

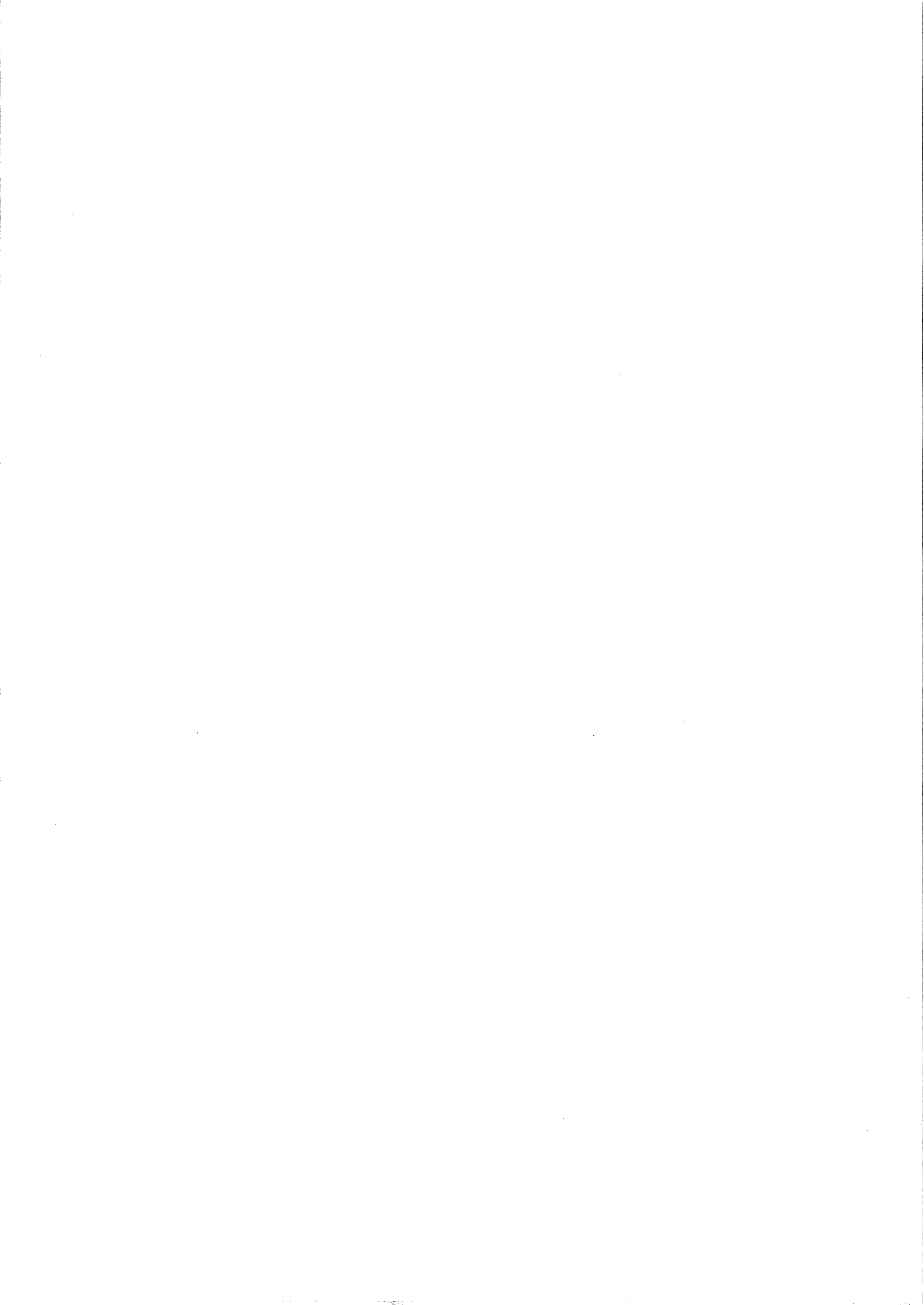
**DIVISION OF COMPUTER SCIENCE**

**BPR - A UK CASE STUDY**

**Vishanth Weerakkody**

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## **BPR : A UK Case Study**

**Conducted at IBM UK Ltd.**

**Vishanth Weerakkody**

Division of Computer Science  
University of Hertfordshire  
College Lane  
Hatfield  
Herts AL10 9AB  
email: comrvjw@herts.ac.uk

### **Abstract**

This report highlights the practical issues and problems of business process and information systems reengineering using a case study of a BPR project at IBM UK. The first part of the report describes the BPR project (CRM), its goals and objectives, project management and organisation structure, and the business process reengineering work at IBM UK. The next section outlines the research and case study methods used for this investigation. This is followed by a description of the various business process and information systems reengineering approaches used in the CRM project. Finally the report concludes by describing the main findings, the practical issues of the CRM project.



# CONTENTS

## Introduction

### 1. BPR - A Literature Review

#### 1.1 What is BPR

#### 1.2 The Relationship between BPR and Information Systems Design

### 2. BPR In Practice - Why Is It Important

#### 2.1 The Practical Impact of BPR on IBM UK

### 3. The CRM Project

#### 3.1 The world-wide CRM Project

#### 3.2 The UK CRM Project

#### 3.3 BPR Work in the UK

##### 3.3.1 Design - Identifying the Gaps between New and Legacy Systems

##### 3.3.2 Development - Reengineering the Legacy Systems and Bridging the Gaps

##### 3.3.3 Testing - the New and Reengineered Information Systems

##### 3.3.4 Deployment - the CRM Business Processes and Information Systems

#### 3.4 CRM Project Management and Organisation Structure

### 4. Research Method

### 5. CRM As a BPR Project

#### 5.1 CRM Business Process Reengineering Approach

#### 5.2 CRM Information Systems Reengineering Approach

### 6. Practical Issues

### 7. Conclusions

## Bibliography

## Appendices



## INTRODUCTION

There have been few management concepts to have generated such enormous media interest so quickly as the concept of business process reengineering (BPR). It is considered by many as one of the most innovative ideas to have emerged in the 1990's. Many organisations have been compelled to reengineer their business processes and information systems repeatedly to meet the changing nature of modern business. (Hammer & Champy 1993, Harrington 1991, Devenport 1993).

This report describes a case study undertaken at IBM UK Ltd., in North Harbour, Portsmouth from November 1994 to September 1995 as part of the author's PhD research at the University of Hertfordshire. The case study concerns IBM's Customer Relationship Management (CRM) project, the biggest Business Process Reengineering (BPR) initiative in the history of IBM corporation and one of the largest, in terms of global BPR projects in present times by a multinational corporation.

The main reason for conducting this case study was two fold. The first aim was to identify and develop a finer understanding of the problems and issues of a BPR project with an emphasis on the interface between BPR and information systems. The second was to gain an understanding of the practical environment in a BPR project and the business process and information systems development methodologies used in this environment.

The research work was carried out whilst working at IBM North Harbour as a Methods and Process Analyst, in a project team responsible for process deployment of IBM's Solution / 2000 methodology. Solution/2000 has been selected as IBM's future world-wide standard application development and maintenance (AD/M) method, and is intended to support the solution design and delivery process in the CRM project. During this placement, in-depth interviews were conducted with members of staff and information on IBM's BPR approaches, AD/M methodologies and tools were collected. Subsequently the author has visited IBM every three weeks to continue the interviews. Comments from these interviews are referenced CRM0xxx throughout this paper (see section 4, page 24 and appendix D(1) for details). Currently the systems testing phase for new and reengineered systems in the CRM project is being monitored with particular interest in legacy and new systems integration issues.

It is recognised that incorporating BPR changes into the business systems analysis and design life cycle is a difficult task. Different applications, especially legacy systems, are at various levels of compatibility with business processes and a number of gaps exist between business process and information systems models which need to be resolved. Little research has been done on developing common approaches that are capable of integrating the business systems analysis and design life cycle with BPR. This report uses a case study approach to identify the practical problems that arise when reengineering information systems as part of a BPR project. It also highlights the general problems and issues that IBM UK have to confront in the context of BPR.

Due to the size and multinational nature of IBM corporation, problems with a business process reengineering project like CRM are unavoidable and there are no easy solutions. Arising from the different geographic locations there are major cultural, political, language, organisational and business differences and power struggles etc., within the IBM world-wide

organisation which hamper the progress of BPR work and the CRM project in the UK. While Some of the problems and issues identified in this report may be distinctive to IBM UK, many of the issues could apply to most BPR projects in any large or medium size organisation in the UK.

## 1. BPR - A LITERATURE REVIEW

### 1.1 What is BPR ?

Business process reengineering is considered by many to be one of the most innovative ideas to have emerged in the 1990's. The popularity and prestige is such that most of the more prestigious organisations in the west would like to claim that they have had a BPR project in some form or the other. With the acceptance of BPR growing there have been several specialist BPR authors that have emerged, the earliest and most notable of such authors is Michael Hammer. In fact many senior IBMers claim that the very idea of BPR at IBM and the foundation of the CRM project is influenced by Hammer and Champy's popular book (1993). (*CRM0035, CRM0026, CRM0111*). Further, Hammer (1993) includes as an example, the reengineering experience of IBM Credit which is a wholly owned subsidiary of IBM corporation. Hammer's definition of BPR is one of the earliest and strongest ones in which he takes an 'all or nothing view of BPR'. His definition is as follows:

"BPR is the fundamental rethinking and radical re-design of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost quality, service and speed". (Hammer & Champy 1993, pp 32)

A radical approach according to Hammer is, to disregard all existing structures and procedures and invent completely new ways of accomplishing the work. The term dramatic according to Hammer is, achieving quantum leaps in performance and he further states reengineering is not about marginal improvements. Although IBM was influenced by Hammer's views of BPR, as they have now discovered and as explained throughout this report (especially sections 2.1 and 6) it is virtually impossible to achieve Hammer's expectations.

Several other notable authors have since emerged, whose views are different to that of Hammer and Champy. The two most popular ones are Thomas Devenport and James Harrington whose work is also referenced by other BPR researchers in the UK such as, the Plymouth University business process team.

Devenport (1993) shares Hammer's view but is more realistic and concedes that, in practice most organisations will need to combine incremental and radical improvements in a continuing quality improvement program. His view is that ideally a company should stabilise a process and begin continuous improvements, then try for process innovation. The present scenario at IBM could be compared with Devenport's pattern. The CRM scenario is: identify, standardise and improve. This shows that although IBM was influenced by Hammer, the project under practical situations is turning towards a more pragmatic approach.



Harrington (1991) proposes an incremental approach, defining BPR as a systematic methodology developed to help an organisation make significant advances in the way in which its business processes operate.

The most appropriate way to summarise this section is by quoting a more recent analysis of BPR. Carr & Johansson (1995) suggest that radical change does not mean that a company must destroy all the assets in place. While BPR expects dramatic improvements, a large number of small, incremental improvement initiatives may be expected eventually to have a major cumulative effect.

The CRM project on the other hand has inherited its own approach that appears to be a combination of several different approaches. This is explained through out section 5.

What ever the literature may suggest there is still a great deal of uncertainty as to a standard definition for BPR. Many organisations claim that they are involved in BPR and many claim that they have been involved in BPR in the past. However only a handful of these experiences are properly documented and are available for scrutiny. Thus it is difficult to evaluate whether these projects are really BPR projects or simple TQM (total quality management) or change management projects.

## **1.2 The Relationship Between BPR and Information Systems Design**

So, what is the relationship between BPR and information systems (IS) design? There may not be a simple answer to this question. The views from published literature and BPR consultants vary. If we look at Hammer, his view is that IS can not play an effective leadership role in BPR. Most IS people will not agree with this view. In the present competitive business environment IS can certainly play a very important role. Both IS and in general IT can support fundamental changes to the underlying processes and not simply be applied to the old, inefficient processes. On the other hand Harrington's (1991) view is that process improvement should be combined with process automation. Automating an inefficient process will create a bigger mess and at the same time not exploiting IS to further speed up an effectively reengineered process will be foolish.

The Plymouth university BPR research team have discovered that in some cases the initiative to move towards BPR originates in the IS department (Childe & Maull 1994). According to Kaplan and Murdock (1991) the detailed mapping of process and information flows is the first step in the diagnostic of performance problems. They emphasise the importance of taking an integrated look at both process and information flows simultaneously, focusing on how information is used in the process and how people interact with systems on both a formal and informal basis. By focusing IS efforts on the business requirements rather than simply the internal efficiency of the IT function greater business impact can be achieved. Further, many firms are now beginning to analyse the business first, before designing computer systems.

It is also interesting to evaluate the impact that client server, object orientation, open systems etc., have on BPR and to note how these technologies and existing methodologies such as SSADM and Information Engineering (IE) overlap with BPR. Mills and Mabey (1993) comparing the merits of IE note that IE often succeeds in reengineering business processes, and conversely BPR often succeeds in defining IT based solutions.

Despite this, BPR and IS developments frequently proceed independently. One reason for this is that process modelling and reengineering may use different techniques from IS development. Moreover, BPR teams often have little communications with the IS professionals. A fair amount of research is being conducted in both these areas in the UK particularly by teams based at Plymouth and Manchester Universities. Both these teams are looking at a number of BPR projects in the UK and concentrating on approaches and frameworks for BPR. The Manchester team is developing a methodological framework called PADM (process analysis and design method) which is strongly influenced by soft systems methodology and sociotechnical design (Wastell, White and Kawalek 1994). The Plymouth team is also researching on a number of frameworks, approaches and best practices for reengineering (Childe and Maull 1994).

Looking at this debate in the context of IBM's BPR work is interesting. Various IBM professionals share different views and opinions about this issue. A few senior strategic level directors feel that process reengineering should be a separate exercise from IS development or reengineering. (*CRM0101*), While the operational level BPR project teams feel otherwise. (*CRM0109*, *CRM0112*). The process reengineering/modelling team at IBM is made up from very senior IBM consultants and business planning experts. The process reengineering work in itself is treated as a independent exercise from any IS work. Also the BPR experts enjoy a very high level of prestige and recognition while the IS reengineering teams are treated as normal employees. This is a common scenario not only at IBM, but more generally in business circles.

From the CRM case study two main causes can be identified which have negative influences on the BPR - IS relationship. The first is the use of different sets of methodologies and techniques for process modelling and reengineering from the ones used for IS design, development and reengineering. The second is the use of different individuals and teams for BPR from the teams that carry out the supporting IS related work.

Earl's (1994) view on the relationship between BPR and IS stresses that systems analysis and BPR have a lot in common and share common methods. He further goes on to suggest that process thinking is the same as systems thinking. Processes like systems have inputs, processing and outputs and he compares the method of problem solving in BPR and highlights the similarities with traditional systems analysis. If we take a closer look at process modelling techniques such as process decomposition diagrams, role and activity diagrams, data flow diagrams, value and time flow analysis and resource flow diagrams etc., all these have similarities with modern business systems analysis and design (BSAD) techniques. It can be argued that most of these techniques are modified versions of BSAD techniques and share the same principles. Unfortunately, in practice there is little overlap between research in BPR and systems analysis, so that there is no shared vocabulary and perspective.

While the debate continues of the links between BPR and IS, it appears that it is not very wise to assume that BPR always involves IS and IT, but it is reasonable to state that most BPR initiatives usually involve some form of IS/IT options to support the new processes. It is in a particular organisation's interest to make sure that the methods and approach used for BPR are closely integrated with IS design and reengineering. Such policies makes it easier and quicker for organisations to carry out BPR work and considerably reduces the work load and risks involved. If steps are not taken to strengthen the relationship between IS and BPR, in today's

IS/IT dominated business environment BPR may remain an academic exercise for many organisations.

## **2. BPR In Practice - Why Is It Important**

It is important and at the same time interesting to look into the practical aspects of a BPR project. As is clear from this case study, the practical environment of BPR is much more complicated than indicated by the academic and theoretical literature. Although many authors argue about BPR and what it should be, there is still no clear cut and dry definition of what is a real BPR project and what is not. Many of present day organisations tend to boast about BPR and there is an on going debate especially among the business community, including senior IBM executives, regarding this issue. This debate is sure to continue for a long time, at least until BPR continues to seduce and draw the attention of the business community

However it is clear that there will be a number of major implications and issues that need to be addressed in a practical BPR project environment. For the CRM project these issues are identified in section 6. At the same time there are major structural and work pattern changes that a prospective BPR organisation has to prepare for and face during and after BPR. Examples of these changes identified by IBM UK are discussed in the next section.

