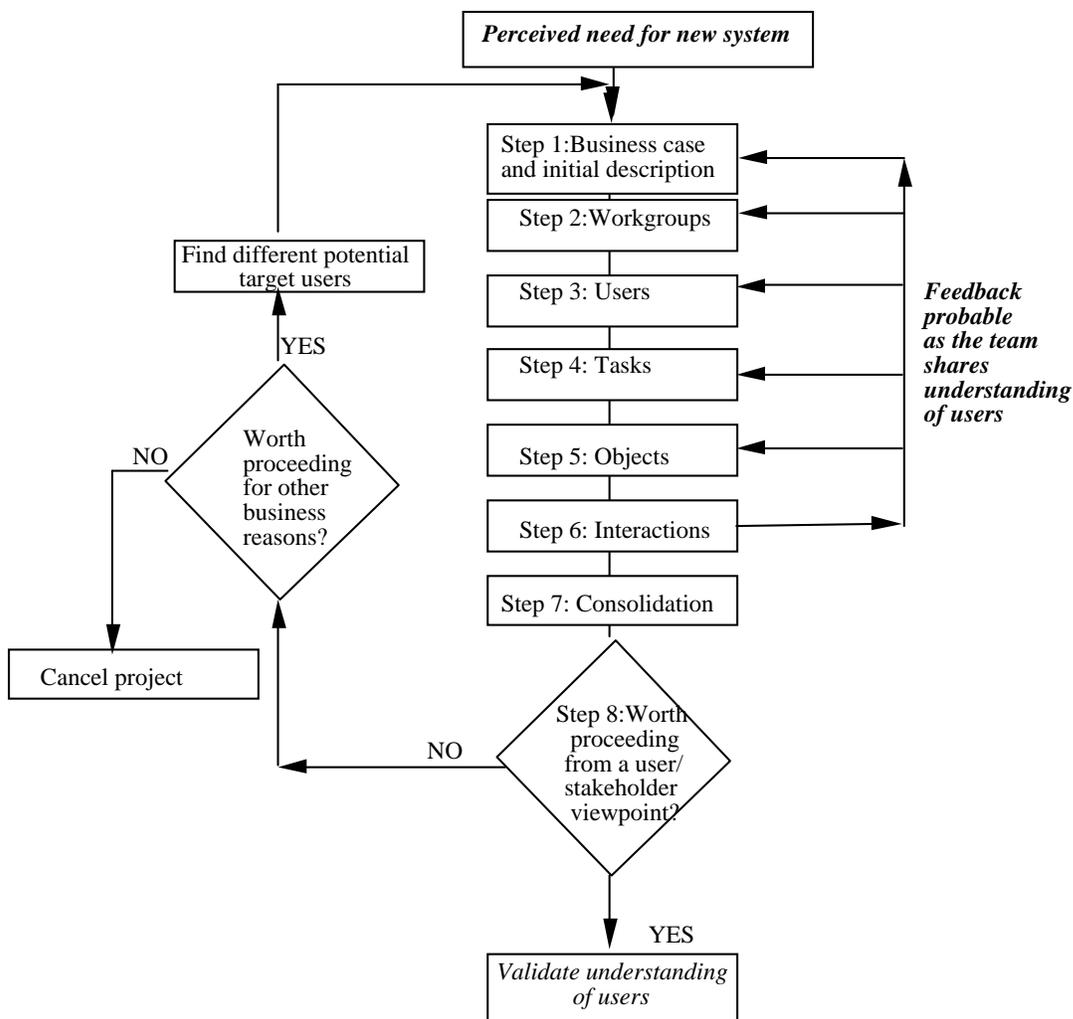


4.8 User guide to CRC Stage 1

Introduction

The aim of stage 1 of CRC is to enable stakeholders to develop a shared understanding of users and what they do now, and to project what users will be doing when the proposed system is introduced. Stage 1 also encourages team members to assess the feasibility of the proposed system and of the proposed change to the users situation, from the users point of view.

