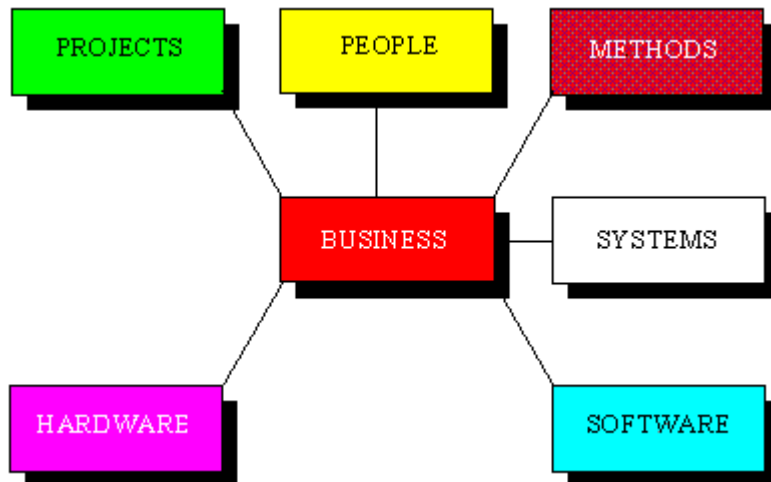


BREAKING THE SYSTEMS BARRIER



A guide to successful implementation

Date printed 22 November 2001

This document is the intellectual property of Ripose Pty Limited. The information contained in this document is confidential and may not be stored, copied, given, lent or in any way transmitted to any other party without the express written permission of Ripose Pty Limited.

The information in this document is subject to change without notice and should not be construed as a commitment by Ripose Pty Limited. Ripose Pty Limited assumes no responsibility for any errors that may appear in this document.

Copyright © 2001 Ripose Pty Limited. All Rights Reserved.

This document was prepared using Word for Windows 97.

5/2001 Subject to change without notice.

Printed in Australia.

FOREWORD

This book is dedicated to all the frustrated Users of both manual and computer systems who instinctively believed that there had to be a better way to define their requirements.

The research of two decades of analysis and synthesis into systems, their strengths and weaknesses, resulted in the RIPOSE Methodology.

RIPOSE is a Reduced Instruction Set Component Methodology. It is a concept compiler and application pre-processor. It reduces the number of high level (or super class) components a business or person has to handle.

RIPOSE offers a gleam of hope to Users in that it will enable them to not only have their requirements understood by others, but also implemented in the way they desire them. Its approach allows this achievement in a less painful and less expensive way.

May your journey through the use of RIPOSE, whether for personal or organisational reasons help you achieve

- PROSPERITY
 - ROBUSTNESS
 - ESTEEM
- and
- PERCEPTION

Charles M Richter

A QUICK REFERENCE GUIDE

The following is a quick reference guide. It provides you with which parts you should read, depending on what role you play in the business. The remainder of the book could be of interest only.

ROLE	BOOK	PART	CH	SECTION
DIRECTOR	1	1	1	ALL
			2	
		2	1&2	
		3	1&2	
MIS MANAGEMENT	BOTH	ALL	ALL	ALL
IT MANAGEMENT	BOTH	ALL	ALL	ALL
BUSINESS ANALYST	1	1	1	ALL
			2	
		2	1	
		3	1&2	
		2	1	
SYSTEM ANALYST	BOTH	ALL	ALL	ALL
PROGRAMMER	BOTH	ALL	ALL	ALL
ANY OTHER PERSON	1	1	1	1, 2.2
			2	
		2	1&2	
		3	1&2	

Table of contents

BOOK 1 WHAT YOU NEED TO KNOW	15
PART 1 BACKGROUND	15
CHAPTER 1 BUSINESS.....	15
CHAPTER 2 MANAGING A BUSINESS.....	19
PART 2 CONCEPTS FOR A BETTER FUTURE.....	39
CHAPTER 1 GOALS.....	39
CHAPTER 2 MEASURES	61
CHAPTER 3 KNOWLEDGE.....	56
CHAPTER 4 ACTIONS	72
CHAPTER 5 SYSTEMS	74
PART 3 A WORKING PARADIGM	90
CHAPTER 1 GOALS.....	90
CHAPTER 2 MEASURES	93
CHAPTER 3 THE KNOWLEDGE BASE, ACTIONS AND SYSTEMS	95
BOOK 2 HOW TO DO IT	101
PART 1 THE LOGISTICS FOR A BETTER FUTURE	101
CHAPTER 1 FACTS.....	101
CHAPTER 2 DATA BASE DESIGN.....	109
CHAPTER 3 PROCESSES	111
CHAPTER 4 APPLICATIONS	113
PART 2 THE PARADIGM CONTINUED	105
CHAPTER 1 FACTS.....	105
CHAPTER 2 DATA BASE DESIGN.....	107
CHAPTER 3 PROTOTYPING.....	111
APPENDIX 1 Alternatives To RIPOSE	116

BOOK 1 WHAT YOU NEED TO KNOW

PART 1 BACKGROUND

CHAPTER 1 BUSINESS

The Webster dictionary defines 'business' as "A matter or an affair that engages a person's time, care and attention; that which one does for a livelihood; occupation; employment".

Look up similar words for "business", and you will uncover the following: An Affair; Bargaining; Barter; Calling; Company; Concern; Corporation; Craft; Employment; Enterprise; Family; Firm; Industry; Interest; Job; Matter; Mission; Obligation; Occupation; Office; Operation; Organisation; Partnership; Position; Profession; Pursuit; Racket; Relationship; Sector; Syndicate; Trade; Transaction; or Vocation.

Not bad for one tiny word! A business therefore seems to cover just about every facet of life.

Thousands of books have been written about businesses. Topics range from:

- What they have been;
- What they are;
- What they should be;
- Why they succeed;
- Why they fail;
- How businesses evolved;
- What impact they have on society and the environment;
- What qualifications and qualities are necessary to run a business.

If you had the time you could read Socrates, Plato or Aristotle as well as the contemporary writers like Peter Drucker and Michael Porter to get a deeper understanding of the meaning of business.

Let us start by identifying what all businesses have in common, what makes a business "tick"!

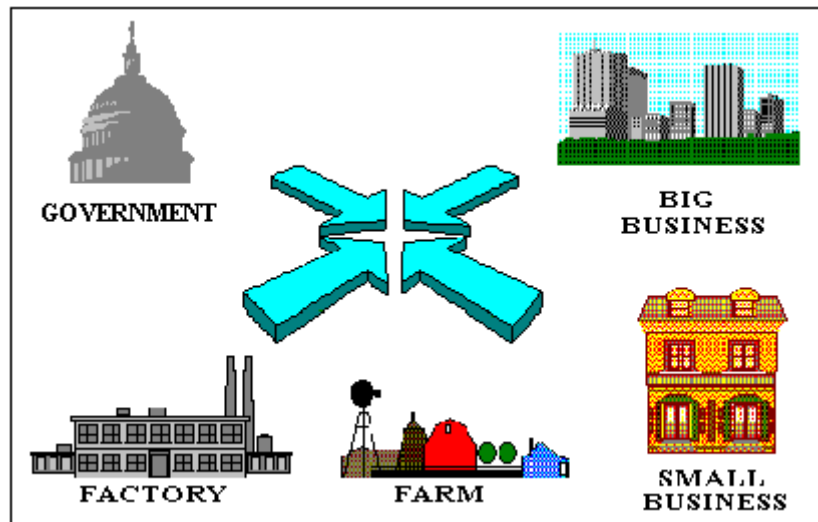


Figure 1 Businesses

If you break a business down into its components and examine each one, the answer should be that “PEOPLE” are the most essential thing that all “businesses” have in common.



Figure 2 People

Simplistic as it may seem, no animal, or group of animals (however skilful) has ever been known to conduct a business! Although some machinery may run a business, they still need people to design them, switch them on and possibly operate them.

Now people are different in so many ways. They come in all shapes and sizes; ethnicity; colour, have different belief systems: religions, political, social. Have different cultures, values etc.

What is it that all people have in common? You could answer: A body, one head, two eyes, two arms etc, however, let us establish that the only common part of a person that we are interested in, is the “mind”.



Figure 3 Minds

The mind is used essentially for thought and thoughts can be portrayed in a number of different ways.

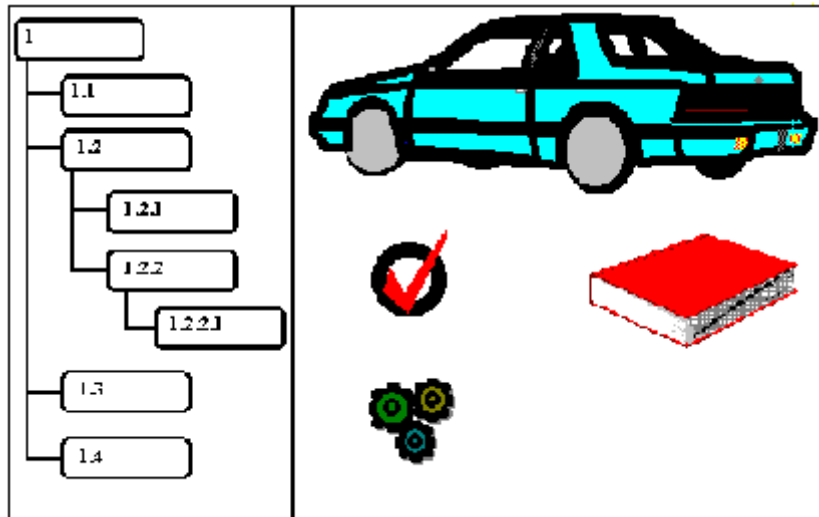


Figure 4 Thoughts (Imagination) Create Pictures

People think in lists (left) or objects (right) or both. Regardless of how they think, people need to communicate their thoughts.



Figure 5 Communication

We need to communicate our wants, our feeling and needs, etc.