### **2.1 The Practical Impact of BPR on IBM UK**

IBM UK will go through the following changes as a result of the CRM project which is bound to have a considerable impact on the employees and the business in general. The following list which was compiled by collating a series of interview data and IBM internal documents, sums up the impact of BPR in the context of CRM, on IBM UK. Many of these features may apply to any organisation attempting BPR irrespective of size or nature of business.

- **Work units change**

The emphasis of CRM is to replace the old departmental structure. The process teams are formed from the business communities which they naturally belong, to include all the skills required to perform the process.

- **Jobs change from simple task to multi-dimensional work**

Process team workers are collectively responsible for process results. The challenging side to this transformation is that individuals are no longer responsible for completing their simple task. In the process they are required to be creative, to continuously improve the process and help embody a continuous learning in the organisation.

- **People's roles change from task oriented to meeting market / customer requirements**

A task oriented company wants people to follow the rules. With CRM implementing new processes, the demand is for people to make new rules to meet new market requirements. The new teams are empowered to make decisions to assist the new processes to operate effectively.

- **Job preparation change from training to education**

If jobs in a reengineered company require people not to follow rules but to exercise judgement in order to do the right thing, then employees need a broad range of education to enable them to make the decisions.

- Performance measurements introduced

When an employee performs process work their performance can be measured by the value they create. The emphasis is to promote ability and reward performance. All processes have process indicators which enable the effectiveness of the team to be tracked and rewarded. Other compensation paradigms disappear. Paying people based on rank or seniority, paying people for showing up, and annual pay rises are no longer valid in this new model.

- Values change

The new CRM environment encourages employees to work for the customers and not to please their bosses. Hence there is a drive to pay people based on customer satisfaction by project. The old functionally aligned system encourages functions to blame each other when a customer complains. When you are customer aligned by process everyone is motivated to fix the problem and to understand what caused the failure in the first place.

- Managers change from manager to coach or even professional

Managers have to change from supervisory roles to acting as facilitators, as enablers, as people whose jobs are the development of people and their skills so that people will be able to perform value added processes themselves. The emphasis here is for the managers to have interpersonal skills and to take pride in the accomplishment of others. They are mentors, responsible for the long term career development of individuals, there to help answer questions and to provide resources.

- Organisational structures change from hierarchical to flat

When the CRM processes are working, most operational decisions are made by the process teams. Although some processes may provide delegated limits to the process teams, increasingly these will diminish. The need for management meetings disappear and the need for process management intensifies. The new CRM process model encourages a flat organisational structure. Work is performed by teams of equals all with their own skills coming together to make something for the customer. If the manager-to-work ratio is only say one-to-ten then hierarchies will invent themselves. When they are stretched to one-to-thirty, this cannot happen

- Executives change from scorekeepers to leaders

In the context of CRM executives have overall responsibility for process performance, but not control over people performing them. The executive role is to ensure the process is well defined, it meets the needs of the market. Traditional executives are focused on financial ratios and period targets (i.e. quarterly, annual phasing). As leaders of a reengineered organisation executives should manage the way work is performed, they create the game plans and coach the performance.

- Business processes centred around handling mostly pre-contract rather than post-contract issues.

The traditional business processes and information systems at IBM are centred around supporting mostly post-contract issues, for instance, processing customer orders only after the

customer places a formal order for a product or service, or after a particular contract is agreed upon and finalised. In contrast, the CRM business processes and information systems emphasise recording and pursuing pre-contract business opportunities.

- Different Business units working for each other rather than against each other
- The emphasis here is to combine and focus the efforts of the different business units to defeat IBM's competitors rather than beat each other by competing against each other.  
(*IBM Process Management Internal documents and Staff Interviews 1995*)

These are examples of changes that have been identified from the BPR efforts at IBM. These alone should be enough to convince a prospective BPR organisation of the importance of evaluating and analysing the practical consequences of BPR.

### 3. THE CRM PROJECT

“Customer Relationship Management (CRM) delivers a set of common processes and tools which will bring world-wide best practices to every IBM employee, thereby ensuring that they deliver value and service to the customers and that the company achieve cost and market advantage.” (*CRM - PDR 1995, pp 3*)

The CRM Project is centred around **10 key processes** and **21 sub projects**. Due to the vastness of the project and to make it more manageable the work has been divided into two phases, CRM1 and CRM2. Phase 1 (CRM1) is the world-wide deployment of common processes and tools. It provides a framework for each process and detailed documentation for each sub process to assist the marketing and services businesses in implementing CRM. Phase 2 or CRM2 provides additional reengineered and improved world-wide processes and tools. In this phase all the legacy systems will be reengineered or replaced in order to align them with the new and reengineered business processes.  
(*CRM1 project newsletter 1995*)

#### 3.1 The world-wide CRM Project

The present global BPR work and the world-wide CRM project extends to almost all IBM locations around the world through the company's four main geographic locations: Europe, Middle East and Africa (EMEA), North America (NA), Latin America (LA) and Asia Pacific (AP). The world-wide CRM business process reengineering team is based at the IBM headquarters in the USA. This team is made up from very senior IBM executives and consultants both from business and information technology fields. These people are responsible for key business process and information systems identification, standardising and reengineering. Further, it is the responsibility of this team to support the CRM project objectives by identifying suitable methodologies, tools and techniques for world-wide standardisation and use. The different legacy information systems used by different geographic locations are reviewed in order to identify the most appropriate system to support the ten key reengineered business processes. If none of these legacy systems match the business processes,

new systems are developed to support these particular processes. The strategic imperatives supported by the world-wide team is highlighted in appendix A(2).

The overall management of the CRM project including its resources (i.e. funding, human resources and skills, technology etc.) and any changes to the business processes and information systems have to be authorised by the world-wide team. The CRM work in the different geographies is co-ordinated and managed via the CRM project regional offices in Europe, Middle East and Africa, North America, Latin America and Asia Pacific.

### 3.2 The UK CRM Project

The UK CRM deployment project is part of IBM's world-wide initiatives to reengineer the customer related business process and is a sub-project of the EMEA CRM1 deployment project.

The UK CRM project is centred around user education, testing and deployment of the ten key business processes, supporting information systems, methodologies and tools. The UK CRM work is managed by a team of senior and experienced professionals from IBM UK. A total of 34 UK businesses, 21 sub-projects (refer appendix A(4) ) and approximately 6500 employees are directly or indirectly involved in the CRM work. In summary approximately 120 man years worth of CRM work is being performed within the UK organisation. Section 3.4 explains the UK CRM project organisation structure, including how the work is co-ordinated and managed by the UK CRM project team. Figure 1 illustrates the Key CRM business processes and supporting information systems that will be deployed in the UK organisation. The key business processes in order are: market management, opportunity management, solution design and delivery, customer satisfaction management, skills management, offering information, business partner management, information management, supplier management, and human resource management. The supporting information systems are OMSYS, OI, PUBP, TP, GESPLAN, PROMISE, SKILLS, OIT, and IW. The functions of these key business processes and supporting information systems are described in appendix A(6).

One main focus of the case study was to investigate the work of the PROMISE systems reengineering team. All the key players in this team were interviewed including the project director, process owner, deployment manager, business analyst and the application developers. Results of these interviews are listed in sections 5 and 6 of this report. Description of the process and systems reengineering approach for this system is covered in section 5.

- CRM UK Goals and Objectives

IBM UK hope to achieve the following corporate goals and objectives through the CRM project:

1. Support IBM UK's quality vision of 'delighted customers through world class performance' by deploying world class world wide processes and tools.
2. Achieve cost savings and reducing expenses by leveraging IBM's global resources, eliminating unnecessary duplication and bureaucracy.
3. Improve market share and customer loyalty by using effective processes that makes

- efficient use of IBM's offerings and resources and delivers value to its customers.
4. Change the culture of the company by creating an environment for team work and sharing and to increase staff morale by effective use of skills and resources to deliver services and solutions that are required.
  5. Have a robust and credit worthy balance sheet and to make a good return to the shareholders.

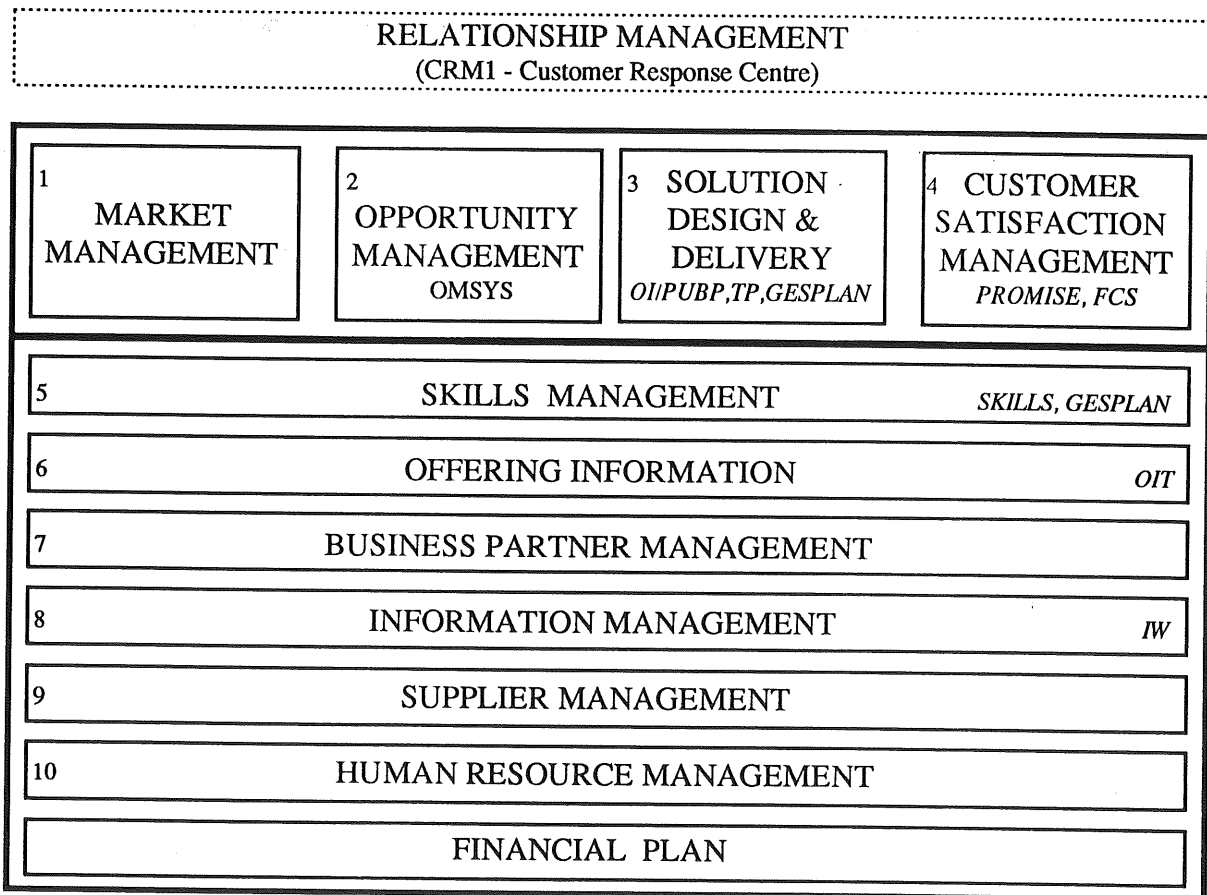
The objectives of the project are to :

1. Have a consistent deployment of a world-wide process management system, common processes, roles, standards and tools by the end of 1995, which is the base for future improvements to make IBM world class.
2. Achieve the improvements defined by the CRM process owners. These include increased customer satisfaction, increased market share, reduced expenses and no negative impact on the key business targets. (*CRM - PDR 1995, pp 3-4*)

Fundamental to IBM UK Marketing and Services (M&S) achieving world class status is a commitment to the process objectives listed in appendix A(1), and achieving these objectives is seen as critical to delivering the goals highlighted above. A diagram of IBM UK's M&S strategy is contained in appendix A(3).

Figure 1

### UK CRM1 PROCESS MODEL



(Source: CRM Promotional literature 1995)

*ITALICS indicate information systems*

- Critical Success Factors, Risks and Containment

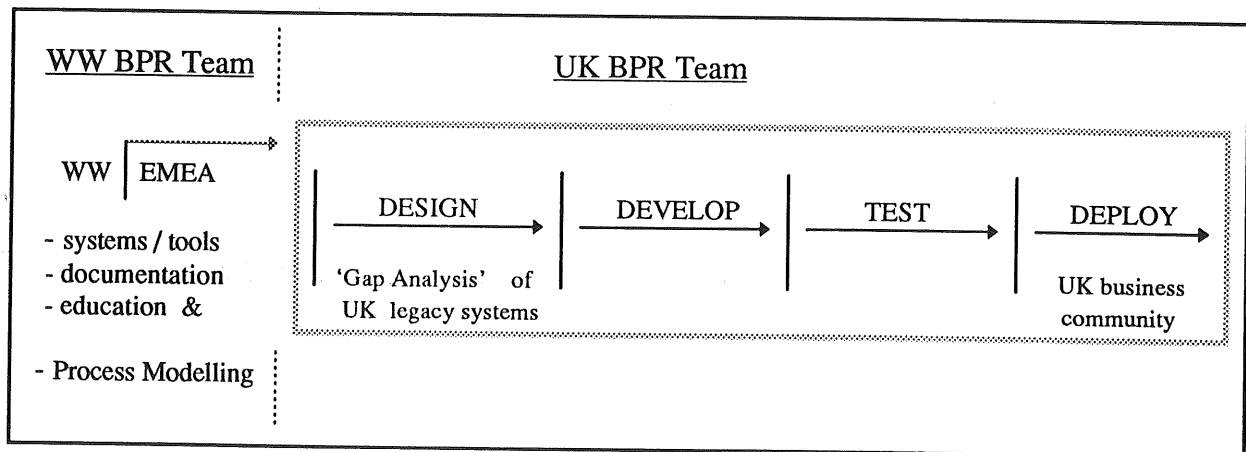
The success of every project be it BPR or otherwise depends on whether a few critical, important issues are satisfactorily met. The UK management have identified four main factors as the most critical in order for the CRM project to succeed. These are: top management dedication and line executive commitment; process management integrated in business management; education; and consistent plans and communication at all levels (unit, country, geography, world-wide). (*CRM - PDR 1995, pp 3-4*)

Risk is another important practical issue when carrying out BPR work. Three main risks have been identified by IBM management that could impact the outcome of the CRM project. These are, concurrent reengineering initiatives impacting CRM, unstable environment and skills availability for the project tasks. A detail assessment of the possible risks at each sub project level has to be done by the person in charge of quality assurance in the project office. A few critical examples of more detail project level risks are highlighted in appendix A(7).

### 3.3 BPR Work in the UK CRM Project Office

The CRM project office is responsible for the design, development, testing and deployment of all UK business process reengineering work and is the central point from where all the work is co-ordinated. The business process, systems and methodology documentation is held here and any problems and issues of different sub-projects are raised through the project office. Figure 2 illustrates in summary the BPR work in the UK CRM project office. The steps involved are discussed below.

Figure 2 - BPR Work in the UK CRM Project Office.



(Source : CRM Project office Interviews 1995)



### **3.3.1 Design - Identifying the Gaps between New and Legacy Systems**

This phase involves the mapping of new and reengineered information systems and business processes against the existing ones. In order to support the reengineered business processes, some of the legacy systems have to be integrated with, or run in parallel with the new and reengineered CRM applications. In order to achieve this integration of systems and processes an analysis has to be done to identify gaps that may exist between the legacy and new applications and processes. According to the CRM project office sources (*CRM0109*, *CRM0301*) this is one of the most crucial IS issues in the context of the UK CRM - BPR work. A number of problems are encountered at this stage regarding the compatibility and integration between the legacy systems and the new/reengineered systems and sub-systems, which are highlighted in section 6. Nearly 50% of the reengineered business processes are suffering from some sort of compatibility problems with the legacy systems and are at various levels of compatibility with the legacy systems. (*CRM0109*, *CRM0112* and *CRM0119*). Identifying these compatibility gaps is referred to as 'gap analysis' and it is the main purpose of the design phase.