CRC stage 1 figure 1 below gives an outline of stage 1 of the CRC method showing the main steps.



Figure

Step 1, is where the proposer of the new system presents the case for that system in terms of business opportunity and potential business benefits. The proposer gives an initial description of the proposed system and this is discussed with the other team members.

Step 2, 3, 4 and 5 are similar in that at each step the team first of all produce a list by using brainstorming techniques, then classify the contents of the list according to some criteria, then select one or two important items from the list and then describe those items using checklists of issues. The descriptions involve the team in thinking about the users present job, the technological options and the proposed system.

Step 6 enables the team to look for interactions between the items and issues discussed steps 2, 3, 4 and 5. Here a number of short lists of user needs are generated.

Step 7 enables the team to reflect on the previous steps and to consolidate their findings into control sheets. These sheets are used by the team to help them assess the credibility of the information they currently have about users and to identify what further work they need to do in order to get a good understanding of users.

Step 8 is part of the consolidation process, in that, as a result of steps 2, 3, 4 and 5 the team will have discussed the proposed system and the proposed changes to the users jobs and environment. The purpose of step 8 is to enable the team to identify the costs and benefits of the proposed system to the proposed users. In some cases it may be that little or no benefit can be identified and hence that it is not worth proceeding. The team may need to rethink the proposed project or else cancel it altogether.

If it is worth proceeding then the team should undertake the further work identified at step 7, that is, they should validate their understanding of the users (after the meeting) and should complete the User Document.

Approximate schedule.....timetable

CRC Stage1: Step 1: Business Case & Initial Description

The business case consists of a statement, by one of the stakeholders, of the rationale for the system being proposed. This should include an initial description of the proposed system, an initial view on who the target users are and on the perceived benefits of the proposed change to the customers and users. In addition the business case should identify the time perspective within which the proposed change will occur, for example, 2 years, 5 years or 'n' years from now.

Thus in the remainder of the discussion 'now' means 'at the time of the analysis' and 'proposed' means 'n' years from 'now'. The analysis of change centres around the End Use Analysis form in which the requirements team write down the current situation in the 'now' column and the projected future situation in the 'proposed' column. See **figures 3, 5 and 6** for examples of End Use Analysis Forms.

CRC Stage 1: Step 2: Workgroups

Each of the discussions concerning workgroups, users, tasks and objects includes a brainstorming session; an evaluation session; a prioritisation session and an analysis of change session. At the workgroup level the team:

(i) Identify the workgroups associated with domain of interest by brainstorming suggestions for workgroups and writing them onto the whiteboard. Next they discuss the list produced until agreement is reached that it represents the collective view, then

(ii) Classify the workgroups according whether they are likely to be primary, secondary or tertiary users of the proposed system (see CRC stage 1 fig 2),

Work Group Title	Title 1	Title 2	Title 3
Relationship	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generic Users <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Indicates the likely relationship of user or workgroup to the proposed system
- 1 Primary Relationship: Likely to be frequent, hands on users
- 2 Secondary Relationship: Likely to be occasional users or use the system through an intermediary
- 3 Tertiary Relationship: Probably will not use the system, but may be affected by it's use, or may influence it's purchase

CRC Stage 1 fig 2 , A Workgroup Table

(iii) Next, select one primary workgroup and describe the workgroup as it is 'now' in terms of social & organisational issues (see CRC stage1 fig 3).

Social issues are considered in order to help the designers to understand social aspects of the workgroup which may affect the acceptability of the proposed system to that group. They are considered in terms of workgroup structure (size of group, location, communication structure), workgroup dynamics (leadership styles and relationships within the group), and the workgroup's status and prestige, as perceived relative to other workgroups.