As there are not many telepathic people in this world, we communicate in a number of different ways. We can:

- Speak to people;
- Write to people;
- Do charades;
- Etc.

Having projected our thoughts, we hope that it will be received and understood by the other party.

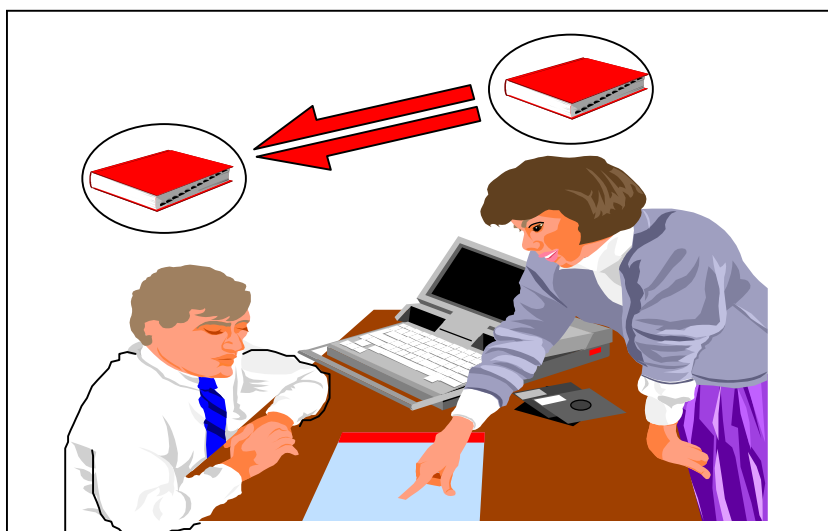


Figure 6 Duplicating A Communique

Now, not everyone will “agree” with everything you say, (conflicts are bound to occur from time to time), but that is not the issue here.

Can you imagine what would happen if the message “Send reinforcements we’re going to advance” was interpreted as “Send three and sixpence we’re going to a dance”.

Let us now broaden the paradigm a bit and find out how people, minds, thoughts and communication affects a “business”.

CHAPTER 2 MANAGING A BUSINESS

The object of this chapter is to present the concept of how to marshal the power of the various minds within a business. This chapter is divided into the following sections:

1. The Mind of Businesses;
2. The Human Resources of Businesses;
3. The Other Resources of Businesses;
4. Managing the Business Structure;
5. Time frame to deliver promises;
6. What other methods are available.

SECTION 1 The Mind of Businesses

The following illustration shows how the “mind” of the business is made up of the collective “minds” of its people.

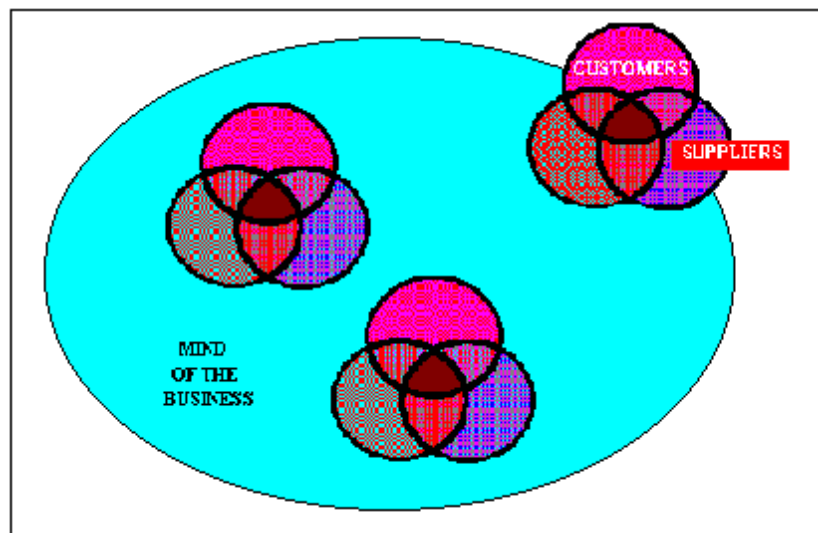


Figure 7 Coincidence of Minds

People may still be a part of, have parted from, or are apart from the business. Any person, leaving a business, leaves some piece of their mind behind. Be it as thoughts, hand written notes, or any other medium (video, audio, computer systems etc).

Minds outside of the business (eg customers or clients and suppliers or service providers) also have an important role to play. With all these minds about, it is important to manage them in one fashion or another.

SECTION 2 The Human Resources of Businesses

This section is divided into the following sub-sections:

1. Management structures;

2. Business operative's expertise;
3. Information technology expertise;
4. Managing the Information Technology (IT) Resource.

2.1 Management Structures

The next illustration shows some of the ways in which minds can be managed.

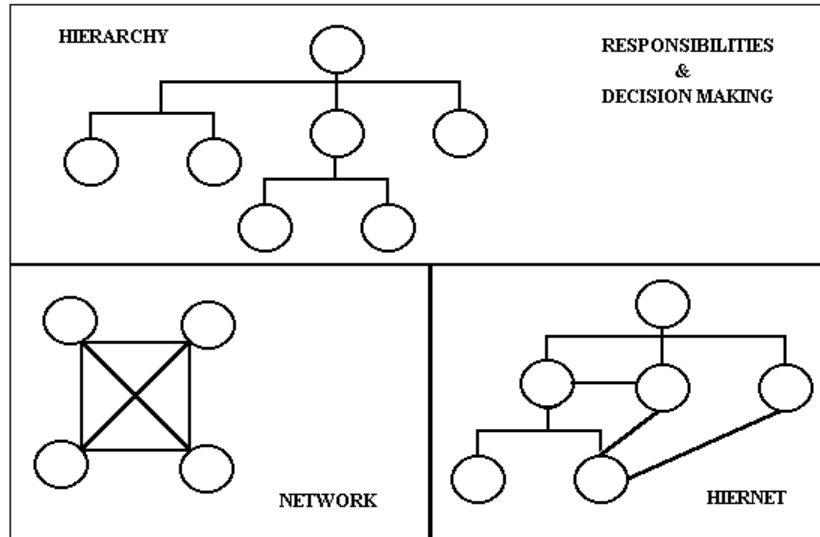


Figure 8 Management Structures

The following 3 structures as a means of managing the minds of the business. Note that the word “manage” is used and not “control”. This book does not propose a method to “control” people.

The first structure is strictly hierarchical. That is, each person reports to a person senior to them and may or may not have someone reporting to them.

The second structure is a network approach, where no one person is senior to another. All minds work in an equal partnership.

The third structure is a hybrid of the hierarchical and network structures. Neither one of the three structures are necessarily the right structure for your business. The important concept here is how each structure adapts to decision making and the responsibility of these decisions.

If you are involved with or run a small business, or only interested in families, then perhaps you would like to skip the rest of this section. You should however read section 2.2 (the section that covers a Business operative's expertise) and then proceed to Book 1, Part 2.

Hierarchical Structure

The following hierarchical structure could represent a typical (medium to large) business geared to selling a product or service to the public.

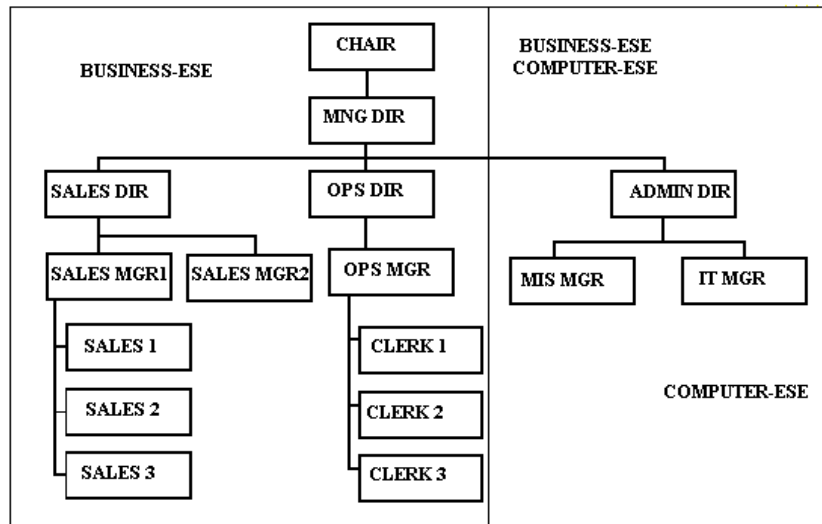


Figure 9 An Example of a Hierarchical Management Structure

The business operators on the “left hand” side of the Figure 9 all tend to speak a language called “business-ese”. These people talk about the business through the prism of their experience and knowledge. In essence they are the “life and soul” of the business.

The Management Information Services (MIS) on the other hand are usually staffed with some business analysts as well as some computer literate personnel. It is noteworthy to add that business analysts know something about the business and have some experience with computers.

In order to communicate with computers, computer literate people have had to learn to speak “computer-ese”. In most cases, these two languages are as different as “English” and “Esperanto”.

The following illustration portrays the structure of a typical MIS Department.

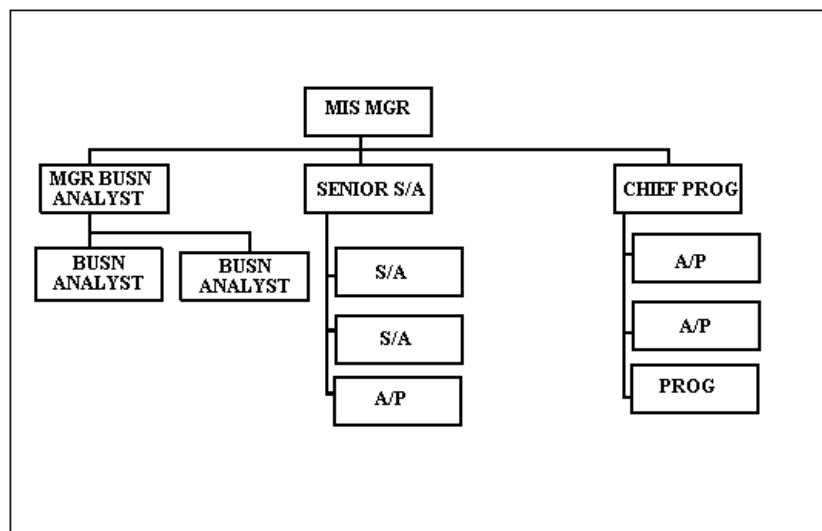


Figure 10 Management Information Services (MIS) Structure

The key player in the MIS Department is the business analyst. They have to somehow translate the intangible concepts (thoughts, ideas) of the various business operators, into more tangible concepts. In other words, they need to document the intangible concepts so that others can understand them. Business analysts, have, through necessity, been forced to learn some

“computer-ese”. Computer literate personnel may only talk “computer-ese” and never learn “business-ese”.