### **3.3.2 Development - Reengineering the Legacy Systems and Bridging the Gaps**

If any gaps are identified in the design phase, changes are then made to the legacy systems during the development phase in order to bridge these gaps and make the legacy systems, new system and process integration smoother. Many difficulties are encountered during this stage (refer section 6), and so most of the legacy systems reengineering work is done using a rapid application development (RAD) approach. That is modifications are done to system modules by directly changing the program code. If any design changes are required to the system these too are done in small stages, mainly using prototyping. The system and program modules are then tested and integrated with the new or reengineered system, which will then be tested and run in parallel with the process documentation. This approach involves to a great extent user participation in the system development work.

IBM UK are using three different methods of interfacing the old and new systems: batch interface which creates batch files by running special programs and interchanges the batch file data between the old and new systems; database interface where a sub-system is used which is capable of interlocking the old and new systems using relational database techniques (DB2) and structured query language (SQL) programs; and the use of a robotic interface to exchange data between the legacy system and new system. This last method will monitor the output from the new system and type in the required data from these outputs into the legacy system using a special robot program which generates actual key strokes.  
(*CRM Project Office Interviews 1995*)

### **3.3.3 Testing - the New and Reengineered Information Systems**

The new CRM applications/systems are tested using two test environments in two different locations. The primary objective of the first test environment is to test the new CRM applications in order to ensure that they meet the user requirements and are compatible with

the legacy systems. Around ten experienced users do the testing using controlled test data in a small client server environment.

The tests have two objectives, the CRM project office objectives and the business unit objectives. The first one involves verifying that processes, documentation and tools support the businesses and to determine common deployment issues. The second involves understanding how CRM will effect the business unit and preparing for actual deployment.

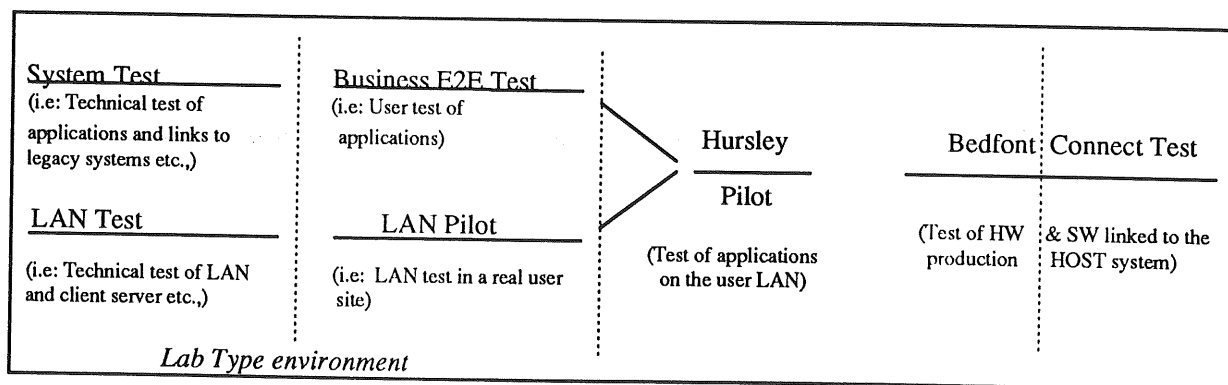
This end to end test is considered as an extension of the development phase and is used as a learning exercise to further refine the systems, processes and documentation. Business unit users are advised to follow the process documentation (which is in a more simplified user understandable form) when testing the systems, and to make sure that they get a good understanding of how the new business processes and systems relate to their individual business units.

A second environment is set up to test the technical aspects of the new and reengineered CRM systems when run on the production host system, under operational conditions. At this stage a simulation of the actual day to day business operations are done to test the following: print services; additional user (common) tools i.e. word processing, spread sheet etc.; back up and recovery services and plans; distributed system management processes and tools; and the production local area network capacity in the context of the new CRM applications. A third test location is also used to test the new and reengineered applications on the user LAN. This is done to establish that the hardware and software works in harmony without any major problems. The main purpose of dividing the testing into stages is to reduce risk and to make the entire operation more manageable.

*(CRM Education Internal Presentations, Test Team and Project Office Interviews 1995)*

The UK CRM information systems, networks and hardware testing approach is summarised in figure 3.

**Figure 3 - UK CRM IT and IS TESTING APPROACH**



*(CRM Project Office Interviews and Internal documents 1995)*

The reactions of three different teams interviewed halfway through the testing phase to the overall testing exercise and the appropriateness of the new/reengineered systems were surprisingly contradictory. One team was extremely dissatisfied, it appeared that they already had a legacy system which according to the users was better than the new one. The second team indicated that the reengineered business processes and systems were meeting half their needs. The third group surprisingly expressed an overwhelming satisfaction and were clearly convinced that the reengineered processes and systems were going to improve their business performance. A number of reasons were identified for these conflicting views.

The first was the varying levels of knowledge about the legacy systems and reengineered processes and the user's background knowledge and experience of using IT based systems and process based business operations.

Another reason was the level of usefulness of the new systems to the individual users and business units. If a particular business unit already had a legacy system that performed the same task (maybe even better than the new one), then the resistance to the new system might be expected to be greater.

A common feature that was evident was the natural resistance to change, which may be unavoidable in the context of BPR. The only solution is a sound change management approach which involves user participation in areas such as systems design (Booth 1992, Radley 1992). This is a formidable task with CRM given the number of users involved.

Cultural, political and historical reasons is another very strong contributor. Changing the ways and means that have become established over the years can be particularly hard. An organisation like IBM always has special systems and ways of doing things. As one user explained "customers recognise and identify IBM because we are better in doing certain things than our competitors, these are our trade marks and we do not want to change them." The culture of competition between business units also mitigated against the new approach. Each unit claiming to have the best accounting or sales analysis system and rejecting the new common systems.

However, one of the main problems is the hype of the CRM project. In summing up the CRM user test results, the team co-ordinator reported; "the present user expectations of the new CRM information systems are at a very high level prior to seeing or using them, and the users feel that the new CRM applications will resolve all their current problems. But when they use these systems for the first time during the tests they are bitterly disappointed". This comment was confirmed during the interviews with the test teams as most of the new and reengineered CRM systems appear to fall below the users ideal 'imaginary' system.

During the interviews it was also gathered that particular business units had a desire to please the management, and occasionally the opposite was true as business units seemed bent on displeasing management too.

*(CRM Test Team and Project Office Interviews 1995)*

As a result of the interviews with the test teams the following problems were identified:

1. The new and reengineered systems failing to deliver required results or are delivering only parts of the requirements.
2. System errors have been identified, including operational errors and wrong outputs etc.
3. The new systems can not be integrated with the legacy systems i.e. no common keys or data fields to integrate or relate with legacy systems.
4. Some of the new systems generating outputs, reports, screens, files and data etc., that are insignificant and are of no use to the respective business units using these systems.
5. Poor representation of management information (i.e. forecasting reports etc., missing).
6. Minor differences between the business process documentation (model) terminology and the information system terminology. (i.e. business terms in the process maps and documentation differ from the titles used for input / output fields in the systems)
7. User complaints of minor irritations such as un-helpful help screens, additional input fields and irrelevant information etc., in most of the on-line systems.
8. Poor system response times.

### **3.3.4 Deployment - the CRM Business Processes and Information Systems**

This stage is where the ten key processes and their supporting systems are actually implemented in the different business units. Most of the process documentation is distributed to the business unit managers (process owners) well in advance, and they already have a good understanding of the reengineered business processes and the supporting information systems at the deployment stage. The deployment stage is scheduled to begin in the 1st quarter of 1996.

#### **Performance Measurements:**

Performance measurements will be introduced as part of the CRM process deployment plan although these are still in the process of being developed. To begin with IBM UK have decided to use a simple method for measuring the new and reengineered business processes and information systems. First a set of measurements for the old (legacy) systems and processes will be established based on the performance expectations of the new processes and systems. These same measurements will then be used for the new or reengineered business processes and information systems when deployed. As the CRM project office sources explained the above is a very basic method of comparing the performance of the new processes and systems against the legacy systems. This method will be used until specific methods of measurement are established. The CRM team have encountered a number of problems when trying to establish a formal set of measurements. They have discovered that the comparison of performance measurements between the old and new systems and processes is not possible given that there have not been any formal business processes in place in the past. As the CRM project office sources explained there are two logical approaches that they can use in this scenario. The first is by gathering information at a departmental level and looking for evidence of any form of measurements that have been used in the past; and the second is to try and establish some form of measurements based on estimates or averages of past data.

*(CRM Project office interviews 1995)*

### 3.4 CRM Project Management and Organisation Structure

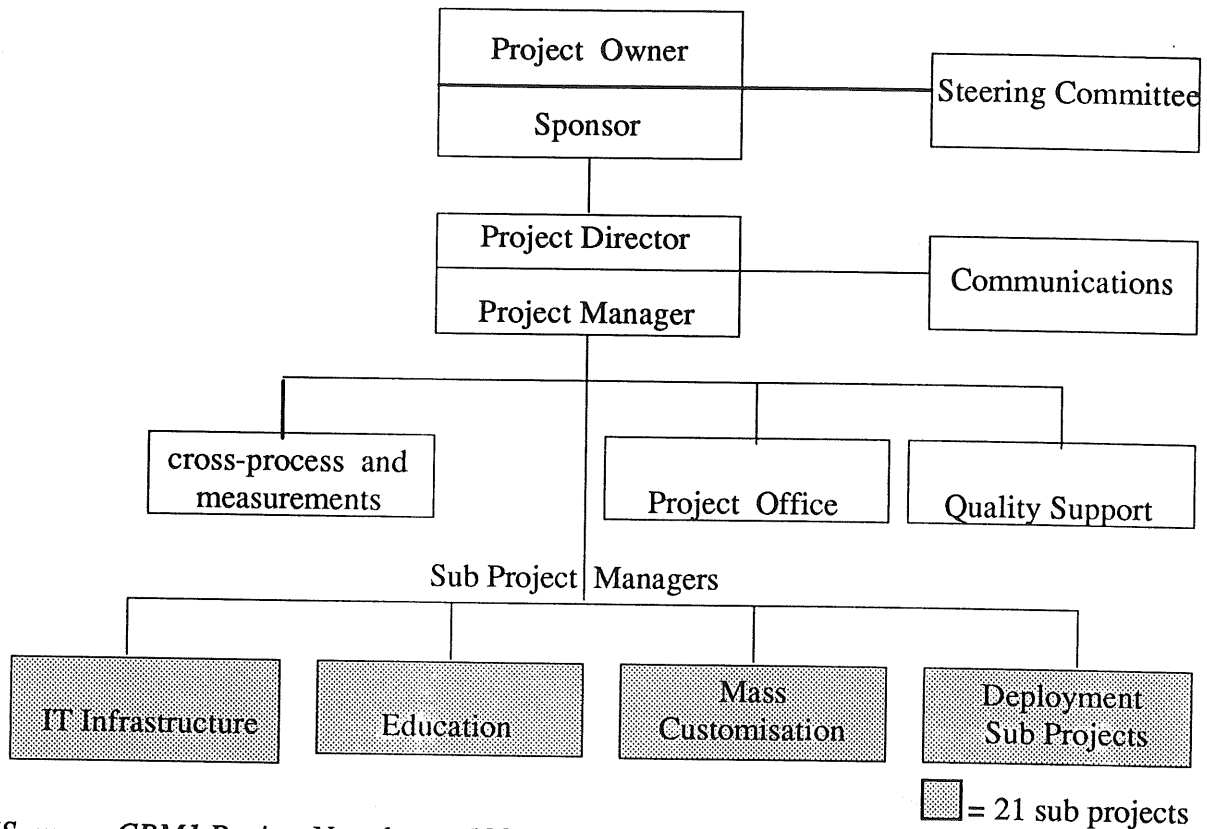
According to IBM's CRM project managers one of the most important features of a successful BPR project is a solid project organisation structure. This was the view of almost all the CRM project members and it was confirmed repeatedly during the interviews. Although it was revealed that there were major difficulties especially in areas like information flow, communication and delays in getting authorisation for work decisions at sub project and country level, many of these problems were due to specific reasons which may be distinctive to IBM corporation. (*CRM0109, CRM0111, CRM0112 and CRM0026*). (also refer section 6) The CRM project organisation structure and the problems caused by this structure may be a significant feature especially from a BPR view point. Many of the CRM managers (*CRM101, CRM0111, CRM109, CRM112*) argue that the ideal management structure for a reengineered organisation should be a flat, but the CRM project management structure is hierarchical and many problems such as information flow are caused by this. At the same time, the senior UK CRM project office sources argue in favour of a hierarchical structure, particularly to limit the authority of middle and operational level managers and to control the constant request for changes. These senior sources argue that the only way of achieving common processes and systems world-wide is to minimise country level and business unit level changes by having a hierarchical structure, and delegating the authority to the higher levels in this organisation structure. They claim that this scenario is a necessity to successfully manage a very large project like CRM under a great deal of work and pressure. (*CRM0101, CRM0026*) Although IBM UK are faced with various problems and obstacles, both at strategic and operational levels, judging by the progress of work flow and BP and IS reengineering achievements in the past eight months, the CRM project organisation structure has withstood the pressure and proven to be robust. This supports the points made by the senior management, but at the same time there are pros and cons to this approach which has become a debate and cause for concern particularly amongst the CRM sub-project managers. Figure 4 is a illustration of how the CRM project management is structured. The roles and responsibilities of the individuals listed in figure 4 are described in appendix A(5) and the sub-projects in appendix A(4).

A clear description of roles (tasks, responsibilities) and WHO plays WHICH role WHEN, i.e. matrix of roles vs. jobs / professions, matrix of roles vs. systems / tools and matrix of roles vs. activities etc., is specified in the CRM project definition report to help the CRM team and the different business units.

Similarly the CRM deployment in the UK can be summarised by using matrix 1 which is an example which shows the relationship between different professionals, business processes, business units and the CRM deployment. The UK CRM deployment work has a matrix management structure with information flowing both horizontally and vertically. Detailed information of a particular process (i.e. OM, SDD etc.) flows horizontally across the business units, whereas the information regarding all the relevant processes together with the deployment details for a particular business unit will flow vertically within the business units. A description of the kind of roles and responsibilities of some of the key individuals involved in the CRM deployment process follows matrix 1.

Figure 4

CRM PROJECT ORGANISATION



(Source : CRM1 Project Newsletter 1995)

Matrix 1 - CRM Deployment (Organisation) Matrix - (an example)

Process	P O	P L	Deployment Managers		
			Bus unit 1	Bus unit 2	Bus unit 3
			← overall deployment managers →		
			Mr. A	Mr. B	Mr. C
SDD	Mr. X	Mr. P	Mr. C	Mr. D	Mrs. F
OM	Mr. Y	Mr. Y	Mr. C	Mrs. B	Mr. G
IM	Mr. Z	Mrs. R	Mrs. A	Mr. E	Mrs. F

SDD - Solution design and delivery, OM - Opportunity management, IM - Information management.

PROCESS OWNER (PO) : Owns one of the key processes. Has to make sure that his process is deployed effectively and that measurements are in place. More of a management role. The process owner and the process leader may on some occasions be the same person for particular processes. This often happens especially due to lack of skilled human resources.

**PROCESS LEADER (PL) :** Is an expert in a particular process and is responsible for development and deployment of this particular process across the business units.

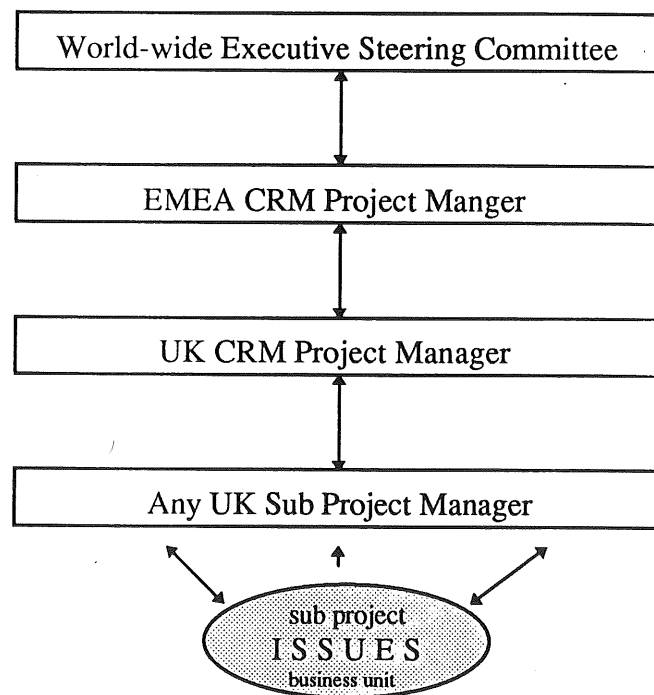
**DEPLOYMENT MANAGER :** Is more of a project management role. Has to co-ordinate with the process leaders and manage the overall deployment plan for the business units. Depending on the skills and experience of the individual managers, there may be situations where one person (specialist) will be responsible for deploying more than one process in his or her business unit. The overall deployment manager is responsible for the smooth deployment of all the processes required by his/her business unit.