Organisational issues are considered in order to understand the workgroup in its organisational context, and to help anticipate any impact upon the organisation which may result from changes in working practice. Organisational issues are considered in terms of the workgroup's mission and objectives, its importance relative to other workgroups, the extent of its autonomy, its cohesion as a group, and the extent of its dependency on other workgroups.

Proposed System

Workgroup

Organisational & Social Issues

Now	Proposed (e.g. 2 years on)
Mission/Objectives	
Autonomy	
Cohesion	
Dependency on other Work-groups	
Structure and Dynamics	
Prestige	

CRC Stage 1 fig 3, Workgroup: Organisational and Social Issues

(iv) Next, for the same workgroup consider job issues and attempt to describe how the workgroup will change in the 'proposed' situation.

Consideration of job issues takes the form of a diary, or a chart showing the time spent on particular activities within a suitable time period. It describes typical activities of the workgroup undertaken in a typical day, week or month as appropriate. In some cases a suitable time period to consider might be a typical project. The job issues would then include a list of typical activities which occur in the lifetime of a project.

CRC Stage 1: Step 3: Users

At the user level a similar procedure as for workgroups is followed. A list of generic users is agreed upon, these are classified according to their relationship with the proposed system (see CRC stage 1 figure 5).

Generic Users	Relationship	Description Sheets		
		Job	Person	Organisation

1: Primary User 2: Secondary User 3: Tertiary User
--

YES: Means that a Description sheet has been completed for that user NO: Means it hasn't
--

CRC Stage 1 fig 4, List of generic users

Select one or more primary users and describe them according to three sets of issues.

(i) The first set of issues is concerned with how the organisation views the generic user, now and proposed. Consideration of organisational issues will determine the potential reactions of the organisation, and the possible impact upon the organisation that may result from introducing information technology into a particular user's job or occupation.

Organisational issues are considered in terms of the mission and objectives of the user, the importance of the user to other users within the organisation, the investment the organisation has made in the user, and the replaceability of the user by the organisation.

(ii) The second set of issues is concerned with the personal attributes of the generic user now and proposed.

Person issues are examined to identify user characteristics that may affect the design and presentation of the proposed system, to understand the potential impact of the proposed system on the user's job or work, and to anticipate any adverse user reactions to the introduction of the proposed system into the workplace.

Proposed System

Generic User

Person Issues

Now	Proposed (e.g. 2 years on)
Attitude	
Motivation	
Aspiration/Ambition	
Expertise	
Skill	
Job	

CRC Stage 1 fig 5, Person Issues, Generic User Checklist

Person issues are considered in terms of the user's attitude and motivation towards work, information technology etc., the user's aspirations and ambitions, kinds and levels of skill and expertise possessed, and characteristics of the user's job such as whether it is lonely or sociable, dirty or clean, undertaken in hot or cold conditions, and so on.

(iii) The third checklist is a typical 'day in the life of' the generic user now and proposed. Explanations of personal and job issues are given below: Job issues are

considered in the same way as for the workgroup, in terms of a diary or a chart of time spent on various activities.

Proposed System

Generic User

Job Issues

Now	Proposed (e.g. 2 years on)

CRC Stage1 fig 6, Job Issues, A Typical Day in the Life of the Generic User

The 'day in the life of' begins to identify where benefits should accrue from the use of the proposed system, for example, less time spent in meetings, faster corrections and changes to designs, less manual administration and record keeping. The team can thus begin to see which tasks are crucial to the success of the system in the eyes of the user.

CRC Stage1: Step 4: Tasks

A task is defined as an action carried out by a generic user on an object in order to achieve a work goal.

(i) A list of tasks associated with a workgroup is first identified, (CRC stage 1 fig 9) the allocation of function between human and computer is considered for each of the **tasks** (see the next section for an explanation of this).