How often have you heard a business user say to a computer professional “we just don’t seem to be speaking the same language”?

Herein lies what could be the root cause of all the problems associated with delivering systems (be they manual or computerised). A number of surveys revealed that “aligning business (business-ese) and information strategies (computer-ese) is a major area of concern”.

What phenomenon has caused this gap to emerge? To explain this, it will be necessary to go back to basics and identify the problems associated with the various people staffing any business.

1. Senior Management does not fully understand the operational aspects of the enterprise.
2. Workers do not fully understand the strategic nature of the enterprise.
3. Users (senior managers and workers) do not fully grasp information technology and
4. IT professionals do not fully understand the business.

Management, Staff and IT Professionals each has a very important role to play in the ultimate success or failure of any business, organisation or enterprise.

Each of the three groups has their own level of expertise, learned and developed over a number of years of training and experience. To try to teach a manager how to develop a computer system is as inane as trying to teach an IT Professional how to run a business.

2.2 Business Operative’s Expertise

This section will address the level of expertise and the business intellect a person requires. The following graphs will help to illustrate these points.

Figure 11 plots the level of management expertise against their Business Intellect. Business Intellect is used to mean the ability to plan strategically and the ability to operate on the “shop floor”.

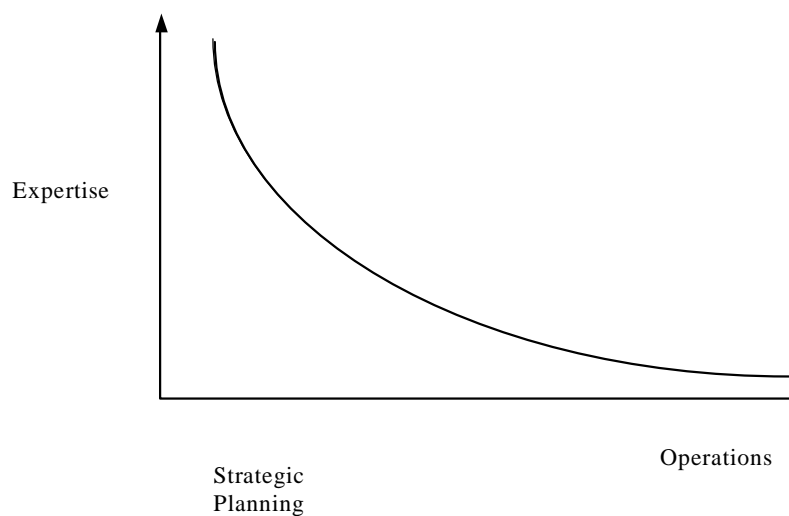


Figure 11 Management Expertise

Management tends to exercise most of their imagination along the theory of the business rather than on the practical issues.

Management is continually being told by academics and politicians that they must always look at the “big” picture. Get a “helicopter” view of their business.

It is no wonder that management must adopt a “think, think” approach. However, too much thinking can have an adverse affect on the business. Many managers attempt to “get back to basics” by actually “working on the shop floor” every now and then.

Staff members (or “workers”) are the “Do, Do” people of the business. These are the people that are often told “they are paid to Do and not to Think”. These are the people who are expected to carry out orders as well as “cop the flack” long before management have any idea that a so called *good plan* has “come off the rails”.

Some businesses have tried to reduce their exposure to the “Doers” by automating just about everything they can and as quickly as they can. This approach has worked in some cases, but has been a dismal failure in many more.

Figure 12 plots the level of staff member’s expertise against their Business Intellect.

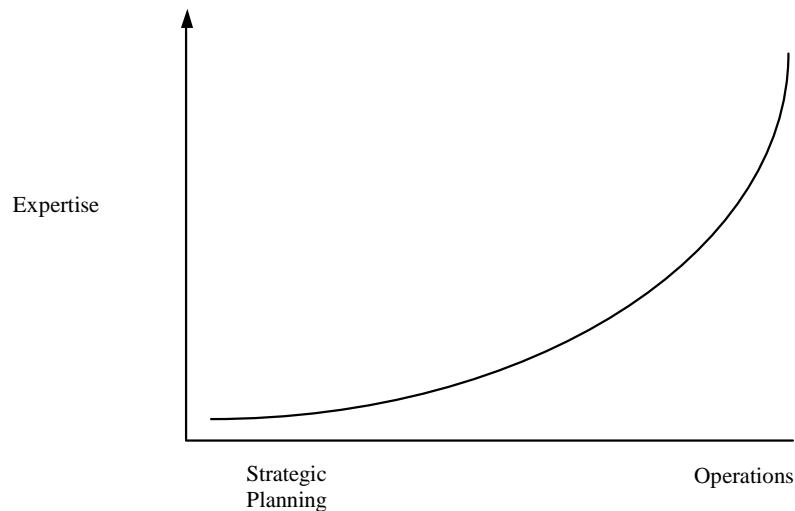


Figure 12 Staff Member Expertise

The above graph infers, that staff member’s expertise and experience lie mostly within the operational or practical side of the business.

The average staff member has very little time to think strategically as they are far too busy dealing with the moment to moment practical issues. Any issue not planned for from a strategic point of view, could have dire consequences if and when they do arise during the “normal” course of events.

Hence the success (or failure) of the business depends on how well these two groups interact with each other. If you were to overlay these two graphs, you will be able to find out just how “effective” the enterprise is. Figure 13 illustrates this point.

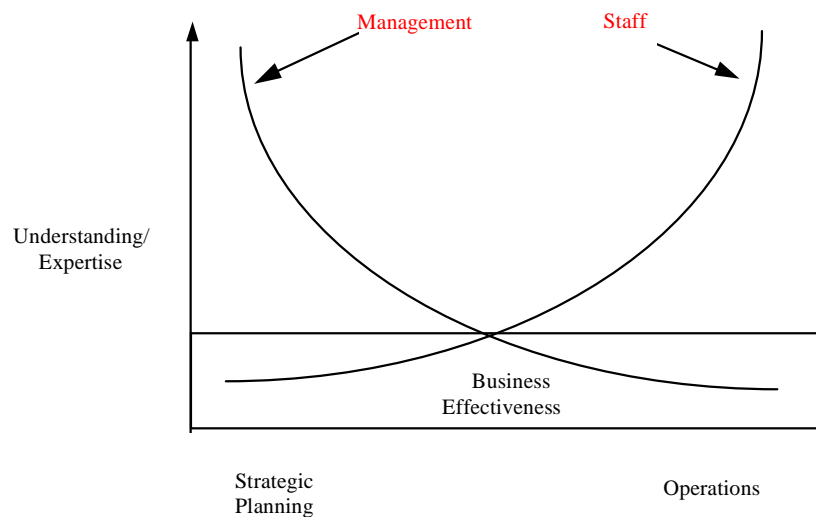


Figure 13 Business Effectiveness

The net business effectiveness can be determined by identifying the overall expertise within the business.

How then does one raise the effectiveness of the business?

Well, you can either:

1. Teach management how to do the jobs of their workers, or at very least get them to appreciate what is really involved;
2. Teach workers how to think;
3. Automate as much as you can, as quickly as you can.

If you stop and think for a moment, ask yourself the following question - "Where did management come from in the first place?".

Surely all managers come from a "pool" of people. All managers must have "gotten their hands dirty" at some time in their career by actually "doing something". Even if it was only for a short time. There are some managers that got there through their parents money and influence. Or there are those that simply rode rough shod over all and sundry by lying and cheating.

Returning to point 1 above, it is not practical to try to get management to "do" too much (physically). It will not pay real dividends in the long run. There is nothing wrong with management actually going to "where the action is" and doing some "real physical work" once in a while.

Point 2 would be far more effective, however, the technique of achieving this would be extremely important.

Point 3 would need the co-operation between management and staff. Putting us back to the problem we started with. That is how do you bridge the communication gap between these two groups.

Figure 14 illustrates how the effectiveness of a business can be raised by teaching the importance of Strategic Planning to staff members.

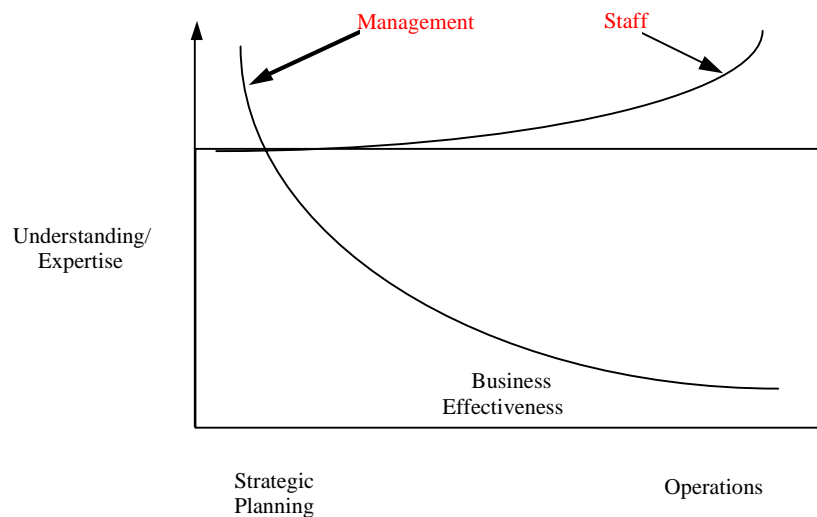


Figure 14 Increased Business Effectiveness

To achieve this result, the business had better be sure that the techniques chosen to teach the workers about Strategic Planning are fast, thorough and yield accurate and quality results. You do not want to spend weeks or months trying to achieve this. Nor do you want to spend a fortune.