The above example of the CRM deployment matrix applies to all ten key processes. Depending on the business requirements of a particular unit, all or some of these processes will be deployed in each business unit.

*(CRM Project office interviews 1995)*

The procedure for raising and resolving problems or issues encountered by the different sub-projects and business units is highlighted in figure 5. This model is influenced by the geographic locations and multinational nature of IBM corporation and the world-wide nature of the CRM project. This again is a very hierarchical model which does not help the cause of the BPR work in the UK CRM project. This was confirmed by most of the CRM project managers (*CRM0109, CRM0112, CRM0301, CRM0026*) repeatedly during the interviews. This area is causing a great deal of frustration among the UK project managers.

**Figure 5 - CRM Issue Resolution : Information Flow**



*(Source : CRM1 UK Project Management System 1995)*

When issues are raised by the sub-projects or business units, depending on the complexity of the particular issue it travels up the hierarchy until it reaches a level that has the authority to resolve the issue. For instance if it is a minor problem it may well be resolved at the UK sub-project or CRM project manager level and if the problem is more complex it may need resolving at a higher level such as by the world-wide executive steering committee.

#### 4. RESEARCH METHOD

With an exploratory problem, a case study is a useful research approach for identifying potential issues (Yin 1994). According to Yin, in such an approach it is important to use: multiple sources of evidence; a case study data base which is a formal assembly of evidence distinct from the final case study report; and a chain of evidence that explicitly links the questions asked, the data collected and the conclusions drawn. The approach adopted for the CRM project is based on these principles. Results were collected in a case study logbook in which issues were highlighted and a chain of evidence identified. Three approaches to data collection were used with data coming from multiple sources.

##### *First : Informal approach*

This approach involved information gathering during the day to day process deployment work with the Solution/2000 and MITP5 project team, through the interaction with senior experienced professionals in these teams and through the familiar grapevine. The offers of assistance and co-operation from a large number of professionals were overwhelming. Nearly all the IBM staff interviewed answered or at least tried to answer any questions that were asked. Since a majority of the CRM and Solution/2000 project members knew the authors background and were aware of his assignment at IBM, gathering information and talking to people was more relaxed, and formal methods were not always necessary.

The author's main role at IBM as a methods and process analyst was to prepare a comprehensive summary of IBM's Solution/2000 methodology mainly for user education purposes (i.e. summarise the S/2000 user manuals), and to assist the S/2000 deployment team in promoting and educating the IBM UK user community. In this capacity the author had to attend a number S/2000 deployment meetings, which gave the opportunity to meet a number of senior IBMers and to get to know them on a fairly personal basis. Some of these people included project managers, business unit managers, key process owners, systems analyst, application developers and a number of other employees from the different business units. This set the stage for asking questions and gathering relevant information for the case study. Most of these informal discussions lasted about five to ten minutes with the exception of a few which extended to nearly an hour, usually over lunch. This method did not allow the researcher to take down notes in parallel to the discussion. This was done soon after the discussion had taken place, and the information that is recorded was usually clarified by the same source during the course of a formal interview at a later date.

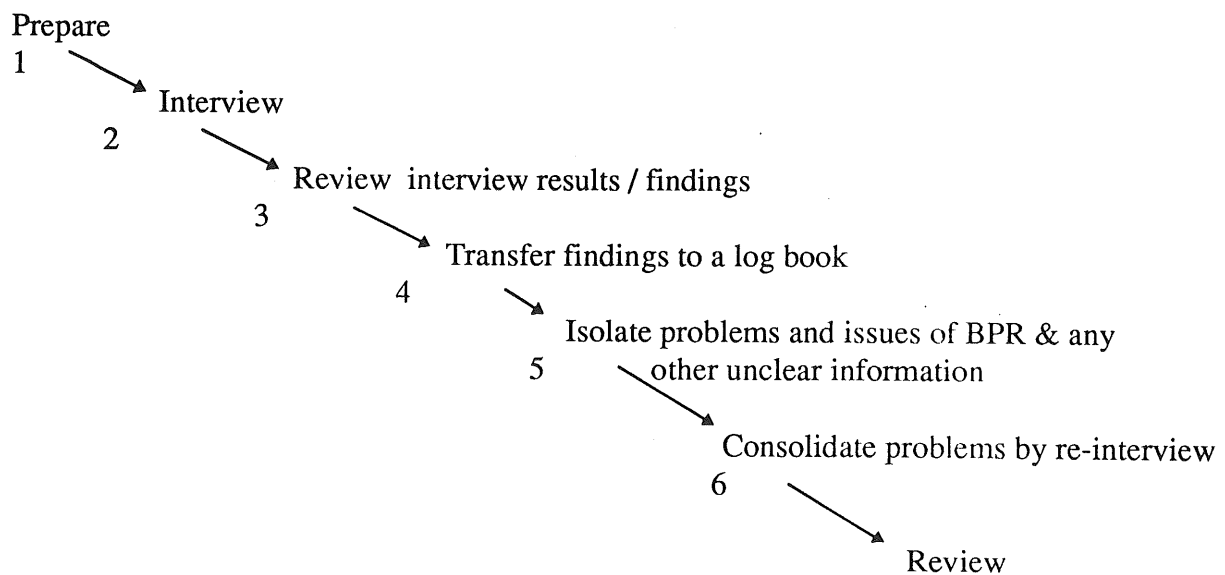
The informal method was particularly useful for gathering vital information and clues, especially more sensitive facts which may otherwise not have been revealed during the process



of an interview. A key feature in this method of fact gathering is that often the interviewee is unaware (or he tends to forget) that his comments are being recorded, and as a result he/she tends to be more open and relaxed. When reviewing all the case study data it was clear that some of the more sensitive and critical issues and employee concerns regarding the BPR work were recorded during this stage. Interestingly when the interviewer wanted to clarify issues discussed at an informal meeting, during a formal interview, the interviewee tended to be more protective, particularly if he felt threatened with being exposed. Nevertheless using an informal approach to fact gathering and case study research can contribute towards building a good understanding of the true feelings and reactions of staff in a controversial initiative like BPR.

**Second: Formal approach**

A series of extensive in-depth interviews were carried out to gather information, from a broad range of employees across the organisation structure. This method was more of a structured and formal approach than the first one. A formal set of questions were used for the interviews with slight adjustments depending on the interviewees job specification and responsibilities and what role he/she plays in the BPR work (CRM project) at IBM. The following pattern would best describe the formal interview method used for data gathering :



Multiple sources of evidence were used to gather information. Requests were made at all times for documented evidence when conducting interviews, and these documents used as a source of confirmation of the verbal information. Generally many such request were granted and the interviewee produced some form of documented evidence. Also, every attempt was made to interview two or more people from the same business unit or sub project, and the same questions are asked from one or more source in order to confirm important facts.

A case study log book is being kept in the form of a set of notes for each interview conducted and is updated frequently. Short notes are made during the course of interviews and these are transferred to the log book after each interview. During the course of this transfer any vague or unclear remarks/information is separated for clarification and review during a second interview. Many of the information sources were interviewed at least twice. The more

important or the key CRM players were and are still being interviewed fairly frequently. Usually these interviews can be anything from 30 minutes to 2 hours, and the number of interviews is decided depending on the importance of the interviewees role in the CRM project. Appendix D(1) shows a list of employees interviewed.

In keeping with *Yin's* recommendations, a link is maintained between the questions asked and the data collected and the sequence of notes in the log book is in a similar format for most interviews. This scenario is explained using a few examples in table 1. A generalised list of interview questions are listed in appendix D(2).

**Table 1 - Illustration of Questions and Chain of Evidence**

E.g. of Question Asked	E.g. of Data Collected
What are your views of the CRM project and BPR in general ?	A very ambitious project, a good or bad idea etc., individual views expressed.
What are the main problems in the CRM project ?	Too much work in too short a time frame, lack of resources, lack of proper education etc.,
Is there a problem with BP and IS compatibility ?	Yes, and problems explained
How do you overcome these problems ?	explanations and individual suggestions to overcome each of the problems
What is the approach and methodology used for BPR and IS design ?	Methods explained, i.e. Solution/2000, BSDM, IBM Lovem/Cabe etc.,

***Third: A Research of Internal Documentation***

A brief review of two of IBM's AD/M methodologies and two process modelling methods was done in order to understand the basic principles of these methods. Further effort will be spent on reviewing these methodologies with a view to assessing their suitability for business systems analysis and design (BSAD) in the context of BPR. A brief summary of each of these methodologies appears in appendix B.

A few example process models of key business processes were also briefly reviewed in order to understand the modelling methods used, such IBM's Lovem/Cabe and IDEF0. Since the author was an IBM employee for seven months the management was extremely helpful and generous and had no objections regarding the use of various documentation, including methodology manuals and process documentation etc., for research purposes. Although a number of IBM methodology manuals were briefly reviewed this was mainly for understanding purposes and not for direct use in the case study.

The documents used in this case study are mostly internal IBM BPR / CRM informative material such as, news letters, project reports, presentation foils etc. This should be clear to the reader from the references made throughout this report. As explained before in the second approach above, most of the documentation was used to confirm and as back up for unwritten comments and information. On many occasions the interviewee took the initiative and provided the documented proof before it was requested.

One key feature of the usefulness of documentation in a large project such as CRM is, the researcher can on most occasions be sure that the information is accurate and he sees the whole picture and not parts of it. This is important as there is a fair possibility that during an interview the interviewee may forget to reveal a piece of information or may even omit valuable information purposely thinking that it is not important to the researcher. Of course if the researcher is depending a lot on documented information, in the first place the documentation should be from a reliable source. Having said this it was always made sure that the documentation was valid and contained accurate information. This was done by going through the documents with a senior member of the CRM project team.

Yin (1994), suggests that data collection for case studies relies on many sources of evidence, such as: documentation, archival records, interviews, direct observation, participant-observation and physical artefacts. Example from the CRM project for each of these six sources are highlighted in table 2.

**Table 2 - Examples of Multiple Sources of Evidence**

Yin's Sources of Case Study Evidence	Examples of CRM Case Study Evidence
Documentation	CRM project definition report, CRM newsletters, internal presentation documents, internal manuals, process maps (IBM Lovem/Cabe charts) etc.,
Archival Records	Organisation charts, process maps, survey data, electronic mail messages and memos etc.,
Interviews	CRM project office staff (project members), business unit managers & users, process owners & directors etc.,
Direct Observation	CRM process deployment, systems testing, process briefings, CRM/IT interlock meetings etc.
Participant Observation	Observe the process deployment of Solution/2000 methodology whilst being a project team member.
Physical Artefacts	The legacy hardware and systems, print outs etc.,

- Information, Proof and Validity

Issues raised during the investigation were highlighted in the case study log book. A matrix was used to highlight the relationship between the various issues raised during the investigation and its source. Matrix 2 over leaf shows the connection between each and every issue against the source identifying it. It shows how particular issues are raised by more than one source, thus, arguably making these issues cause for more concern than the others. Some confidential information gathered during the case study have not been disclosed in this report as agreed with IBM UK. Sources have been given code numbers in order to protect the identity of the interviewees and maintain confidentiality. The identity of these code numbers are known only by the author. This has been done out of mutual respect for those IBM employees who have offered their whole hearted support for this research. A full list of interviewees is shown in appendix D(1). Section 6 describes in detail the issues identified in the matrix. The source codes have been allocated on a random basis to each of the employees interviewed, but can be classified into two areas according to the employees overall role at IBM UK and the CRM project.

Classification 1 :

Directly involved in the CRM work : CRM0101 to CRM0403 and CRM0888

Indirectly involved in the CRM work : CRM0017 to CRM0035 and CRM0511 to CRM0831

Classification 2 :

Process Reengineering : CRM0101, CRM0109 and CRM301

IS Reengineering : CRM0111 to CRM0119

IS Testing : CRM0888

Users (IS testing) : CRM0811 to CRM0831

Education : CRM0403 and CRM0511

Project mng., Quality mng. & Consultancy : CRM0017 to CRM0035 and CRM0201

**Matrix 2 - CRM project issues and information source : The relationship**

Issue \ Source	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
CRM0017			x	x	x				x								x								
CRM0026			x	x	x			x	x		x	x	x				x								
CRM0030			x							x							x								
CRM0035	x									x							x								
CRM0101			x		x					x					x	x			x				x	x	
CRM0109	x	x	x	x	x	x		x	x		x		x	x	x	x		x	x	x			x	x	
CRM0111	x	x	x			x	x		x	x			x		x			x	x						
CRM0112	x	x		x	x	x	x	x	x		x	x		x	x		x		x	x					
CRM0118					x				x			x							x	x			x		
CRM0119	x	x							x			x			x					x			x		
CRM0201			x	x		x	x																		
CRM0301	x	x									x		x					x							
CRM0403		x	x	x						x															
CRM0511		x		x	x				x									x	x						
CRM0811			x																			x	x		
CRM0821																						x			
CRM0831																						x			
CRM0888															x				x	x	x				

## 5. CRM AS A BPR PROJECT

How does one distinguish a business process reengineering project from a one that is not, or how does one separate a straight forward change management project from a BPR project. As briefly explained in section one this is still an ongoing debate with the business community. Considering BPR has become the flavour of the month with most organisations, every body wants to claim a stake in it. In today's highly competitive market place BPR has become a necessity for most leading organisations, not only because arguably BPR can help to gain competitive advantage by improving the company's business processes, but because of the industry's image of BPR and the certain amount of prestige associated with it.

So how do we know whether IBM's Customer Relationship Management project is a BPR project after all? The UK CRM project office sources claim that CRM is a BPR project. The supporting evidence for this claim is described below.

It is evident that IBM did not have common processes or a process driven management structure in the past. Although there were common processes across IBM businesses, these were considered as normal business procedures and were not formally identified as common business processes, until CRM. The introduction of standards, guidelines, work instructions and performance measurements to monitor the progress of the different businesses, and the fact that there were no such standards or measurements prior to CRM is also strong evidence to support the claims of the CRM project office. The CRM project team argue that CRM is designed to change the whole nature and purpose of IBM's business operations by introducing a process based business approach. This is done by identifying common business processes and practices, standardising them, improving them by reengineering and deploying them across the different business units. It is a fact that in the history of IBM corporation there has never been such a radical change or reengineering initiative which involved such human effort, resources and funding of the magnitude of CRM.

Another paradigm shift is that different business units were operating their businesses independently and had their own information systems, methodologies and techniques for conducting their business. Business units had very little in common until CRM standardised all these and introduced the concept of sharing and team work based on the process principles. None of the above resources or information was shared and the business units were competing with each other and working against each other rather than competing together against IBM's real competitors until CRM introduced the primary BPR principles of customer service, profit, productivity, efficiency, waste reduction and competitive edge.