Task Id.	Relationship	Description Sheets		
		Organisation	Timing	Human

1: Automated Task :
Likely to be totally automated, and the user will not take any action
2: Shared Task:
Likely to be shared between the user and the system
3: External Task:
Likely to be totally carried out by the user without system support

YES: Means that a Description sheet has been completed for that task
NO: Means it hasn't

CRC Stage 1 fig 7, A list of tasks and the likely role of the system in supporting each task

(ii) Select one or more primary tasks and describe using the checklists. This will help the team to gain some understanding of the details of the task and the likely effect of change. Selected tasks are described using checklists of organisational issues, timing issues and human issues now and proposed.

(iii) A task is described in terms of organisational issues; its importance from a political viewpoint within the organisation, its significance for security, the motivation for the user to carry out the task, the type of training required and the other tasks supported by or supportive of the task.

Proposed System

Task

Organisation Issues

Now	Proposed (e.g. 2 years on)
Importance	
Security	
Motivation	
Skill Level	
Dependencies	

CRC Stage 1 fig 8, Task Description Sheet, Organisational Issues

(iv) The task is also described in terms of timing issues; that is, its frequency (i.e. how often the task is carried out by the user), the amount of time spent on it, the amount of preparation required to do it, and the degree of fragmentation of the task.

Proposed System

Task

Timing Issues

Now	Proposed (e.g. 2 years on)
<p data-bbox="285 489 488 548">Time Spent on Task/Frequency</p> <p data-bbox="285 890 440 919">Preparation</p> <p data-bbox="285 1205 472 1234">Fragmentation</p>	

CRC Stage1 fig 9, Task Description Sheet, Timing Issues

(v) In terms of human issues, the team should consider the level of discretion the user has in deciding whether or not to carry out the task, the amount of stress involved in the task and the performance criteria used to measure successful completion of the task.

Proposed System

Task

Human Issues

Now	Proposed (e.g. 2 years on)
<p data-bbox="284 598 479 630">Task Discretion</p> <p data-bbox="284 882 430 913">Task Stress</p> <p data-bbox="284 1281 446 1344">Performance Criteria</p>	

At the task level the team gains a greater understanding of the users and the tasks they carry out and can begin to identify which tasks will be of importance to the proposed system. In addition the team begins to consider the role of the proposed system in supporting the tasks, and to identify what the learning needs of the user are with respect to learning the new system supported tasks.

CRC Stage1: Step 5: Objects

At the object level the team is asked to

(i) Identify a list of objects associated with the users environment. These objects will normally be associated in some way with users and workgroups, they could be real world objects, knowledge about real world objects, procedures remembered by users or other more abstract objects.

Once a list has been produced it is then reconsidered and revised by the team, this entails clarifying the meaning of object names, looking for similar objects with different names or two different objects with similar names. In addition it may be possible to aggregate some objects with others, for example, some 'objects' may actually be attributes of other objects.

(ii) Once an agreed list is produced the objects are then classified according to whether they are likely to be of interest to the proposed system (see CRC Stage 1 figure 13).

Object Id.	Relationship	Description Sheet

1: Hidden Object:
 Likely to be totally automated and not visible at the user interface
2: Visible Object :
 Likely to be supported by the system but will be visible to the user at the user interface
3: External Object:
 Not likely to be supported by the system , likely to remain external to the system, but could still be of interest to the user

CRC Stage 1 fig 11, A list of objects and the likely role of the system in supporting each object

(iii) Selected objects are then described in further detail in terms of their 'now' characteristics and 'proposed' characteristics (see CRC Stage 1 figure 14).

Proposed System

Object

Object Description

Now	Proposed (e.g. 2 years on)
<p>Description</p> <p>Access to the Object</p> <p>Management</p> <p>Representation</p> <p>Quality</p>	

CRc Stage 1 fig 12, Object Description Sheet

At the object level the team begins to identify which objects in the user environment are likely to become objects which need to be supported by the system.