Let us now assume that the above is achieved. In most cases it is almost imperative that the results of the Strategic Plan be converted in some form of automotive system. This is because the sheer size of the task of improving the business will dictate that some form of automation is required.

By the time this realisation is reached, the business will have achieved the understanding and the co-operation between management and staff.

To this end, the business may require some form of Information Technology expertise. Whether the business uses its own resources or outsources the work, will depend on further analysis.

If your interest lies in small business and you are not interested in Information Technology, skip the following section and proceed to Book 1, Part 2.

2.3 Information Technology Expertise

This section will address one of the major factors affecting the effectiveness of computer systems.

The following graphs plot the expertise of the User (the collective term for both management and workers) against their knowledge of Information Technology and Business Intellect.

Figure 15 illustrates the resultant level of expertise for the majority of Users.

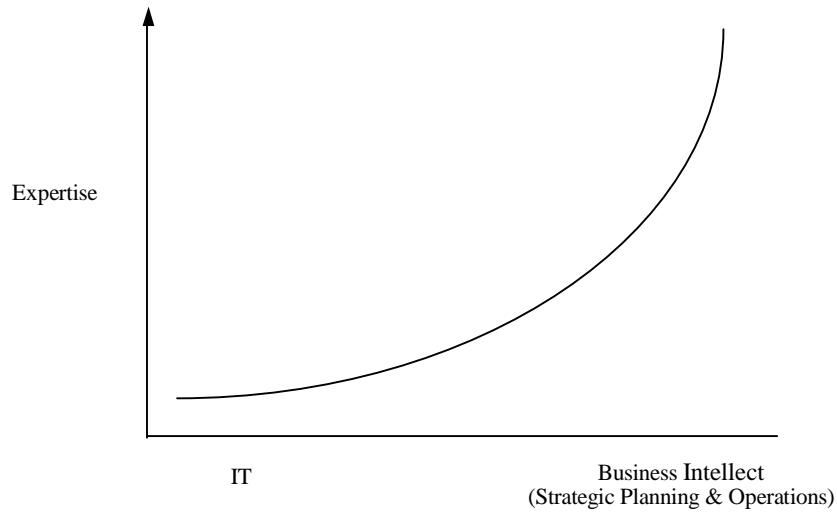


Figure 15 User Expertise In Information Technology

As can be seen from the above graph, most Users have little (if any) real knowledge of IT. Some Users even have trouble just finding the on switch.

Some Users have the notion that all they have to do is press a button and their weeks' figures will miraculously appear. Smart Users ensure that they have some Information Technology person available on call whenever they need some piece of information. This however, can end up causing the User more problems than they expected. They may have created themselves a “Minder” without whom they cannot operate effectively.

IT professionals on the other hand, have little (if any) knowledge of the business they are trying to automate (see Figure 16).

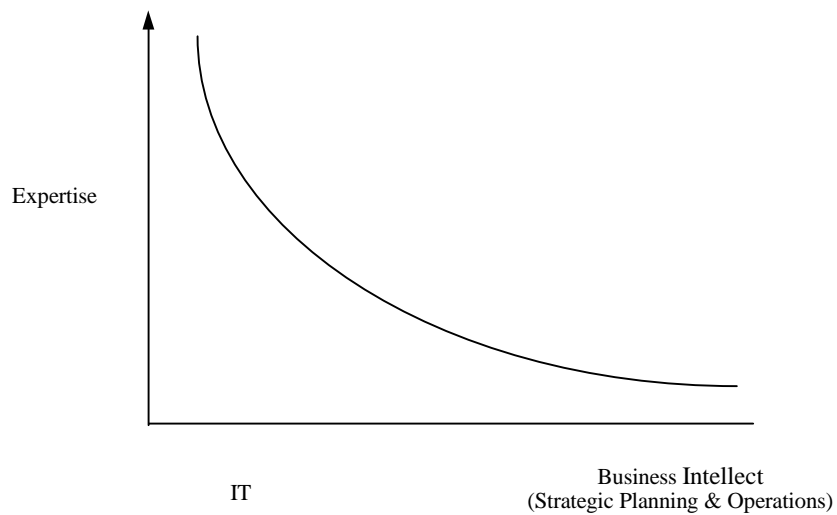


Figure 16 Information Technology Professional Expertise In The Business

Figure 17 endeavours to depict the effectiveness of involving Users and Information Technology Professionals in a Joint Development exercise.

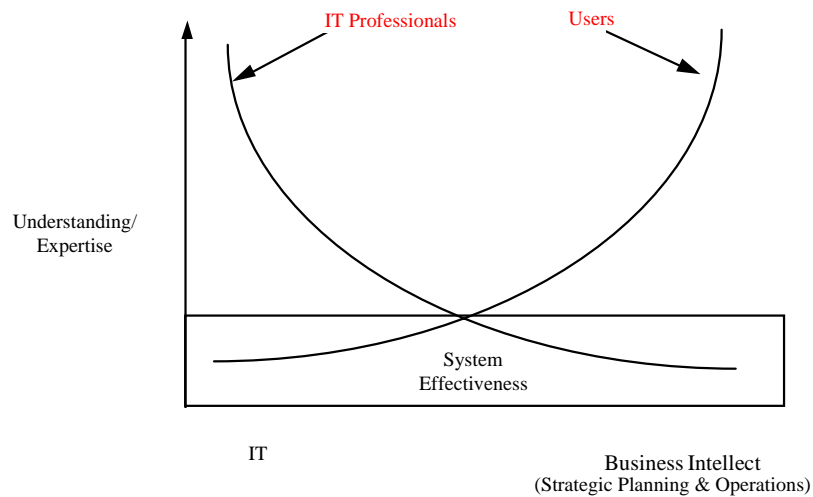


Figure 17 System Effectiveness

The net effectiveness of the system depends on the common level of understanding of the participants.

To raise the level of System Effectiveness you can do one of three things:

1. Increase the User's expertise and understanding in IT;
2. Increase the Information Technology Professional's expertise and understanding of the business;
3. Outsource IT.

Point 1 above will take a very long time to achieve (and what happens to the business in the meantime). There has been a mad rush by hardware and software vendors to "win" the minds of management by creating the illusion that computers are easy to use.

Computers are a necessity but there is a need for caution. There have been a number of well-documented cases where computers have led to the quick demise of businesses. There have also been cases where without the computer, the business would not have survived.

There is a fine balance between these two extremes. That balance must be attained if any business is to survive.

Point 3 above would not help in the short term. Just think of all the effort involved in trying to give an outside organisation a detailed picture of your business in order for them to automate it. If you purchase a package, think of all the training you will need in order to use it. Think about the fact that the package may end up running your business, rather than the business dictating the way the package works.

This leaves Point 2 as the only workable solution.

Figure 18 illustrates the net result of Point 2.

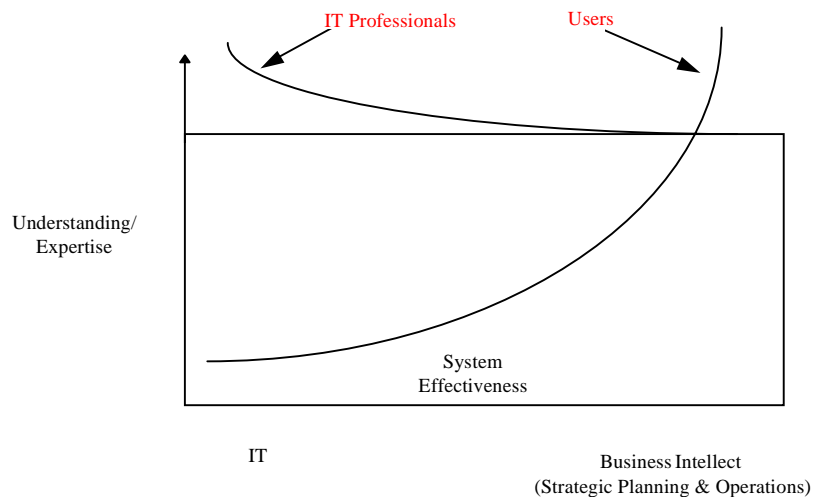


Figure 18 Increased System Effectiveness

To achieve this result, the enterprise had better be sure that the techniques chosen to teach the Information Technology Professional about the Business are fast, thorough and yield accurate and quality results.

Unless the gap that exists between business users and computer literate people is (rapidly) bridged, millions of more dollars, pounds, lira, yen (etc) will be wasted on systems that do not deliver what they promised.

“Why is this so?”.

The answer lies in the kind of role models we have established and the kind of methodologies we have developed and used. Thus far, each decision maker has been presented with only part of the problem. Hence the leaders employ “experts” to solve only that part of the real problem.

What we should realise however, is that everything we think, do or say, affects everything else. So how do we “get the big picture” without spending too much time effort and money?

Methods employed by the professional consultants have evolved over a number of years. Some have yielded fairly good results and some extremely poor results. The fact of the matter is that each time a failure occurs, was the lesson learnt. Will the consultants find another way to overcome the shortcomings of their technique? Or has the fact that they have expended millions of dollars on automating their approach stop them!

To resolve this problem, there is no way that we can go back to the past and rectify a wrong decision. Equally, if we do not become part of the solution, but continue to be part of the problem, nothing will ever be solved.

So, what role should Information Technology play in the business and how should it be managed?

2.4 Managing the Information Technology Resource

The Information Technology group usually comprises highly trained, computer literate people who speak mainly “computer-ese” and little, if any “business-ese”. Hence the gap between Information Technology and the Business User is usually a gaping chasm.