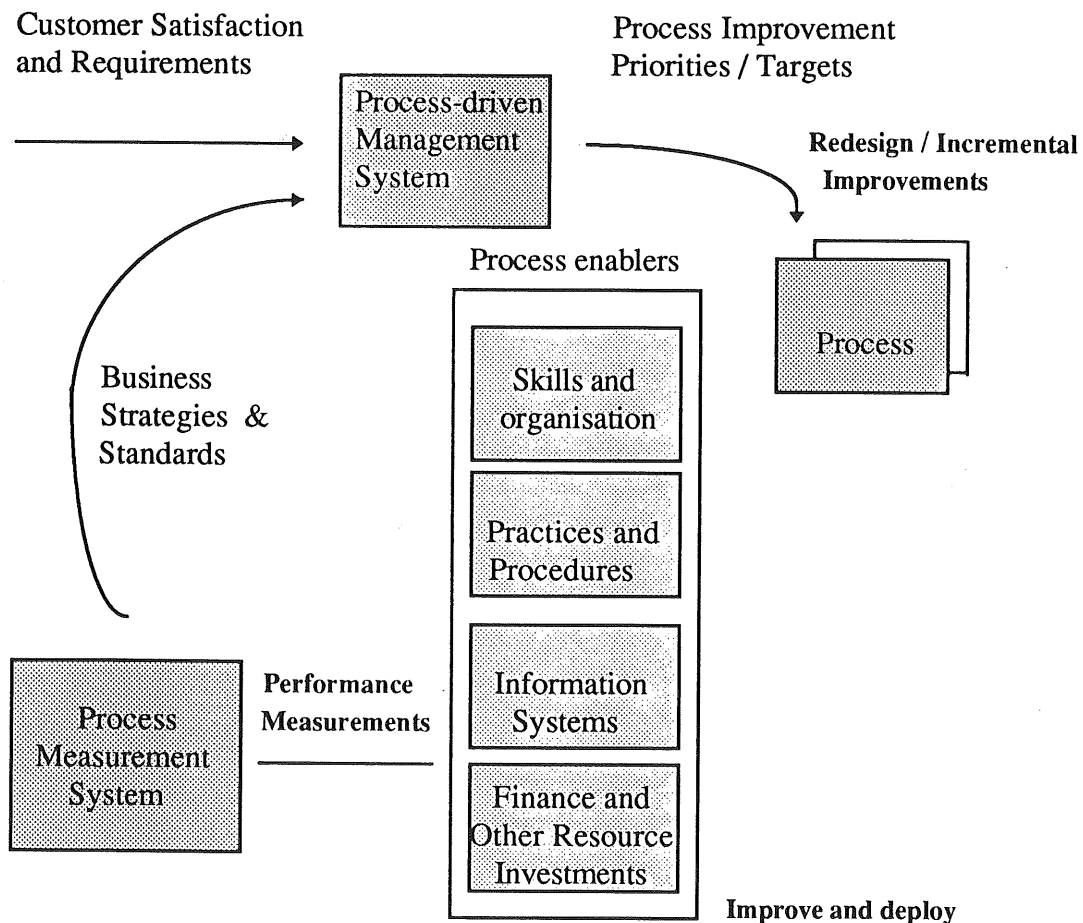
In this context it is difficult to disagree with the CRM project managers particularly after spending seven months working and conducting research at IBM and a further five months of case study to date. The amount of change involved and particularly the nature of these changes, the size and multinational nature of IBM corporation makes the world-wide CRM project one of the biggest BPR projects in present times. Due to the multinational nature it makes the project management and the BPR work itself very unique.

Primarily the introduction of a process based management system and the use of process reengineering methodologies for business process improvement is the biggest factor and easiest explanation which make CRM a BPR project. Other supporting evidence are, the introduction

of new and reengineered information systems, process and systems measurements, methodologies, use of work flow management tools (i.e. CASE based), the availability of detailed process and activity maps and detailed documentation of process guidelines and work instructions for the CRM users. The signs are that none of these existed in the past, at least if they did, they were not used. These evidence with some of the CRM strategic goals and objectives is sufficient to make CRM without doubt a unique business process reengineering project.

The following model (figure 7) is a diagrammatic illustration of the CRM process management scenario. It shows the different elements that are involved in CRM in the context of BPR, starting from the driving force which is customer satisfaction and ending with improvement and deployment of the key business processes. The model shows how process improvement targets are met in order to meet the customer requirements by carrying out incremental improvements to the business processes. The middle shaded parts shows the intermediate elements on which the success of the BPR work depends, such as skills, business practices and procedures, information systems, finance and other resources.

**Figure 7 - CRM Process Model**



(Source : CRM Education, Internal Presentations 1995)

## 5.1 CRM Business Process Reengineering Approach

The IBM process reengineering approach does not follow a single pattern but is a combination of approaches. According to the UK CRM project team there is neither any documented evidence or strategic guidelines on the exact BPR approach for the CRM project. This, although understandable with the nature and the extent of a project the size of CRM - can be a severe handicap from a BPR view point, and can cause a number of problems as clear from the case study findings. (refer practical issues of the CRM project, section 6). However, from the in-depth interviews carried out with the UK CRM project team and a number of other IBM professionals, and the evidence gathered during the entire course of the case study, the following conclusion can be drawn.

The CRM project would appear to be influenced by three business process reengineering approaches. Namely, a radical reengineering approach, continuous/incremental improvements and an evolutionary approach.

(CRM0101, CRM0111, CRM0109, CRM0112)

- Radical Approach

Evidence suggests that the core of the CRM project was originally planned to be approached in a radical way, at least the strategic expectation was this. (*CRM documentation and interviews*). Some of the dead lines and goals set out even at present is enough evidence to suggest the high level of strategic expectations and ambitions. Interestingly most of the problems and issues raised at the monthly CRM/IT interlock meetings (that were attended by the author), were from areas where a radical approach was required. (*CRM0888 and CRM0301*). For instance, one such problem is the difficulties encountered by the sub-project team responsible for setting up the technical infrastructure (i.e. LAN local area networks) to facilitate the client server environment. According to the *LAN Infrastructure management team* it is extremely difficult to radically set up the network configurations, software, protocols and security features for the new client server environmental in such short time frames and deadlines. This according to the team gets worse when the world wide requirements keep changing constantly. It was reported at one of the CRM/IT interlock meetings, that with the presently available resources (human resources, hardware, software and funding) it is not practically possible to make these changes and at the same time meet the dead lines.

Another example is, some of the new CRM systems that were radically developed and legacy systems that were radically reengineered are suffering from severe compatibility problems with the existing legacy systems, and are not delivering the desired results. In the application development area a common feature with most of the radically reengineered systems is the use of RAD techniques for systems development. (*CRM0112 and CRM0119*). It was gathered that a majority of professionals are not in favour of radical approaches and preferred alternative methods such as incremental reengineering.

Many argued that a company the size of IBM could not afford a radical approach in the way Hammer (1993) suggests : 'all or nothing' or 'throwing away the old systems and starting with a clean sheet of paper'. Almost all the CRM project and sub-project managers agree that most of the legacy systems are nearly five to ten years old, but a great deal of functionality has



been added to these systems throughout the years. Thus, they argue that, although a radical approach may well suit business process reengineering itself the supporting legacy systems can not be reengineered overnight, nor can they be thrown away to make way for new systems as Hammer would argue.

- Continuous Improvements

This approach has become the most popular and widely used BPR approach with almost every IBM business unit manager, although some have to reluctantly follow a radical approach due to strategic expectations and pressure from top management. This approach can be divided into three different phases, namely, assess, analyse and implement.

With IBM paying much attention to the *Baldrige* program and having achieved *Baldrige* 'bronze' standard last year, most business units are concentrating on continuous improvements and TQM (total quality management) programs. Thus, the continuous/incremental improvement pattern suits the different business units and satisfies their requirements. (*CRM0030, CRM0035, CRM0201, CRM0119*). Although this approach may mean slow progress compared to a radical approach some BPR experts like (Harrington 1991) and (Devenport 1993) support this method. However, (Hammer 1993) would argue that real benefits of reengineering can not be reaped using an incremental approach. However this is an on going argument in BPR circles. One very senior IBM director fully agrees with Hammer's views and argues that continuous improvement is nothing new to IBM and can not be compared with *real* business process reengineering. But the majority of the IBM professionals very strongly support and prefer a continuous BPR approach

According to the CRM project office, which is the central point from where all the co-ordination and deployment work is done, none of the problems arising from a radical approach are reported by the business units using the continuous approach. Because of the incremental nature of change people do not feel threatened and seem to have more time to adopt to the new and reengineered business processes and information systems. The sub-project manager responsible for the supplier management process explained: "employees get the opportunity to participate and contribute to the reengineering work, and their knowledge of the business processes and systems also improves. With this, the resistance to change and job insecurity etc., will gradually disappear."

- Evolutionary Approach

The evolutionary approach involves mostly identifying and standardising business processes, information systems, methodologies, tools and techniques to support IBM's world-wide BPR initiative, and provides the foundation for the CRM project. (*CRM0111*). This is clear from the CRM definition which says 'CRM delivers a common set of processes, systems and tools and supporting documentation to bring world-wide best practices to every IBM employee.' The theme and purpose of all the CRM documentation including process, standards, guidelines, and methodology documentation is: 'standardisation of common processes for world wide use'. This is evidence enough to support the evolutionary pattern. This approach involves, identifying common processes, standardising these processes and improving them.

The identification and standardisation of common processes was done at a strategic level at the very inception of the CRM project by the world-wide CRM team. Strategic level management, including some directors claim that the *ten* key processes in the CRM project are common for all the IBM locations irrespective of geographic differences. However, the middle and lower level managers, i.e. the sub-project managers and other professionals (*CRM0109, CRM0112, CRM0118, CRM0119 and CRM0026*) are more pessimistic and argue that there are significant differences in the processes between geographic location. The most common examples cited by these managers and professionals were, politics, culture, language and historical differences. This is an ongoing debate and a number of issues and problems have been raised regarding the validity of the common processes for world-wide use. (also refer section 6)

After identifying and standardising the common processes the next phase is the improvement stage. This stage is where the real BPR work comes in and may fall into either of the two previous patterns of radical or continuous process reengineering. Most of the business units as explained earlier, prefer process improvements that fall into the incremental / continuous pattern.

## **5.2 CRM Information Systems Reengineering Approach**

According to CRM project office sources nearly 60% of the reengineered business processes will be supported by new information systems. Another 30% of the systems will be centred around integrating the new systems and legacy systems to create a systems environment that is capable of supporting the business processes. The remaining 10% will involve sole reengineering of legacy systems to suit the redesigned business processes. A good example is the UK PROMISE system which has been selected for reengineering. (*CRM0109*)

### **An example of a sub-project : The PROMISE System**

The UK PROMISE system has been selected by the IBM world-wide BPR team as a official information system for world-wide standardisation and use. The PROMISE system will support the customer satisfaction management process (which is one of the ten key processes in CRM) by processing customer complaints and other issues of dissatisfaction. This system has been selected after evaluating other complaints handling systems used by different IBM locations world wide. The task of reengineering the system to make it fully compatible with the new business process is delegated to a team of UK professionals. This team are experts with the PROMISE system and already have the experience of developing the existing legacy system. Primarily the team consists of a project director, a process owner, a project manager, a business analyst, system developers and experienced users

#### Background

The PROMISE system deals with complaints from customers, business partners or staff and includes information relating to complaints, critical situations, marketing claims, and negative feedback from surveys. Until 1993, IBM UK had been operating many user written complaints applications run independently by various functions to support quality tracking and issue

resolution together with other systems to handle critical situations, claims and disputes. Business Associate issues were only handled locally and no automated tool existed for handling dissatisfaction issues highlighted from surveys.

Prior to the CRM project IBM UK had already identified the need for a single customer dissatisfaction system (PROMISE MKII), this being driven by: the complaints process reengineering study in 1993; the need to ensure compliance with various internal and external audit requirements (IBM audit, BSI/ISO9000 standards etc.); support to the IBM UK customer charter of which complaints handling is a key area; and the inability of the old PROMISE application to support the new customer complaints handling process.

A UK process reengineering team was responsible for developing a process which fulfilled the customer and IBM requirements and ensure that a consistent process is used company-wide. The process reengineering work involved much input from customers and it identified four key elements to handling any issue of customer dissatisfaction, these being: registration; resolution; root cause analysis (RCA); and process improvement.  
*(PROMISE Overview 1994)*

Thus, the background work had already been done when the CRM project proper started in 1994. The same UK team involved in the 1993 study, with the addition of a few others have been appointed to reengineer the existing PROMISE system to the specifications of the reengineered customer satisfaction management business process in CRM. This sub-project is the biggest and the most important example of the IS reengineering efforts within the IBM UK group.

### Business Coverage

The process supports all customer, business associate and staff issues of dissatisfaction however they are communicated to IBM (letters, fax, telephone, face to face encounter, email or survey feedback). The PROMISE system enables the complaints co-ordinator to log complaints, track/monitor complaint status (with automatic action prompting), provide credible information to enable pro-active follow up and report on complaints.  
*(PROMISE Overview 1994)*

- The PROMISE System Reengineering Approach

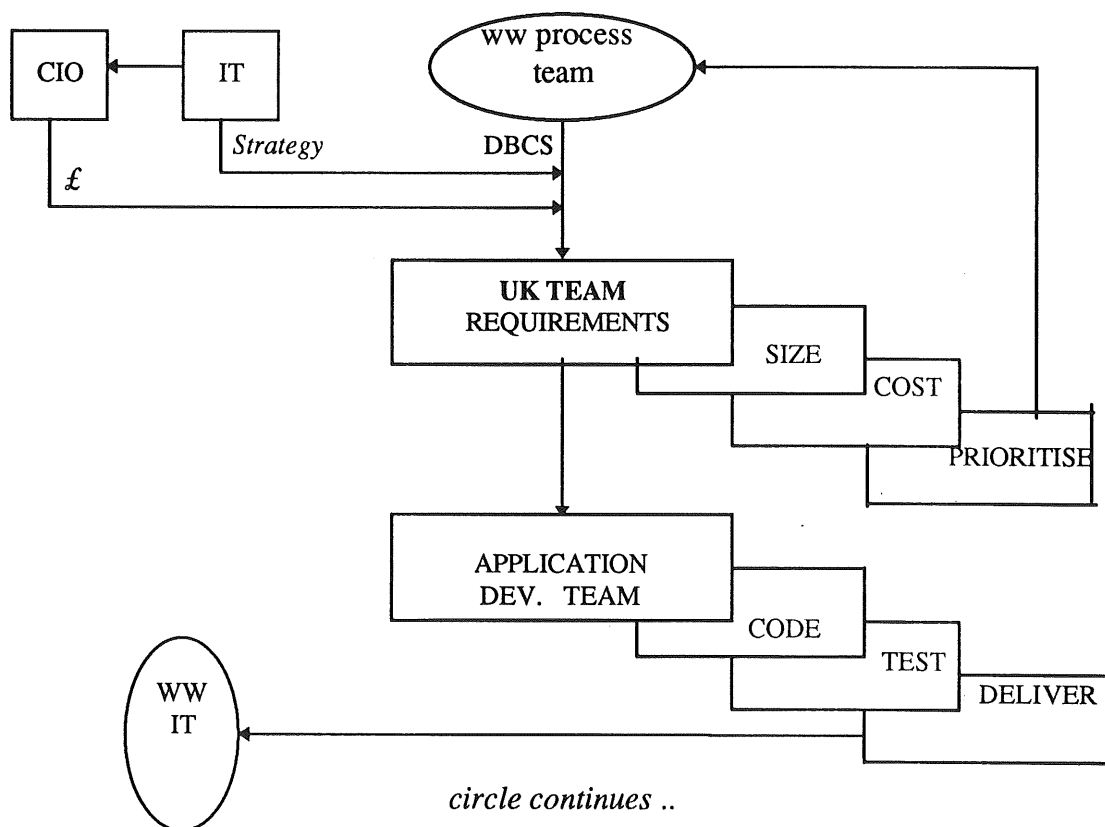
The PROMISE project team claim that the most suitable approach to carry out rapid IS reengineering work is by using a RAD method. Since the complaints business process is already reengineered and standardised (fixed) by the world-wide BPR team, the only reengineering required at this stage is to the PROMISE application. Thus, the system is redesigned and the software is reengineered to conform with the business process using simple RAD techniques. Changes are made to the legacy system by dividing the system into manageable modules and by directly modifying the system design and program code. These changes are executed very rapidly in order to meet the deadlines and facilitate constant changes required by the world-wide team. The PROMISE team prefer rapid changes and prototyping

to traditional system development methods which they claim consume more time and are more complex to manage.

Almost all the important people involved in this project were interviewed and a number of very significant problems and issues were raised by the project team. (refer section 6)

Figure 8 illustrates the background of the PROMISE systems reengineering project and the information flows, requirements and people involved in the system development work. Layer 1 in the figure shows the work and responsibilities at a world-wide level and layers 2 and 3 the work by the UK PROMISE systems reengineering team respectively.

**Figure 8 - PROMISE Systems Reengineering structure**



CIO = Chief Information Officer    DBCS = Double Byte Character Set    WW = World-wide

*(Source - IBM Internal : PROMISE Project Team Interviews 1995)*

As illustrated in figure 8 the development of the new world-wide PROMISE system is proceeding in three stages. Firstly, the world-wide process reengineering team analysed the original system against the new customer complaints handling business process and specified new and modified requirements. The CIO and the world-wide IT Strategy team recommends further improvements to make the system more adaptable to countries having special

requirements. One such example is the new requirements for double byte character set to cater for the language requirements of countries like Japan, China, and Korea.