CRC Stage 1: Step 6: Interactions

Step 6 enables the team to look for interactions between the items and issues discussed steps 2, 3, 4 and 5. Here a number of short lists of user needs are generated. In particular, combinations of user, object and task are examined in order to assess needs or requirements associated with the proposed system. The team is encouraged to make statements of the form 'There is a need for.....', for example 'There is a need for version control' as opposed to 'The xyz system of version control will be implemented'. The purpose of this is that the team should be trying to identify user and customer needs rather than deciding on the solution.(see CRC Stage 1 figures 15)

User ID	
Object ID	
Task ID	
Interaction Characteristics: A Need For:	

CRC Stage 1 fig 13, User, Object, Task Interactions

CRC Stage 1: Step 7: Consolidation

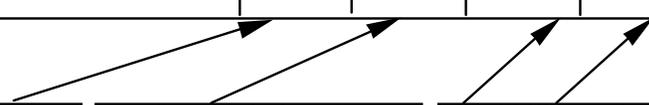
Step 7 enables the team to reflect on the previous steps and to consolidate their findings into control charts. These charts are used by the team to help them assess the credibility of the information they currently have about users and to identify what further work they need to do in order to get a good understanding of users. In particular, the consolidation session includes a review of each of workgroups, users, objects and tasks in which the team is asked to make an honest assessment of the accuracy of their collective knowledge of the users. **See the Control Sheets in CRC figures 16 & 17 &18.**

Proposed System

Control Sheet:

Generic User ID	Relation-ship	Descript. Sheets?	Target Cred.	Actual Cred.

1: Primary User 2: Secondary User 3: Tertiary User	YES: Description sheet completed for that user NO: Not completed	Credibility Rating: 1: Verified 2: Authorative 3: Not authorative
--	---	--



CRC Stage 1 fig 14, Control Sheet for Generic Users

figure 16 shows-----

Proposed System

Control Sheet:

Object ID	Relation-ship	Descrpt. Sheets?	Target Cred.	Actual Cred.

1: Hidden Object
2: Visible Object
3: External Object

YES: Description sheet completed for that object
NO: Not completed

Credibility Rating:
1: Verified
2: Authorative
3: Not authorative

CRc Stage 1 fig 1, Control Sheet for Objects

Proposed System

Control Sheet:

Task ID	Relation-ship	Descrpt. Sheets?	Target Cred.	Actual Cred.

1: Automated Task
2: Shared Task
3: External Task

YES: Description sheet completed for that task
NO: Not completed

Credibility Rating:
1: Verified
2: Authorative
3: Not authorative

CRc Stage 1 fig 16, Control Sheets for Tasks

figure 17 & 18 shows-----

The team are then encouraged in step 7 to identify follow-up investigations that are needed in order to ensure that the future stages of requirements capture and analysis, and the system design, are based on a sound understanding of the users. The User Document is initially a collection of the proformas completed at the workshop, but should be expanded after the workshop.

CRC Stage 1: Step 8: Worth Proceeding?

Step 8 is part of the consolidation process, in that, as a result of steps 2, 3, 4 and 5 the team will have discussed the proposed system and the proposed changes to the users jobs and environment. The purpose of step 8 is to enable the team to identify the costs and benefits of the proposed system to the proposed users. In some cases it may be that little or no benefit can be identified and hence that it is not worth proceeding. The team may need to rethink the proposed project or else cancel it altogether. Or, as is sometimes the case, will proceed with the project but seek to identify different target users.

If is worth proceeding then User Document provides the requirements team with an agreed set of descriptions of the target users and with an initial description of the requirements associated with the proposed system. The next stage in the process is to validate that the descriptions of users are valid and to modify the User Document accordingly.

The starting point for the next workshop is a validated User Document. The team can then proceed to identify the scope of the proposed system by following the steps within stage 2 of CRC.

A full description of stage 2 is not given here, instead the *following section describes one of the themes which is central to stage 2, that of task analysis and allocation of function. Also central to stage 2 is usability specification which is covered in chapter 6 of Macaulay, 1995.*