Curve
- Raised: Forecast S-Curve
- IPD 30 Dec 2009
- Slope 0.72300
- $SS_{residual}$ 90,001.97

Completion: Linear Trend
- Raised: LT UCI LCI
- Start 21 Dec 2009
- Closed: LT UCI LCI
- Start 21 Dec 2009
- Forecast Completion

SR: Linear Trend
- Rd SR: LT UCI LCI
- Start 20 May 2009
- Cd SR: LT UCI LCI
- Start 21 Dec 2009
- Forecast Sales Release
- Forecast SR Total 998

Cautions

Avoid more than one problem reporting and change control database on a single project

Multiple databases will as a minimum require administration overhead

At worst, multiple databases lead to confusion, nugatory work and mismatched expectations

The best problem reporting and change control databases link to code base, drawings and the configuration management system and should be agreed before the project starts

Adopt the same definitions for severity and priority across all projects

and with all customers if possible

Don’t over complicate Change Control – a tool may offer ten severity levels and eight priority levels but you probably do not need them all

Take care to differentiate **Issues** for escalation outside the project team

Author Profile

After 4 years as an electronics engineer for Siemens, achieving Chartered Engineer, I moved into project management for 14 years, at Siemens and Roke Manor Research. Successfully delivering Roke's most challenging whole lifecycle product developments on time and under budget led to a role as Director and board member for 6 years. In 2013 I returned to hands-on project management as Programme Director at Cambridge Consultants, founder member of the Cambridge Science Park.

In my board role I led a team of 22 Project Managers and 5 Quality Engineers, and ensured Roke's £79m project portfolio delivered better than budget profit. I set-up and ran a virtual PMO and created REP, the Roke Engineering Process, also managing the engineering tools to support it.

Creator of the APM corporate accredited PM Excellence Programme, I chaired a quarterly PM forum to share best practice and built a supportive PM community. I coached seven PMs to RPP, five to PQ, and all passed APMP.

These investments in PM professionalism led to a turn-around and annual improvement in project results across a 400 project portfolio and delivered an above budget performance in five consecutive years with profits totalling £7.9m above budget.

Passionate advocate of PM professionalism, Fellow of the APM and the IET and author of articles published in *Project* and *PM Today*.

Project Management Topics

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Risk Management

Earned Value Management

Change Control

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