The UK PROMISE project team then receive the new requirements and changes from the world-wide process reengineering team and the world-wide IT Strategy team together with the necessary funding from the CIO. At this stage the UK PROMISE team analyse and prioritise changes to the system passing back queries to the world-wide team. For example the world-wide team have recommended new modifications to the PROMISE system to facilitate double byte character set (DBCS). This change is expected to fulfil the language requirements of countries such as Japan and China and help to make the PROMISE system a world-wide standard for customer complaints handling.

Finally, the UK team carry out the systems reengineering work using a prototyping approach and RAD methods which involves making small incremental changes to the system. After extensive testing by the team and by a few experienced users, and a parallel run with the old UK PROMISE system, the reengineered version is delivered to the WW IT team for further compatibility testing with the customer complaints handling process. If the WW team is satisfied with the reengineered version, it is then released for world-wide use. If the system is unsatisfactory due to errors, functional problems or if new requirements have to be incorporated into the system the same procedure is repeated once more.

*(Promise Project Team Interviews 1995)*

## 6. PRACTICAL ISSUES IN THE CRM PROJECT

The primary objective of the CRM case study was to identify problems and issues in a business process reengineering project and to understand the practical environment, methodologies, tools and techniques used for business process and information systems reengineering in a major organisation in the UK..

The CRM project team at IBM UK are faced with a number of practical problems and issues arising from the business process reengineering. From the case study, twenty-four different issues were identified. Many of these issues were raised by the IBM UK CRM project and sub-project members and business unit users during interviews as shown in matrix 2 in section 4 of this report.

The problems and issues identified in the CRM project are highlighted here as requirements rather than as problems. Below is the authors own interpretation of the kind of problems that are encountered by the various CRM project teams and business units. Each of the requirements listed, if not met, is bound to turn into a problem at some stage of the CRM project.

The following list of issues was handed in to the UK CRM project office at IBM North Harbour.

## A SUGGESTED LIST OF ISSUES THAT NEEDS TO BE ADDRESSED FOR THE CRM PROJECT TO ACHIEVE MAXIMUM BENEFITS FROM BUSINESS PROCESS REENGINEERING

1) The CRM project may need to resolve and reduce the large number of gaps that exist between the business process models and the information systems (i.e. legacy systems). The gaps between CRM1 and CRM2 seems to be too big at present. The CRM (UK) project should adopt a flexible approach or methodology which is capable of facilitating the integration and mapping of process models with the new and reengineered information systems.

2) Emphasis needs to be placed on increasing the compatibility between the business processes and the application systems as each application is at various levels of compatibility with the business process - which contributes to widening the gaps in (1) above. The BP and IS modelling strategy in CRM may need changes as the present methods and approach seem to only contribute towards widening these gaps. For example the process modellers, business analyst, application developers and experienced users can work together and make the business process modelling exercise a joint effort. (i.e. the WW process team can be formed with highly experienced professionals representing each of the above disciplines at EMEA, NA, LA & AP level). If working together is not a feasible option, at least increase the level of co-ordination between these teams - for instance by introducing shift work, where the process modellers work by day and the IS people work by night and the two teams meet the next morning for a joint session. But it is important that these teams are at least based in one geographic location while the process modelling and tools/systems design work is in progress.

A number of researchers and authors have established that if "different" methodologies are used for BP and IS modelling the transparency between the BP and IS models will be lost, thus widening the gaps between the two models. It appears that this problem exists in the CRM project too. The adoption of a "common approach" which can facilitate simultaneous BP and IS reengineering and modelling may reduce this problem, especially when attempting to reengineer and integrate the legacy systems with the new CRM processes

3) An effective communication strategy is essential to improve the poor levels of communication that exist at present and to increase the awareness and importance of the BPR work. This should be a system where there is a free flow of information at all levels of the CRM project both horizontally and vertically across the organisation. Due to the lack of a proper communication strategy there appears to be a certain degree of misinformation regarding vital issues, being spread around by different sources. This results in confusion among the business units and CRM sub-project managers.

4) The education program in CRM needs to be adjusted to address the "what" and "why" of BPR at each project, sub project and individual operational level. In this way all concerned would benefit from a fuller understanding of the aims and goals of the CRM project and so would be able to contribute more effectively. This should be the target of an educational strategy. For example if object-orientation, information warehouse and client server

technologies are to be implemented, then it is imperative that the underlining concepts, techniques and methods are communicated and understood in order to achieve effectiveness in the implementation of these technologies. The education program has to help the employees to overcome the natural feeling of "fear of the unknown" and to cope with the paradigm shift caused by reengineering. If not the CRM project/BPR can get too complicated for many employees. Some may find it difficult to adapt to the new systems and processes which will be introduced to replace the legacy systems, and to cope with the pace of change in CRM2.

5) It is fundamental for the success of CRM to increase the number of skilled professionals and improve the level of skill in the existing work force involved in BPR work at IBM UK. BPR is a relatively new subject and there are numerous bright ideas and technologies floating around to facilitate it. Therefore the probability of technology preceding before employees are capable and skilled enough to understand it are great. For instance it is easy and convenient for a systems analyst to read the contents page, introduction and summary of a manual and believe that he/she knows the methodology.

Project teams, process modellers and business analyst should have a sound and comprehensive knowledge of new tools, techniques and methodologies etc., before they embrace them. The art of object oriented system development and information warehouse (IW) etc., needs to be "MASTERED" at least by a handful of professionals in the CRM/BPR team before these technologies are implemented.

6) The CRM project lacks clear objectives and goals at both project, sub project and operational level. If objectives and goals are not clear specially at sub project and operational level and if they contradict with each other, the CRM project as a whole may fail to deliver the desired results. In an ideal BPR project there should be clearly defined goals and objectives. (i.e. hard physical evidence of proposed improvements to processes, such as cost and process cycle time reduction, improved profits and plans for increased efficiency and effectiveness in processes etc.). Each task should have attached to it clearly defined objectives and goals. In the present CRM scenario especially at sub project and lower levels people seem to carry out the tasks without actually knowing the end results or goals.

If the above issues are not clarified employees will begin to seriously doubt the feasibility of the CRM project. Already there appears to be a certain degree of doubt and this should not be allowed to grow further. It is a proven fact that if a BPR project is to succeed the employees should have 100% confidence, participate 100% and believe that it is going to work.

7) For business process reengineering to be more meaningful to the ordinary employees and users the proposed "benefits" of the work undertaken should be clearly defined. Similarly there should be a quantification of benefits in the CRM project. The present CRM scenario lacks in this area, particularly the lower level processes.

8) The relationship between the reengineering effort for marketing and services (M&S) and manufacturing and development (M&D) needs to be placed in perspective. If the

reengineering work does not take into account M&D and it's allowed to stagnate, as is the case with CRM, the manufacturing and development expenses will over ride the cost savings from marketing and services. The competition will capitalise on the situation by offering cost effective, value added products at a lower price.

Present day customers are very price conscious and if the final products are not priced competitively (which may not be possible if the cost of production is high) - efficiency, standardisation and customer care etc., will mean little. To offer competitively priced products one's manufacturing processes should be cost effective, which means one should decrease waste, increase production efficiency, reduce cycle time and produce value added high quality goods at a low cost. This requires effective and efficient M&D business processes. Therefore there should be a balance between the reengineering efforts for M&S and M&D's business processes. The CRM project concentrates only on M&S and neglects M&D.

9) The level of co-ordination between all the teams involved in business process reengineering work be it at a world-wide, project or sub project level and be it CRM or SDDM deployment needs to be improved. Eliminate the present work scenario at IBM, where different project teams work in isolation with each other and prevent situations where team 'A' does not know what team 'B' is doing.

10) People with strong sponsorship, skilled leadership and successful project management skills need to take the initiative and responsibility to start, restructure or terminate projects with authority.

11) The different information channels in CRM may need changing to accommodate and enable different project, sub project teams and process owners to communicate their concerns and issues to higher levels of management and teams (i.e. to the WW and EMEA teams etc.) working on business process design, with minimum changes to the original information.

12) A more decentralised management structure, with appropriate controls, will give the different geographic locations more power and freedom and will encourage them to contribute and make productive changes etc., within the CRM project. This should neutralise the negative feeling and hidden frustration among the various IBM UK team members involved in CRM.

13) The CRM project is attempting to cover too much of ground and appears to be too big to handle in one go. For example the ideal situation would be to break up the ten key processes in CRM into two in order to facilitate a two phased reengineering approach. (i.e. successfully deploy the first five "most important" processes and then follow it up with the next five.) This will provide management the opportunity to evaluate the first deployment phase and measure its success, thus minimising the risk, increasing the chances of success and encourage employees to work "smarter" instead of "harder".



14) The project is also attempting to do too many things in too short a time frame and this scenario fits into neither of the most popular/common BPR approaches of RAPID or INCREMENTAL business process reengineering. If a straight forward pattern is followed the objectives, goals and benefits of the CRM project are bound to become clearer and the work load likely to get lighter.

15) The CRM project mechanism requires alterations at EMEA and WW levels to ensure that process models, systems/tools, methodologies etc., do not continue to get changed at the present level. The present rate of change appears to be unhealthy from a CRM deployment view point. Firm "freeze" dates should be established for the enhancement of information systems. Changes and enhancements can re start once the deployment is complete and the systems allowed to performed under operational conditions for a certain period of time. At Present information systems and methodology versions keep changing constantly and before version 1 of a system or methodology is adopted version 2 is ready for implementation. This is a area which is causing a great deal of concern for some of the sub-project and business unit managers.

16) It is essential to introduce a standard set of measurements and criteria for each process, sub process and task in order to measure the benefits of the new and reengineered processes and systems against the old systems and processes. At present there is a certain level of confusion among the business units regarding the use of process measurements. Different businesses claim to have their own methods of measurements while the CRM project office is planning to implement the standard method which will be provided by the world-wide BPR team.

17) The relationship between the deployment of CRM and other supporting methodologies, tools and techniques are vague. For instance the relationship between SDDM (which is going to become the standard A/D and systems integration methodology) and CRM needs to be clearly defined and understood by both the CRM project office as well as the SDDM deployment team. In a successful BPR scene projects and sub projects should not operate in isolation from each other.

18) It is imperative that the UK CRM team formulate an effective strategy to properly organise the human resources and skills requirement for the BPR work. Frequent change of peoples roles and responsibilities and the change of process owners disrupts the work flow and demands new training etc., which only contributes to increasing the work load. This strategy should also consider the pros and cons of recruiting new skilled personnel against retraining existing staff, by for example comparing the performance and productivity of the latter against the former.

19) The present problems (friction) that exist between different geographic locations, for instance due to politics and cultural reasons etc., if resolved will contribute to speeding and smoothening up of the CRM project. Because of domination by the United States and other

WW and EMEA teams UK project teams are suffering from a "*not invented here syndrome*", which results in low morale and less enthusiasm, specially from the skilled professionals in the UK CRM / BPR teams.

20) Due to the magnitude of size and multinational nature of the IBM corporation, reengineering and standardisation of business processes, information systems, methodologies, tools and techniques etc., is quite a formidable task. With the present trend of deadlines and tight schedules the CRM project may fail to achieve any real benefits from BPR. For instance although most business processes and systems are common at a high level there can be a number of differences at the lower detail levels due to cultural, language and historic reasons between the different geographic regions and countries. Thus the standardisation of business processes and information systems will be a extremely difficult task which involves close co-ordination and co-operation between the geographic locations and a good understanding of each others business process and information systems needs.

Another likely danger is, when the deadlines get nearer the pace of change increases making it increasingly difficult for the CRM/ BPR teams to cope. This scenario will encourage and in some extreme cases force project teams to change their objectives and priorities from "*Business Process Reengineering*" to simply "*meeting the deadlines*".

21) Necessary steps should be taken to ensure that business process and information systems reengineering is not done in isolation from each other or from the business users. This may be the most significant contributor to the problems encountered during the CRM information systems testing phase, such as, systems not meeting the user requirements and expectations and the minor differences between the process models and information systems. If the systems do not meet the user requirements, achieving the quality, efficiency and performance expectations of BPR using these systems may not be feasible.

22) Some of the business process documentation seems to be at a very high level and the IS people (i.e. systems analyst and programmers) in the UK seem to have difficulties in understanding this documentation. (i.e. process maps, DFD's etc.) This again arises from two sets of people carrying out BP and IS reengineering in isolation from each other. Necessary steps should be taken to ensure that the process documentation is in a user understandable form, at least at a level where the IS people can understand it. If not, unnecessary delays will occur during systems design and delivery, and the probability of mistakes when interpreting the process requirements into system requirements will be high.

23) Necessary precautions and restrictions are required to ensure that process owners and project managers do not have undue influence on the business processes. A good example is where a process owner or project manager can control the process outputs by withdrawing or committing resources to a particular business process. If a manager withdraws resources to a particular business process, the process outputs are bound to be effected and the final outputs may not reflect the capability of that particular business process or information system.

Similarly if he commits more resources than necessary the outputs will be bloated and will not reflect the process or systems true potential.

24) The ten key processes in the CRM project are interconnected with each other. Thus, the failure or success of a particular process will effect at least one or more of the other processes. It may be a wise decision to try and separate some of these interconnections between the processes so that the success, and more importantly the failure of a particular process will not have a chain reaction through the other processes. This will also provide the opportunity to reengineer a specific process without effecting the rest of the processes. The interdependent nature also has adverse effects on sub-project deadlines. For instance if sub-project 'A' and 'B' are linked, if 'A' encounters a delay due to a problem - this delay is automatically transferred to 'B', thus pushing back 'B's deadlines.

## 7. CONCLUSIONS

This report has described in detail IBM's customer relationship management project, its goals and objectives, project structure, business process and information systems reengineering approach. The purpose of this report is three fold. First, to examine and document the business process and information systems reengineering approaches and the project management approach of a BPR project in a major organisation in the UK; second, to highlight the practical problems and issues of this BPR project; and third to document the case study research method used to obtain the above information.

Most of the contents of this report were gathered from the IBM employees involved directly and indirectly in the CRM project and from internal IBM documentation. The remaining comments and evaluations are the author's own views of the project. The problems and issues identified in the report have been expressed by IBM employees and have been confirmed by the author's own understanding of the CRM project. One surprising feature during this case study was that no resistance or rejection by the interviewees were encountered. Although most of the interviewees were extremely busy individuals they found time for the interviews and were always keen to help. This may be due to the unique culture that exists within the IBM corporation which fosters teamwork, openness and the policy of helping each other. With the introduction of CRM the signs are that the working environment will be further improved and the emphasis on team work and co-ordination will also improve by leaps and bounds.

Several important lessons were learnt during this case study. The *first* being the wealth of knowledge and experience gathered regarding case study research it self, leave alone the case study subject. For instance the effectiveness of the six different case study sources of evidence. In this case study all six sources had a part to play. Out of the three case study approaches explained in section 4, it was clear that the informal method was the most productive in terms of gathering information, particularly when looking for problems and issues of a project. The formal method provided the opportunity for more in-depth interviews usually over a longer period of time. But the interviewee looked more cautious and protective when disclosing information during these interviews. Documentation can be bulky and going

through it and selecting the relevant information can be time consuming, but the evidence may be much stronger.

The *second* lesson being the in-depth understanding of the subject, in this case BPR. A case study or a real world situation of a subject such as BPR can be quite a contrast from its academic theory. This is clear if section one and two in this report is compared with section six. In keeping with the primary objective of this case study the main efforts of the interviews and the aim of the questions were directed at identifying the practical issues and problems of the CRM project. This may not be a easy task as committed project members and employees in a particular organisation might not always openly discuss a project critically. Having said this, this was not the case with IBM employees involved in the CRM project. They were extremely open and were proud of their recent achievements, particularly the CRM BPR work and were prepared to discuss and openly admit certain problems and issues that they were facing at present.

The *third* and final point is the early opportunity that a case study provides to a compare the researcher's hypothesis with the real situation. This helps the researcher to think in more practical lines thus increasing the practical value of his or her research. This was certainly the case with the CRM research work. It clearly shows that there are no clear cut methods, neither are their any definite boundaries when the actual BPR work has started. The difficulties and the amount of work involved appears to be immense. None of the BPR literature tells us how to tackle this and how to carry out the real BPR work. If BPR was so straight forward the list of issues identified in section six would be so much shorter.