The following diagram illustrates a typical Information Technology Department:

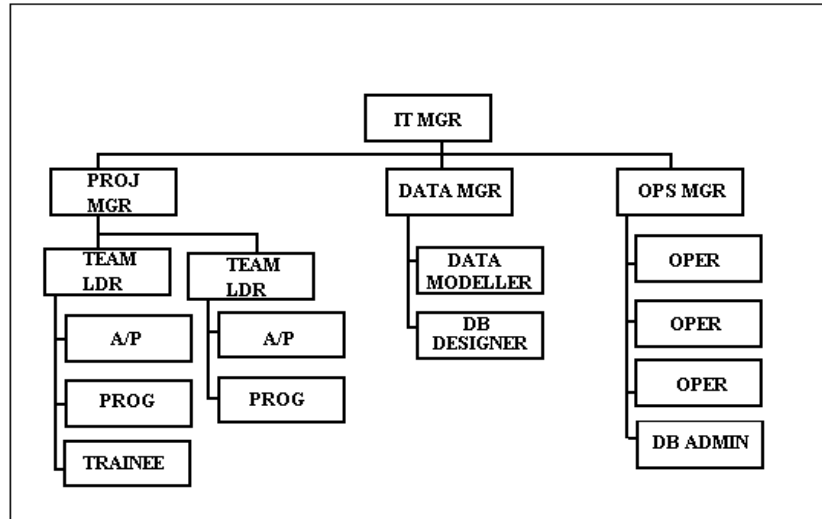


Figure 19 Information Technology Department

As can be seen from the above illustration, the entire Information Technology Department Structure is staffed with people talking “computer-ese”.

Now some of you will be ready to cry out, “but our IT Department is not like that. We involve our business users in every facet of the system design by holding Joint Application Design (JAD) sessions.

Have you not considered that what you are trying to develop is a “Business Analyst”! What better way than to take a business user and teach them a bit of “computer-ese”. After all it would take longer to put an IT professional into the business world and try to teach them “business-ese”.

So we end up with an MIS Department structure.

The problem is still there! In fact, the gap may widen because the business user, “seconded” in such a manner may object to being treated in such a manner. Indeed, a number of businesses have lost highly experienced users through this inane approach.

Network Structure

Let us now look at a business that chooses a network structure in an attempt to manage the resources of its minds.

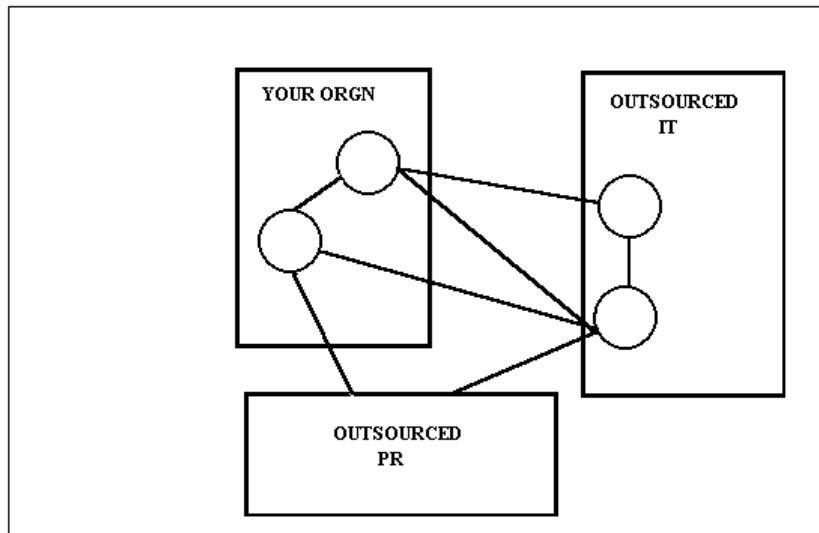


Figure 20 Network Structure

The approach taken by a network is to “contract out” or “out source” a number of activities. However the ultimate responsibilities and decision making still remain with the business operators themselves.

The networking approach enables smaller businesses to avoid the huge costs of hiring in-house staff and buying, renting or leasing expensive resources (eg computers etc).

However, the need to communicate the business needs is still there. The fact is that it is more imperative that the vision of the business is fully understood by the outsourced people.

SECTION 3

The Other Resources of Businesses

Businesses do not only comprise of the human element. The following illustration is an example of the other contributing factors to the success (or otherwise) of a business.

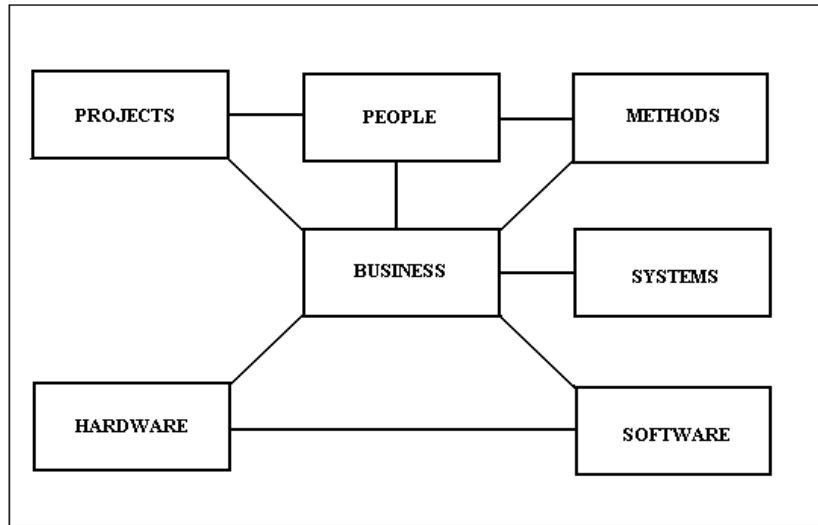


Figure 21 Business Components

This book is not intended as a guide to “Project Management”, nor as a buyer’s guide to what hardware and software a business needs, nor what systems will provide the best solution for the business.

This book is more than that.

This book is about a method to align all the parts mentioned above into a cohesive and seamless structure that simply works (or works simply).

SECTION 4

Managing the Business Structure

Businesses have become far too sophisticated to function without some form of automation. History has taught us that the industrial revolution grew out of the need to provide more people with more goods.

Unfortunately, as more and more tasks are automated, the need to learn how to build better machines and how to operate them create new problems. In most cases, the ability of the person needing a new tool to tell the toolmaker their exact specifications, often led to the building of:

1. The incorrect tool;
2. A useful tool;
3. The exact tool.

A computer is nothing more than a tool. The software that drives the computer is nothing but a tool. There is ample written evidence as to the success rate of developing systems to meet user's exact specifications.

This section will provide you with a better solution to help resolve the communication gap between business users and computer professionals.

It may get rather technical for some readers. However, when you complete it, you should have a better understanding of RIPOSE.

A wise person once said "Function Monitors Structure". Another way of looking at this is that a Function expressed as a Design leads to the emergence of a Structure.

What we now need is a "Way" or "Method" to achieve this transformation. A number of eminent authors and philosophers have written about and developed Methodologies to explain this transformation.

The following illustration shows the functions of a business and the level for which business each user is responsible.

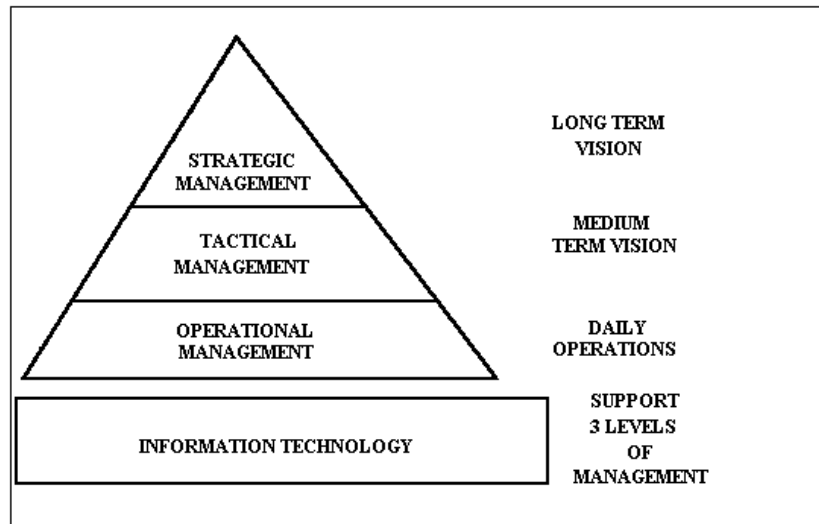


Figure 22 Managing a Business

Strategic management is any business user responsible for the long term future of the business. We understand strategic management to be:

- Directors and Chief Executive Officers;
- Government Ministers and Deputy Ministers;
- Shadow Ministers and Deputy Ministers;
- Secretaries in the Public Service.

Tactical management is any business user responsible for the mid term future of the business. We understand tactical management to be:

- Middle Management
- Members of Parliament
- Deputy Secretaries in the Public Service

Operational management is any business user responsible for the day to day survival of the business. We understand operational management to be:

- Line Management and Staff Members;
- Political Party Staff and Supporters;
- Supervisors and Staff in the Public Service.

Information Technology Management is responsible for providing the automated support for the business.

Unfortunately, senior management has had to prematurely scrap a number of multi million dollar projects because the systems developed would not have supported the business. They were Information Technology solutions to the business problem and not a business solution.

In some cases, Information Technology tried to market their solution to other businesses. Ask yourselves the following questions:

1. Is Information Technology in the business of delivering systems tailored for the business it supports?
2. Is the Information Technology department of a business in the business of selling the system it develops to the business' competitors?
3. Should the business organise itself to suit the Information Technology department?
4. Should the Information Technology department be of service to the business or a profit centre of the business?
5. Should the business purchase a solution (package) developed by an outside Information Technology organisation?

Does this mean that businesses should scrap IT?

Not at all! Businesses have become far too sophisticated to ever get by without the computer. It is almost akin to suggesting that we close all the supermarkets and return to the corner grocery store. The sheer size of the population will prevent this from happening.

As a problem between business users and the Information Technology professional lies in the area of communication, then that is where we have to find the solution.

The next illustration shows how the Strategic Management, MIS and Information Technology professionals can use a common approach to narrow the communication gap between them.

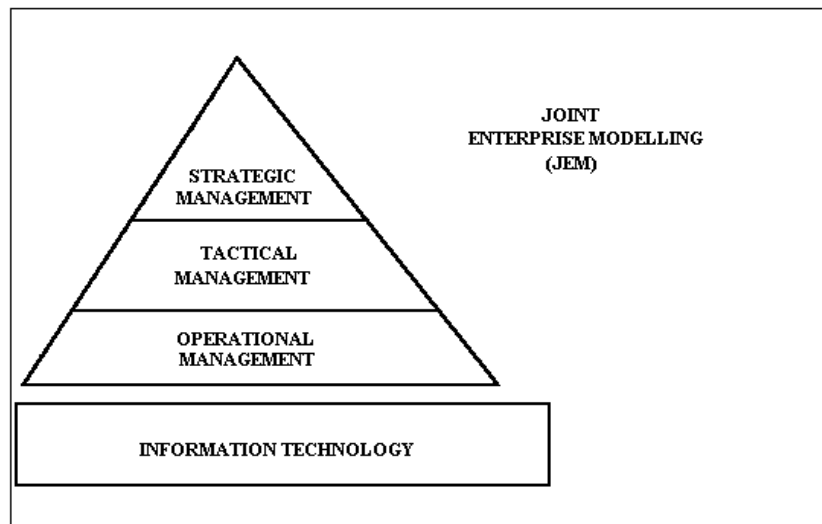


Figure 23 Information Technology Supporting Senior Management

Joint Enterprise Modelling can be achieved by bringing together strategic management, tactical management and a key person from either the MIS or Information Technology department (called an Information Administrator) for a single 3 hour session. During this time the attendees will identify, define,

agree upon and document the business' goals. Refer to Part 2, Chapter 1 for details.

The next illustration shows how Tactical Management, MIS and Information Technology professionals can use a common approach to narrow the communication gap between them.

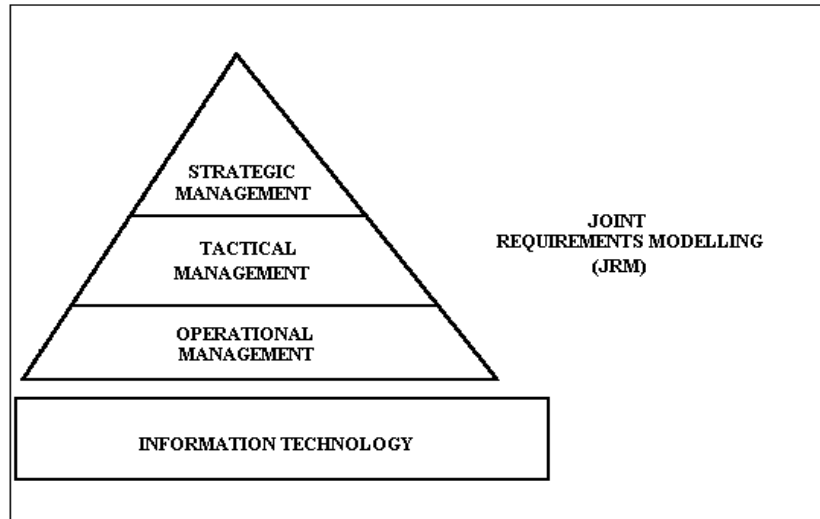


Figure 24 Information Technology Supporting Middle Management

Joint Requirements Modelling will reduce the effort of delivering business solutions by up to 50%.

Joint Requirements Modelling is accomplished as follows:

1. Identify the tactical management responsible for overseeing each particular goal;
2. Bring these managers, relevant business analysts and the Information Administrator together for a number of 1 - 3 hour sessions. These sessions help identify, define and document the Key Performance Indicators (KPIs) for each prioritised goal. Refer to Part 2, Chapter 2;
3. The business analysts and information administrator will get together for a number of 1- 3 hour sessions. These sessions help identify, define and document the information classes needed to support the KPIs. Refer to Part 2, Chapter 3;
4. Repeat steps 2 and 3 until they have documented sufficient information classes. The business analysts and information administrator will then get together for a couple of half day sessions. These sessions use the information classes to help identify, define and document the relationships between the information classes as well as the relevant business functions. Refer to Part 2, Chapter 4;
5. On completing step 4, the information administrator and systems analysts get together for a couple of half day sessions. These sessions use the business functions and information classes to help identify, define, document and prioritise the business systems. Refer to Part 2, Chapter 5.

The next illustration shows how Operational Management, MIS and Information Technology professionals can use a common approach to narrow the communication gap between them.

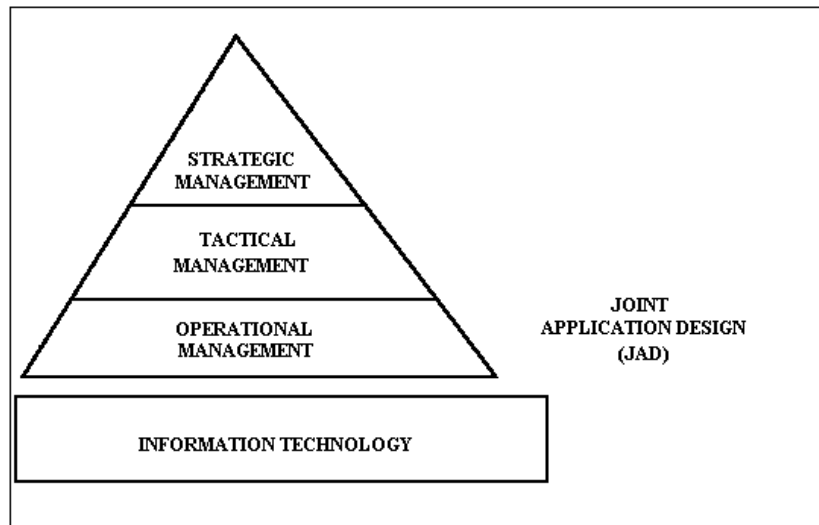


Figure 25 Information Technology Supporting Operational Management

Joint Application Development can be accomplished as follows;

1. Further analysis of each prioritised system is undertaken by a systems analyst together with the relevant business analysts. The purpose of these sessions is to identify, define and document the facts (or data) that supports the existence of the information classes thus creating an Entity. Refer to Book 2 Part 1 Chapter 1;
2. A data base designer should now be able to design a number of alternate data base designs. Refer to Book 2 Part 1 Chapter 2. (The data base designer could use the RIPOSE software to design these alternative designs);
3. In a joint session comprising the information administrator, business analysts, system analysts, the data base designer and the data base administrator, the most suitable data base design will be selected. Using a Computerised Aided Software Engineering (CASE) tool, the selected data base design will be transformed into the physical data base;
4. System analysts, together with the operational business users will map out the necessary business processes;
5. The Information Technology department's programmers will use a CASE tool to rapidly transform the above processes into application programs.

SECTION 5

Time frame to deliver promises

If you were to follow the RIPOSE life cycle, then the following illustration shows a typical time frame for the deliverables mentioned in Section 4:

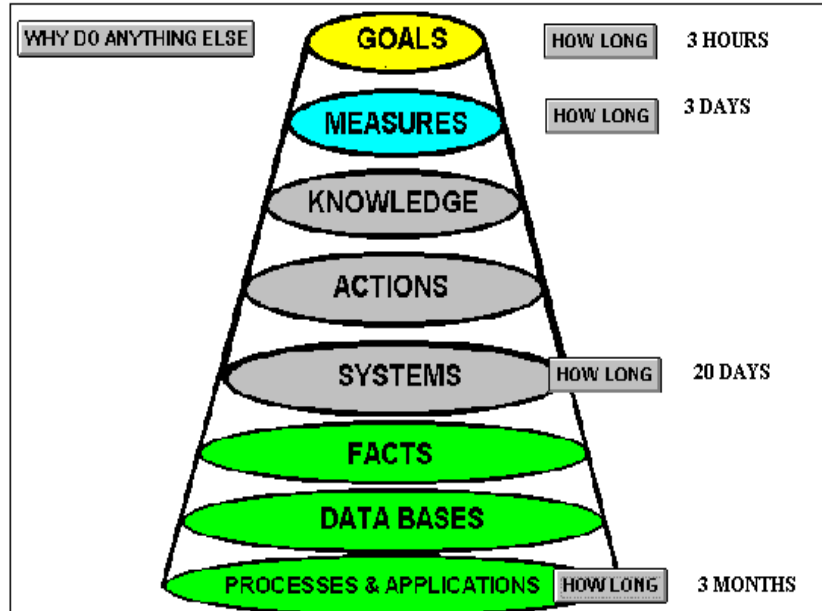


Figure 26 RIPOSE Timeframe

As the above illustration says, “Why use anything else?”.

For those readers who wish to explore alternate approaches, please read APPENDIX 1. For those who feel that RIPOSE will produce the deliverables suggested, please turn to Book 1, Part 2.

PART 2 CONCEPTS FOR A BETTER FUTURE

CHAPTER 1 GOALS

The topic of goals and goal setting has been addressed by a number of eminent people. The following technique is an attempt to isolate the key components of their work and to explore a simple yet efficient method.

In order to get these concepts across, it has been necessary to divided this chapter into the following sections:

1. Cycle of Opportunity;
2. Cycle of Success;
3. Cycle of Failure;
4. Rebuilding the Cycle of Success;
5. Goal Identification;
6. Goal Priorities.

SECTION 1 Cycle of Opportunity

What is the one thing we all have in abundance that no one can take away?

The answer to that question is 'our ability to think'. With this ability, all things are possible. Without it, nothing is possible.

Given this ability, what we do with it provides each one of us with a potential to do just about anything we want.