When conducting the case study, more time and effort were spent analysing the IS related issues in the context of BPR. The CRM project provided the ideal background for this research and most of the objectives of the case study were achieved. One limitation was it did not provide an adequate background for research on the use of process reengineering methodologies, or to witness any process modelling exercises; and nor did it provide the opportunity to interview any of the process modelling teams. The only other drawback in the case study was that the CRM project did not provide the scope for further improving the more theoretical aspects of BPR as a subject. Although two of IBM's process modelling methodologies were briefly reviewed, they did not provide the scope for proper understanding of the real practical process modelling work. IBM's main process modelling method - LOVEM/CABE is capable of providing very detail level process mapping, but it is quite complicated, especially for a first time user. Out of the two application development methodologies that were reviewed (Solution/2000 and BSDM) both support a traditional life cycle approach and are influenced by information engineering IE principles. This is a good sign as many consider IE to be one of the better methodologies capable of supporting BPR. Further effort will be dedicated towards reviewing these methodologies with a view to evaluating their approach for BP and IS reengineering.

If we turn our attention to the customer relationship management project itself, it is a bold and remarkable business process reengineering initiative by any standard; it is a very ambitious project. Employees have different views and have formed their own opinions about the project which vary between the three main layers of management. The strategic level management (directors and senior executives) are optimistic and insist that the CRM project is a must for IBM to survive in the present competitive market place. A majority of them strongly believe

that the project will be a success. In contrast the middle level management and professional staff are more pessimistic. Some feel that it will be killed due to politics and some feel that only various bits and pieces will thrive. As usual with most BPR and change projects there is a lack of enthusiasm, and negative attitudes are clearly visible with operational level staff. Nevertheless because of the high level of top management commitment, enthusiasm, backing and funding, and judging by the progress of the work accomplished so far, the majority view is that the project is likely to be successful.

With any project of the size and scope of CRM, problems will arise. The analysis of the interviews and other information gathering activities identified a range of issues as described in section 6. The most obvious area arises from the cultural and political differences across a global organisation. Not surprisingly, management of the BPR project proves to be critical. One distinct feature in the CRM project is its project management structure. Although CRM boasts of a flat organisation structure in keeping with the principles of BPR, its project management structure is very hierarchical. This is causing major delays in the CRM work due to authorisation problems and delays in information flow. The UK strategic management claim that the hierarchical project structure helps to maintain overall control and avoid constant changes by sub-project and business managers. This according to IBM is important in order to maintain the policy of standardisation of business processes, information systems and methodologies. This case study concentrated on the work of the UK CRM Project Office and so focused on deployment. It is interesting that IBM is using a mixture of rapid and incremental approaches. In itself, this should not cause problems but when coupled with the tight deadlines there is a feeling of too much in too little time.

IBM is clearly spending a lot of resource on communication but the case study highlighted the importance of two-way communication both horizontally and vertically. CRM is a complicated project, so communication needs to be supported by education programmes. Within, the IT area, this is compounded by the adoption of many new tools and technologies. The CRM project highlights the close relationship between BPR and Information Systems development. Perhaps the most significant contribution to the challenges that IBM are facing is the difficult communications between the various teams involved. This is aggravated by the difficulty of mapping business processes to legacy information systems.

Nearly one third of the issues that need to be addressed in section six are caused by the world-wide nature of the CRM project, the multinational nature of IBM corporation and by geographic politics which may be distinctive to IBM corporation. As some of the CRM team members (*CRM0111*, *CRM0112*, *CRM0109*) point out it is not impossible to resolve over half of these problems, although it may mean additional work and commitments on the part of CRM team members world wide.

While a full evaluation of the CRM project is not feasible until process and systems deployment is complete and normal operations resume in late 1996, this case study illustrates the usefulness of studying the practical application of BPR. Many of the twenty four issues identified in section 6, could apply in any large BPR project and include topics which are barely addressed by the literature.

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## APPENDIXES

### Appendix A : CRM details

This appendix gives a description of the CRM process objectives, strategic imperatives, the marketing and services strategy, the UK sub projects, the roles and responsibilities of the UK CRM team members, the key business processes, information systems and a few examples of project level risks.

#### (1) CRM Process Objectives

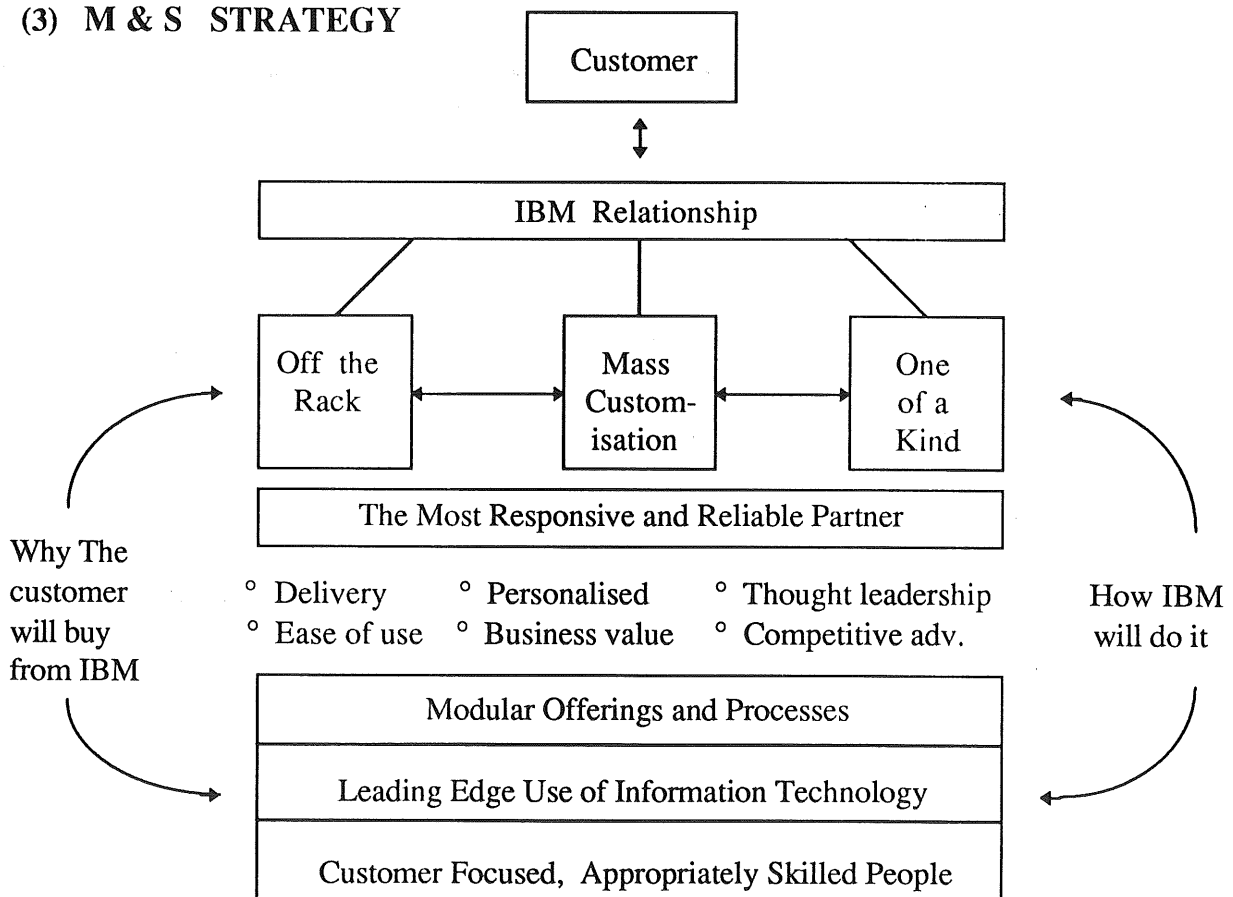
1. A clear understanding and definition of customer needs and expectations.
2. A view of the nature of the work and the life cycle of activities across organisation.
3. A detailed understanding and good communication of the work being performed.
4. Defined process boundaries, linkages and ownership responsibilities.
5. Properly placed measurements that determine process performance based on customer requirements.
6. Work simplification.
7. Defect prevention.
8. Reduction in the cost and time to do business.

9. Right information to the right people at the right time.
  10. Common access to data.
  11. Information technology aligned with business goals.
  12. Integrated information systems that can be rapidly built and modified.
  13. A view of the whole enterprise that guides the parts, the people and the information systems.
  14. A continual focus on implementing best practices to gain and retain competitive edge.
- (IBM Process Management briefings 1994)*

**(2) The world-wide CRM Reengineering project directly supports IBM's following strategic imperatives :**

1. Exploit IBM's technology better than in the past
  2. Increase IBM's share of the client/server market
  3. Become a leader in the emerging network-centric market
  4. Reengineer the way IBM delivers value to its customers
  5. Rapidly expand IBM's market in key emerging geographic markets
  6. Leverage IBM size and scale to achieve cost and market advantage
- (IBM Inter-company BPR Presentation 1995)*

**(3) M & S STRATEGY**



*(Source : IBM Inter-company Presentation 1995)*



#### (4) CRM UK SUB PROJECTS

The following sub projects will be managed within the CRM1 UK deployment programme :

1. **IT infrastructure** - To deploy the UK IT infrastructure and tools required for CRM1 (further 7 sub-projects within IT infrastructure)
2. **Communications** - Plan and provide project communication.
3. **Education** - Plan and co-ordinate education for CRM1 processes, tools and infrastructure.
4. **Standards** - Ensure standards are in place for processes, procedures, data, roles and responsibilities, principles of operation, hardware, software and technical infrastructure.
5. **Profiling** - Identify CRM1 community, tool deployment profile, education requirements, current skill level, user location and mobility and production roll-out impacts.
6. **Mass customisation offerings** - deploy relevant processes and systems.
7. **Market management** - deploy relevant processes and systems.
8. **Offering information** - deploy relevant processes and systems.
9. **Skills management** - deploy relevant processes and systems.
10. **Other tools deployment** (Gesplan, TP etc.,)
11. **Customer satisfaction** - deploy relevant processes and systems.
12. **Relationship management** - deploy relevant processes and systems to support customer response centre.
13. **Business partner management** - review CRM1 systems and processes with business partners to assess applicability.
14. **Transaction processes project** - deploy relevant processes and systems for opportunity management, solution design and delivery, customer satisfaction and IW system containing transaction processing information.
- 15-21. Seven IT infrastructure sub-projects.

#### (5) Individual Roles and Responsibilities Of the UK CRM Project Team

##### **UK Project Owner / CRM Steering committee**

Will guide the CRM project and identify and resolve inhibitors to a satisfactory conclusion of the work.

- Provides overall leadership and ownership of the project.
- Approves the project definition, plan, resources and major milestones.
- Approves significant changes to the project plans.
- Ensures cross functional commitment to the project
- Implements a process management culture.

##### **UK CRM Sponsor**

Owns the project and will have the ability to promote change across the UK organisations, and provides overall leadership of the project and agrees scope, purpose and objectives of the project.

##### **UK CRM Project Director**

Is accountable to the sponsor for deployment of CRM as defined in the Project Definition Report (PDR) and ensures interlock with other reengineering and world class projects.

- Assigns project team members and responsibilities.
- Secures resources.
- Addresses cross-process issues to the cross process owner.
- Ensures cross-functional issues resolution.
- Escalates unresolved issues to the WW steering committee.

### **UK CRM Project Deployment Manager**

The role of the project deployment manager is to develop and drive the deployment program for CRM across the M&S organisation and be accountable for the success of the deployment.

- Plan, co-ordinate and manage the project office activities.
- Drive the integration of the sub project plans.
- Manage the project control processes.
- Provide single management focus for the project office.
- Be responsible for, and approve changes to the deployment plan.
- Review sub-project plans with business unit managers and process owners.
- Communicate with the UK CRM sponsor and report out-of-line situations to the EMEA CRM project manager and to the UK CRM sponsor.
- Escalate unresolved issues to the EMEA CRM project manager.
- Manage risks and dependencies.
- Ensure actions are in place to address all issues.
- Secretary to the executive steering committee.

### **UK Communications Project Manager**

Will :-

- Create an integrated communications plan describing detailed activities to be performed.
- Interlock the communications plan with WW/EMEA CRM deliverables and other UK 'world class' project initiatives.
- Plan and manage the communications project activities.

### **UK CRM Project office**

Will manage the following on behalf of the CRM1 UK deployment manager.

- Project planning and control
  - Integrate the EMEA and country plans, contents and schedules for CRM deployment in UK
  - Maintain the integrated project plan
  - Maintain status, issues and problems log
  - Manage sub project reviews
  - Ensure budgetary control of capital
- Quality Assurance
  - Document all risks and dependencies, with containment plans
  - Set up necessary reviews, for example systems assurance and technical reviews for sub projects
  - Ensure individual sub projects have reviews in plan
- Project administration
  - Manage total project documentation (standards, consistency, media, distribution etc.,)
  - Project secretary
  - Communicate project information at summary level (project activities, status, issues)
  - Maintain communication with other countries to promote and optimise sharing.

**UK cross-process and Measurements**

- Ensure integrity of the deployed CRM1 processes and tools with each other and the legacy processes and systems.
- To resolve any issues effecting cross-processes

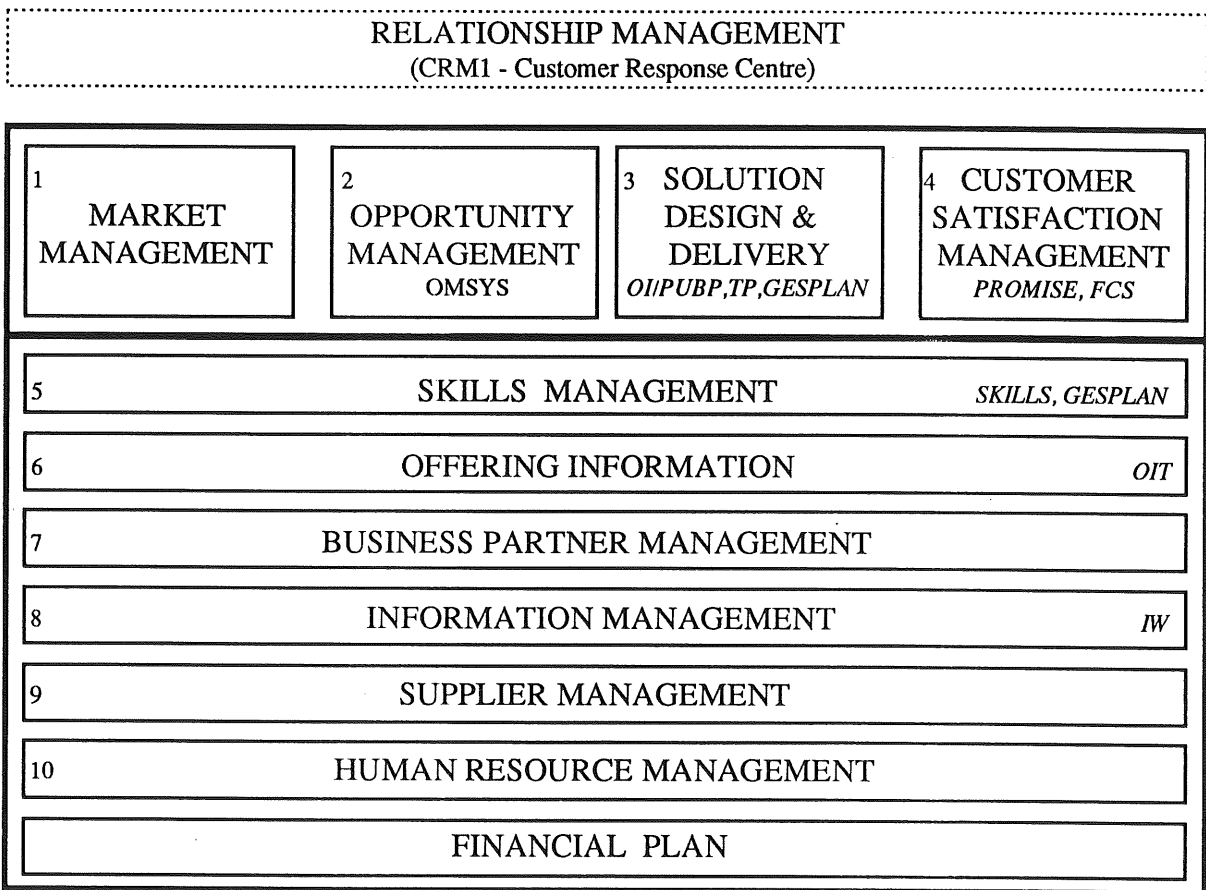
**UK Quality Support**

Perform evaluation of the project status, with focus on project standards, methods and project management on behalf of the project manager.