POTENTIAL

Potential gives us the capacity to hope and the possibility to achieve. The potential energy stored up in ourselves can be an awesome force.

However, potential alone will not do much for us, what we need to do is to put that potential into action. That is we need to change the potential energy into kinetic (movement) energy.

This concept enables us to start an equation that states:
Potential must lead to action.

ACTION

Action adds the movement to life. It is the kinetic energy mentioned previously. Action conjures up all sorts of pictures. These include work, play, exercise, practise, contest to mention a few.

The important thing is that once a potential has been developed, it must be put into action.

Once you get into action, the next thing that you will expect to happen is getting a result.

Let us now extend the first equation (Potential leads to action) with the following:
Action yields results.

RESULT

By definition, a result is an outcome (expected or unexpected) achieved after some activity. Results do not just happen. They are made to happen.

Results may however be positive or negative. What is important is the ability to recognise the gift of the result and to learn something from it. Every result will assist you further.

What is important here is that any result will affect our attitude

Let us now extend the equation (Potential leads to action; Action leads to results) with the following:
Result affects one's attitude.

ATTITUDE

Attitude can be defined as the way we look at the world and the stance we take.

Attitude is also about how we feel about things.

What is important about our attitude is that has a direct bearing on our potential.

This now enables us to complete the equation:

Potential must lead to action, action yields results, result affects attitude, attitude changes potential.

The following illustration shows this graphically.

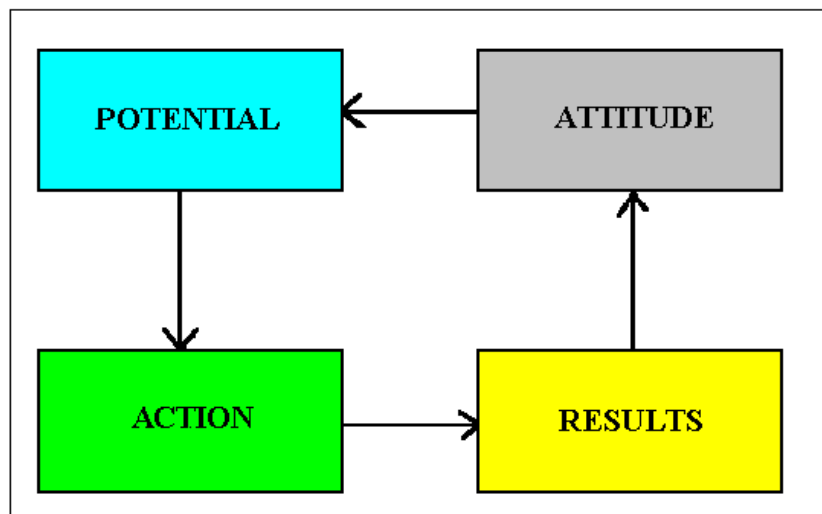


Figure 27 Cycle of Opportunity

What we now have is a cycle that enables us to increase our potential and hence improve our lot.

This is all very nice you may say, but where does it get us.

Wouldn't it be great if we were all given a guarantee that every opportunity would make us extremely wealthy, or happy or something. Unfortunately there are only 2 guarantees in life:

1. Death and
2. Taxes.

In addition, although countless books have been written on how you can "make it", most people end up no better off than they were before they started reading the "book". So what guarantee can this book give you?

Well none and yet some. The problem with most techniques is that they assume too much. Haven't we all spent a lot of time and money purchasing these books and attending courses which were designed to give us an edge over our competitors. Only to

find that all we got out of the course was more confusion and a lower bank balance.

Each method teaches you a new skill and with this skill you are more able than you were before you started. Some people drop out of the course too early or carry on too long. The problem is trying to find the balance.

This section of the book will give you another insight into how you can use the Cycle of Opportunity to at least identify what problems lie ahead.

SECTION 2 Cycle of Success

Let's face it, each and every one of us is striving for success (whatever success means). Before we can define what success is, let us look at a way of using the cycle of opportunity to create a cycle of success.

To begin the cycle let us plot the elements of the cycle of opportunity.

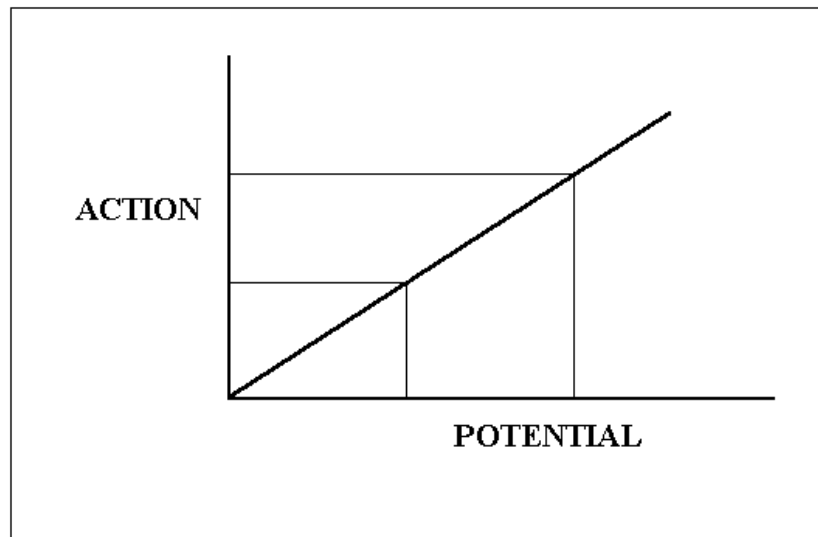


Figure 28 Potential vs Action

The above graph shows that if we increase our potential, we get an increase in activity. This may not however, be a straight line, it could be exponential. The higher the potential, the greater the activity. Do you remember how difficult it was when you first tried to ride a bike. You may have had some potential but very little action (apart from always falling over). As your potential increased, so did your activity, until you were able to throw away your training wheels.

Okay, so you have gotten into action, now what?

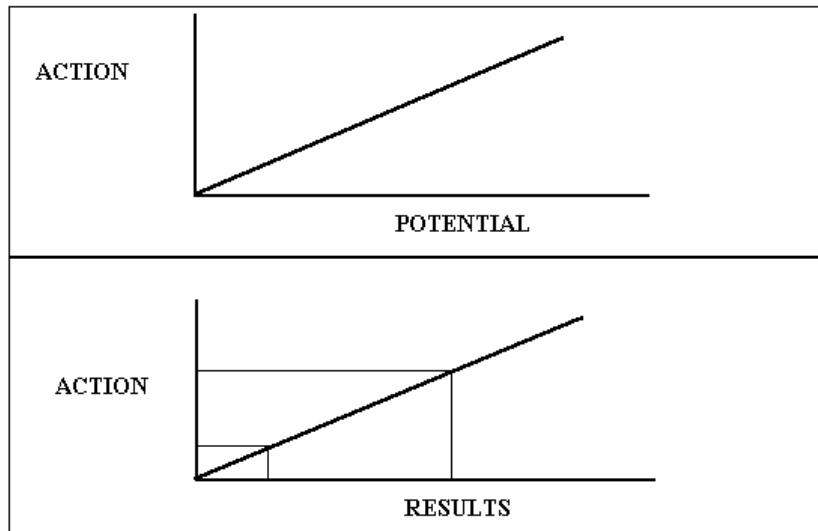


Figure 29 Action vs Results

If potential leads to action and action yields results, then the more we act the better (theoretically) our results will get.

If we take the example of riding a bike, then the more you ride, the better you get and hence you can ride further away from your home base. “Today around the block, tomorrow the Tour de France”. Well, not quite. Perhaps the local cycle race.

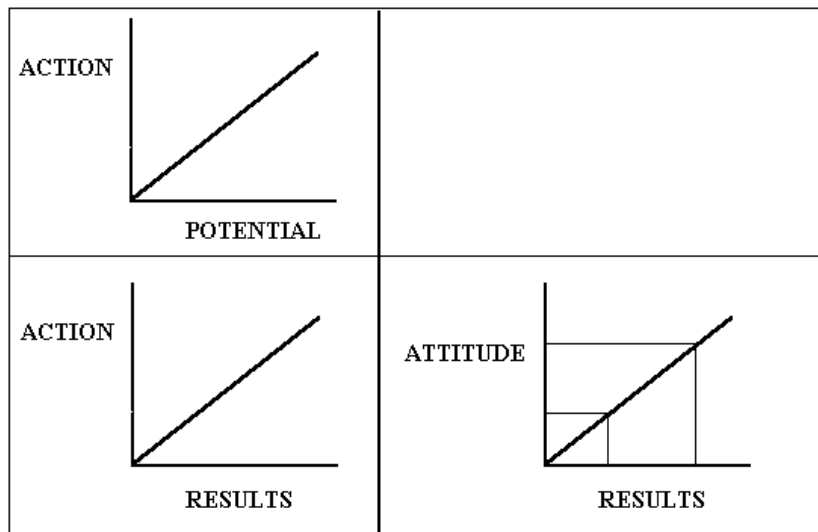


Figure 30 Results vs Attitude

If result affects attitude, then the better the result, the higher the attitude.

Imagine how you would feel if you entered your first cycle race and actually won!

Let us now plot our attitude against our potential and see what we come up with.