*(CRM1 UK Project Management System 1995)*

**(6) CRM Key Business Processes and Supporting Information Systems**

**UK CRM1 PROCESS MODEL**



*(Source: CRM Promotional literature 1995)*

*ITALICS indicate information systems*

**Relationship Management (RM) :** Standards for capturing and meeting customer expectations: blueprint for customer call centres. Understanding individual customers needs.

**Market Management (MM) :** Common world-wide market segments, market analysis and planning done by skilled market management professionals. Choosing the market segments to pursue, the solutions, resources and return on investment.

**Opportunity Management (OM)** : A standard registration, qualification and prioritisation application enabling a single point of visibility for all opportunities. Qualifying and selecting opportunities.

**Solution Design and Delivery (SDD)** : Common world-wide application for pricing, proposal preparation and the first release of contract management application. Defining the solution from customer request and delivering and managing the solution.

**Customer Satisfaction (CS)** : Automated satisfaction survey creation at the transaction level, complaint management application with resolution and owner databases. Meeting customers expectations and increasing satisfaction with IBM.

**Skills Management (SM)** : World-wide standards for skills definition, skills levels and job role templates: on-line repository of CV s and skilled resources. Delivering the right skill at the right time and place and to the right people.

**Offering Information (OI)** : Guided search access to IBM and business partner offering databases. Collecting and delivering information about products and services.

**Business Partner Management (BPM)** : Provides the framework for IBM and its business partners to jointly develop and execute the plans necessary for both to be successful.

**Information Management (IM)** : World-wide information warehouse management, contents will be accessible by all authorised IBMers. Identifying sources, receiving and reconciling, sharing and distributing aggregating and summarising information.

**Supplier Management** : Ensure that the supplier organisation delivers a solution that meets the full expectations of the recipient.

**Human Resource Management (HRM)** : Provides a skilled, empowered and highly motivated work force which delivers customer value resulting in competitive advantage and mutual success for IBM and its customers.

**Financial Plan (FP)** : Projects future measurements including revenue, expense, resource and profit. It projects and tracks actual against budget / plan.

*(IBM Internal : World Class Project 1995)*

The following systems / tools will be deployed to replace a number of legacy systems and some will be integrated with the legacy systems to support the CRM processes :

TRANSACTION PRICING (TP) - This application performs the pricing of products which make up a customer proposal design.

OFFERING INFORMATION (OI) - Designed to access marketing and product information.

PUBP - Is an application for interfacing and creating customer proposals.

GESPLAN - Supports profit tracking and forecasting, budget follow-up, resource management and management operations.

SKILLS - Provides skills planning, assessment, and skill based development functions.

FIELD CUSTOMER SURVEY - Provides support for activities related to initiating and collecting IBM identified customer solicited feedback and identifies customer issues for assignment and resolution.

PROMISE - Supports all customer, business partner and staff issues of dissatisfaction, such as complaints, critical situations, marketing claims, negative survey feedback's etc.

INFORMATION WAREHOUSE (IW) - Is a large collection of all business data, report formats, data objects organised in a data base for easy access, sharing and re-use. The data is provided by other systems as a result of interaction and processing of customer transactions.

OPPORTUNITY MANAGEMENT (OMSYS) - Provides support for the management of all business opportunities within a business area.

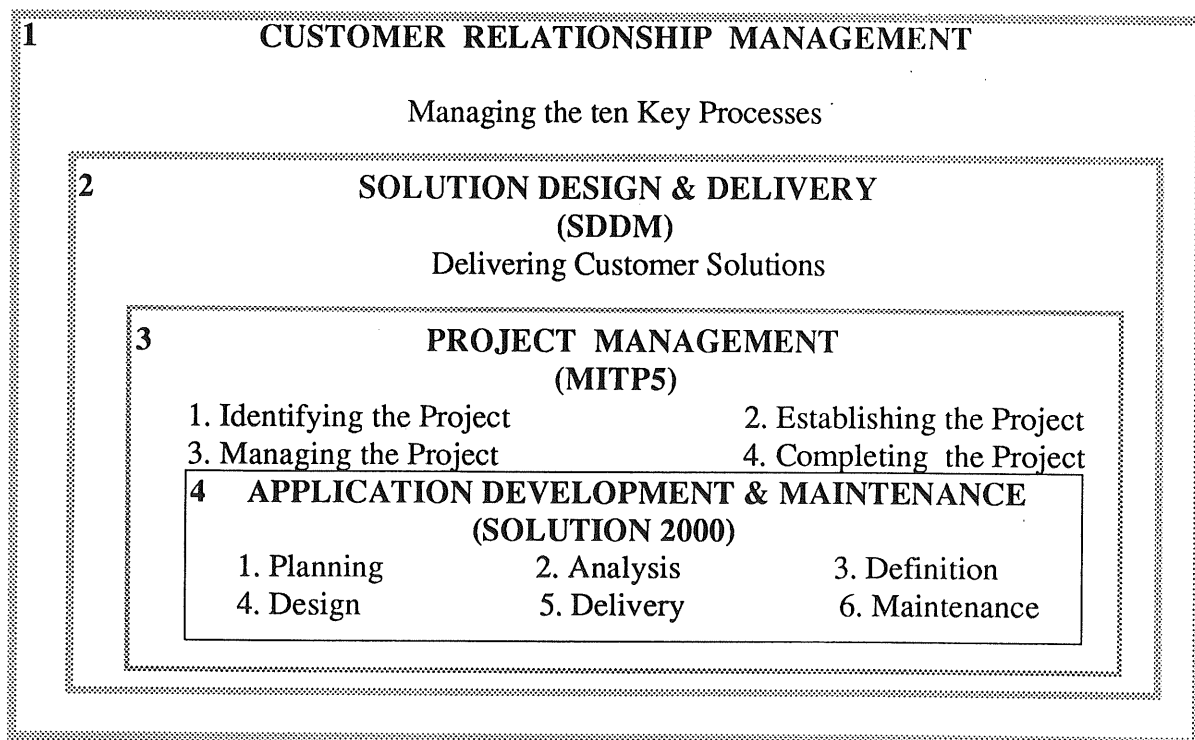
**(7) Examples of detailed project level risks.**

- \* Supply of project resources not meeting the demand, which can result in project delays.
  - \* Lack of adequate funding may result in a half completed project and project delays
  - \* Present management system not being able to support the new process structure, i.e. old system does not support team work and sharing etc.
  - \* Lack of management commitment at middle and lower levels of the organisation.
  - \* Process measurements not being in place or inefficient measurements.
  - \* Inability to deliver an effective internal education program for the staff, i.e. in the use of new business processes, information systems, standards and documentation etc.
  - \* Contingency plans not being in place or not working according to plan.
- (CRM Project Office Interviews 1995)*

**Appendix B : BPR & IS Methods**

This appendix highlights a number BPR and IS methodologies which have been developed within the IBM corporation, and used at present for internal and external BPR and IS related projects.

**1. CRM, IBM Customers, Solution Delivery, Project Management and Application Development : The RELATIONSHIP.**



*(Source - IBM Internal : Interviews & Internal Presentation documents 1995)*

## 2. MITP

Managing Implementation of the Total Project (MITP) is IBM's world-wide methodology for managing projects. MITP was used in full for the first time on IT projects, but has been developed so that it can be used for any project, whether IT is involved or not. MITP is based on a consistent set of principles and guidelines that have been developed and used successfully at IBM over many years.

The components of MITP are:

- *The MITP life cycle model*

The MITP life cycle model can be applied to any project that delivers a solution, or delivers change. The MITP life cycle model is structured in four phases :

- a) Identifying the project
- b) Establishing the project
- c) Managing the project
- d) Ending the project

- *The MITP techniques*

The MITP techniques provide you with guidance on how to accomplish various MITP activities. They are organised into key techniques and support techniques.

- *The MITP standards and quality*

The MITP and ISO9000 standards can be found in the MITP and ISO9000 standards and conformance guide. Conformance to standards is by independent review for each project, which can be called at any time by the reviewer.

- *The MITP project control book*

The project control book is a structured way of managing data. It is a repository for plans, controls, and procedures used in a project. The 'book' is traditionally a loose-leaf binder into which project documentation is collated throughout the life of the project, and therefore acts as a common reference for the project.

(IBM Internal : MITP Handbook 1995)

## 3. SOLUTION/2000

Solution/2000 is a application development and maintenance methodology (AD/M) which will be used as a world-wide standard at IBM corporation for both internal and external AD/M projects. Solution/2000 is mainly influenced by James Martin's Information Engineering and another IBM internal methodology called Business Systems Design Method (BSDM). It strongly supports business modelling and improvement, thus, also providing a framework for business process reengineering. The methodology documentation is divided into three main sections.

1. Solution/2000 Executive guide
2. Solution/2000 Project Management guide
3. Solution/2000 Practitioner guide

The Practitioner guide is meant for the systems analyst and any one else involved in application development. The methodology supports the traditional life cycle model and is divided into the following stages :

- *Information Strategy Planning (ISP)*

ISP is the Solution/2000 methodology phase that establishes the scope and direction for business solutions for an organisation over the strategic horizon.

- *Business Area Analysis (BAA)*

BAA is the Solution/2000 methodology phase that develops the detailed process, entity and business event models.

- *Business Systems Design (BSD)*

BSD is the Solution/2000 methodology phase that defines business needs and trends, provides necessary information leading to a future business system solution that may be implemented using a database and application design.

- *Business Systems Implementation (BSI)*

BSI is the Solution/2000 methodology phase that constructs, e.g., builds, tests, deploys and sets the stage for the maintenance and support of the application solution.

- *Business Systems Maintenance (BSM)*

Solution/2000 BSM involves the following tasks :

Prepare for maintenance, apply emergency repairs, manage requirements, develop application change plan, design and implement new release, initiate redevelopment project, perform reverse engineering, application reengineering and perform development follow up.

*(IBM Internal : Solution/2000 1994)*

#### 4. SDDM

IBM Solution Design and Delivery Methodology is a comprehensive methodology for system integration and application development. SDDM provides a single and consistent methodology for all IBM service practitioners world-wide. It also provides activities and tasks to plan, analyse, define, design, deliver, maintain business systems components, resulting in a set of deliverables. Successful IBM methodologies have been selected on which SDDM has been build, resulting in a world-class methodology for managing IBM client projects.

*(IBM Internal : SDDM Overview Hand book 1995)*

SDDM is made up of the following IBM Methodologies :

- \* MITP5
- \* Solution/2000
- \* FLT - full life cycle testing
- \* E2E - end to end system design
- \* Redevelopment
- \* Package selection
- \* Client server planning & design

## 5. LOVEM/CABE

IBM LOVEM/CABE is a new methodology for business process reengineering and business process management (BPM). It is based on a customer-oriented methodology - the IBM line of visibility engineering methodology (IBM LOVEM), and is supported by a computer aided business engineering tool - the Sterling CABE tool. LOVEM/CABE is based on the process path management concept and uses a pictorial language to demonstrate the processes of an enterprise. It uses an integrated set of graphics to document and evaluate the business process flows between functions, departments or jobs. It also guides you to focus on the redesign or reengineering of those areas which need to improve service, reduce cycle time, improve resource use, reduce costs, improve employee morale and foster team work.

IBM LOVEM/CABE is built on the realisation that business and systems professionals are jointly responsible for process reengineering and management. It offers a common specification language that lets business and systems professionals document, manage and evaluate business processes and systems functions. (*IBM Internal : IBM LOVEM/CABE Methodology 1994*)

## 6. BSDM

IBM's Business Systems Development Method (BSDM) is a development method especially for building systems that support the business and are integrated across the business. It interacts with, but does not encroach on, project and process management. BSDM was started as an IBM business-based approach for creating an architecture (or framework) for business-wide systems solution. It has since been extended to cover the analysis of business needs and the design of solutions to meet those needs. BSDM is now used in many IBM and customer locations world-wide.

BSDM distinguishes three distinct activities:

1. **The building of a business map** by the company's business managers, which reflects the mission and long term policies and strategies of the company.
2. **The analysis of the business need** using the business map as the foundation, which involves identifying and recording the objectives to be met and the constraints to be observed.
3. **The design and construction of a solution** to meet the business needs. BSDM encourages the analyst to identify and explore different designs which cover the entire business system, not just the computer based part.

(*IBM Internal : Business Systems Development method, 1992*)

## Appendix C : Glossary of Terms

AD/M	- Application Development and Maintenance Methodology
AP	- Asia Pacific
BP	- Business Process
BPR	- Business Process Reengineering
BSDM	- Business Systems Design Method



CABE	- Computer Aided Business Engineering
CRM	- Customer Relationship Management
EMEA	- Europe, Middle East and Africa
IE	- Information Engineering
IS	- Information Systems
IW	- Information Warehouse
LA	- Latin America
LAN	- Local Area Network
LOVEM	- Line of Visibility Engineering Methodology
MDQ	- Market Driven Quality
MITP5	- Managing Implementation of the Total Project, version 5
M&S	- Marketing and Services
M&D	- Manufacturing and Development
O-O	- Object Oriented systems / programs / techniques
PDR	- Project Definition Report
RAD	- Rapid Application Development
SDDM	- Solution Design & Delivery Method
TQM	- Total Quality Management
WW	- World Wide

## Appendix D : Interview Details

### (1) List of Interviewees

Customer Sat. and Process Reengineering Manager / CRM Project Office  
 CRM UK Chief Information Officer (CIO) / CRM Project Office  
 CRM Tools Deployment Manager  
 PROMISE Project Director  
 PROMISE Project Manager / Process Owner  
 Senior Business Analyst - Promise Project  
 PROMISE System Development Team / Programmers  
 Customer Services and Baldrige MDQ Project - Manager  
 CRM Sub Project Manager - CRM Education  
 Lan Infrastructure Management  
 SDDM and MITP Deployment Manager  
 Solution/2000 Deployment Manager  
 Solution/2000 and O-O Specialist  
 AD Consultant - IBM AD Education  
 AD Consultant - TQM / MDQ  
 CRM IS Test team 1 - Banking, Finance and Securities business  
 CRM IS Test team 2 - Customer Services business  
 CRM IS Test team 3 - Public Services business  
 CRM IS Test team Co-ordinator

The above information sources can be further clarified by comparing the respective reference codes given to them, with the type of roles they fulfil within the CRM framework.(also refer section 4, page 24)

Ref. Code	Type of Roles				
	Process Reeng	IS Reeng	IS Testing	Education	Proj, Quality mng/Consultancy
CRM0017					X
CRM0026					X
CRM0030					X
CRM0035					X
CRM0101	X				
CRM0109	X				
CRM0111		X			
CRM0112		X			
CRM0118		X			
CRM0119		X			
CRM0201					X
CRM0301	X				
CRM0403				X	
CRM0511				X	
CRM0811			X		
CRM0821			X		
CRM0831			X		
CRM0888			X		

## (2) A List of Generalised Interview Questions / Information Sought

The following is a generalised list of the interview questions. Most of the questions varied depending on the interviewees background and his/her role in the CRM project. (For example it is of no use to ask a user about BPR or IS development as his knowledge of these subjects will understandably be very limited). The main aims of the questions were to obtain the following information. Some questions in the list were excluded for certain interviews, and at the same time a number of other detailed questions were also asked depending on the interviewees background.

1. The interviewees job specification and role at IBM.
2. Interviewees roles and responsibilities before and after CRM.
3. Views on the CRM project.
4. General views on BPR.
5. What effect or impact CRM has had on the interviewee and his or her business unit.
6. Views on the reengineered processes / process based management system, work instructions, the changes in work patterns and paradigm shift with the introduction of CRM.
7. Views on the new process guidelines and performance measurement system.
8. Individual problems and issues faced with the CRM work.

8. Views on the overall problems and issues of CRM.
9. Information / views about the legacy information systems.
- 10 Views on the new and reengineered information systems.
- 11 Views on the compatibility / gaps of reengineered business processes, legacy and new information systems.
- 12 The legacy and new systems integration issues and views on how to overcome the problem.
- 13 The BP and IS design / reengineering methods at IBM.
- 14 Views on the CRM business process and information systems reengineering approach.
- 15 What is the ideal situation and what will the interviewee do to overcome the problems if he or she is in put in charge of the CRM project.