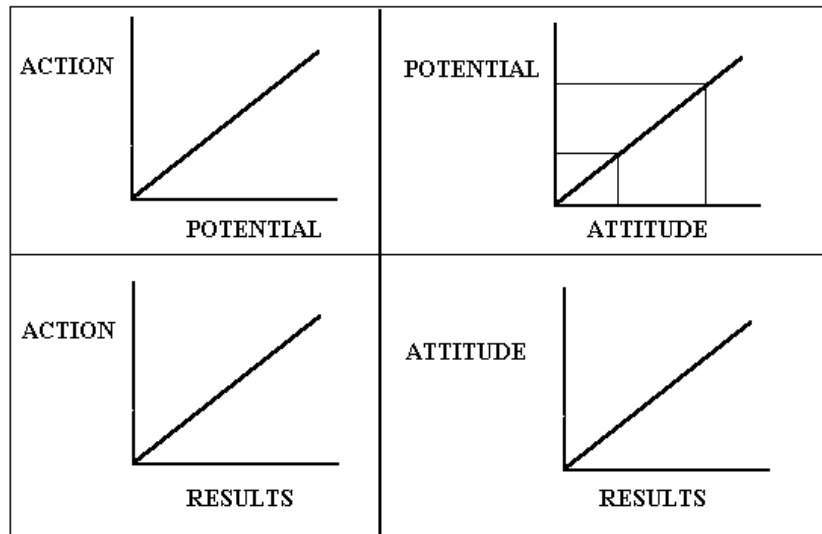


Figure 31 Attitude vs Potential

Finally as attitude changes potential, then an increase in attitude will bring about an increase in potential.

The feeling of winning your first cycle race will give you the energy to strive for the big one, the “Tour de France”.

Now let’s not get carried away you may well say. Things don’t always happen that way.

So what has gone wrong?

SECTION 3 Cycle of Failure

To find out what went wrong with the cycle of success, let us start our Potential versus Action graph in a slightly different way.

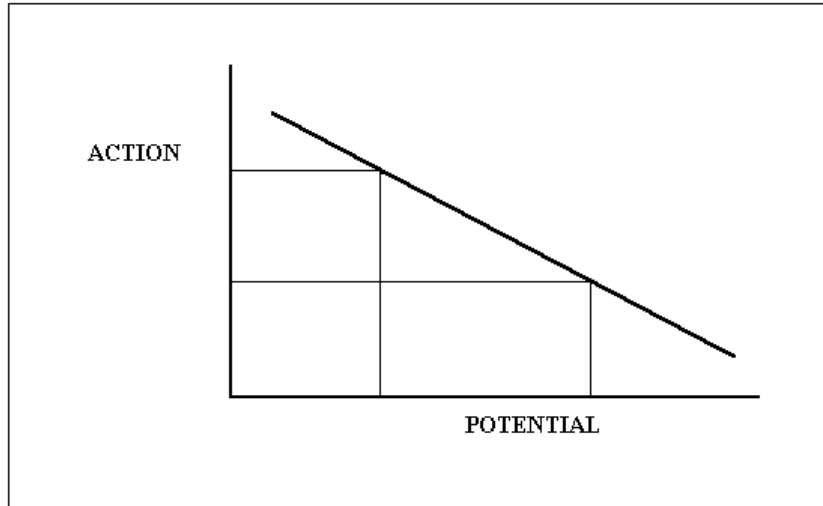


Figure 32 Declining Action vs Potential

What will happen if we restrict the activities of a person with a high potential?

What will happen if we increase activities of a person with little potential?

You only need to look at the next graph to find out what.

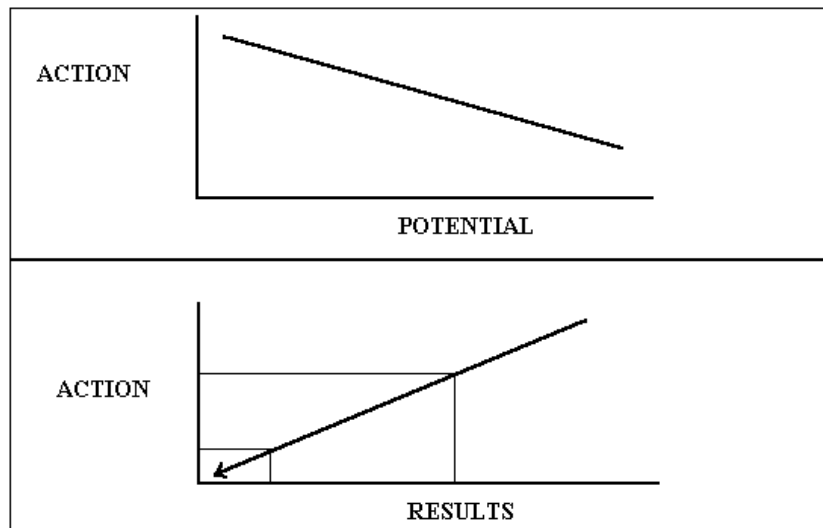


Figure 33 Negative Actions vs Results

For a person of high potential, being given little activity, their results will ultimately diminish.

For a person of low potential, being given a great deal of activities, their results may at first appear to increase, but in real terms their results will also diminish. That is unless you are able to increase their potential rather rapidly.

Let us return to the Tour de France. Imagine if you will winning a cycle race the first time they entered. Imagine being spotted by a talent scout, who immediately enters you into a major cycle race. With little potential, you cannot expect having any chance whatsoever of pulling off the big one.

So what happens to your attitude?

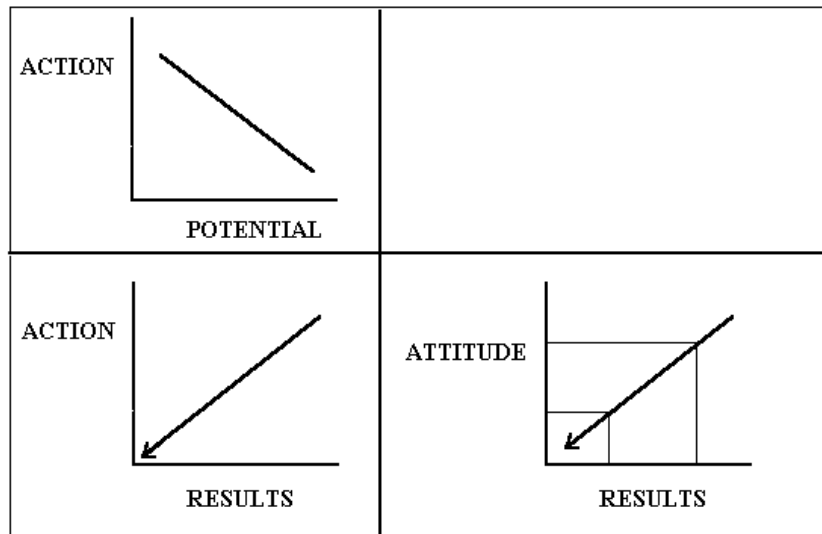


Figure 34 Bad Results vs Attitude

If result affects attitude, then the worse the result, the worse the attitude.

How will you feel after being trounced (or not even finishing) the big race?

Probably totally demoralised.

Finally what happens to your potential?

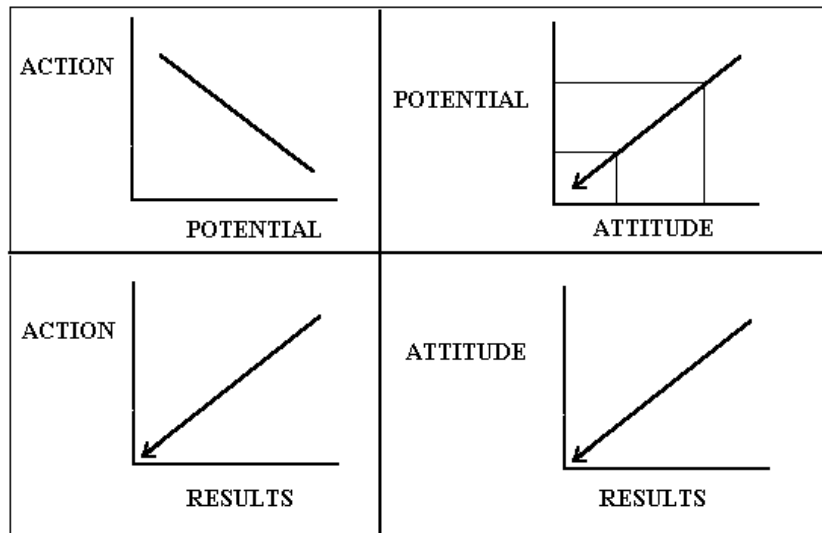


Figure 35 Negative Attitude vs Potential

You've guessed it, your potential will decline. What may have started out as a small potential could end up a basket case. The talent scout moves on to the next person. How can you get over this setback?

SECTION 4 Rebuilding the Cycle of Success

So how do you rebuild the cycle of success once you have suffered a failure. Well, you could tackle any one of the elements in the Cycle of Opportunity and try to improve on it.

Increase your potential:

Well, you could try increasing your potential. To do this you could learn new methods by reading the success stories of someone who won the "big race". You could take up an advance "riders" course.

You could end up as the most knowledgeable person who never won the "big one"!

Increase your activities:

Well, if increasing your potential doesn't work, how about putting in extra hours of work or training. If 5 hours won't do try 8, if 8 won't do try 16. Try taking on an extra job to supplement your income.

You could end up spinning out totally.

Increase your results:

You could enter a few lesser known races. You would eventually get better and better results. That could take a much longer time.

You could end up getting worse results.

Increase your attitude:

You could attend all sorts of motivation courses, or hire a personal coach.

Be careful they do not end up with your money and you end up with another bad experience.

Not a pretty picture and so early on in this chapter.

So, how do you break out of this dwindling spiral. Well, the answer is relatively simple. You have to start achieving **RESULTS IN ADVANCE**.

You can do this in one of two ways. Either you use visualisation to pull yourself through the hard times (motivation course stuff) or you change the words “results in advance” to a single phrase called **“GOALS”**.

SECTION 5 Goal Identification

Here is a simple definition for Goals. “A state to be in or a state to have”.

- How many goals do you think you need? One, 10, 50? How many?
- If you are setting goals for your family, how many goals would you need?
- If you are setting goals for a small business, how many goals would you need?
- If you are setting goals for a large business, how many goals would you need?

In 1956, George Millar published a paper in ‘The Psychological Review Vol 6 pp 81-97’ called “The Magic Number 7, plus or minus two: some limits to our capacity for processing information” [Rule of 7]. In this paper Mr Millar observed that most people had difficulty dealing with multiple chunks of information. Hence perhaps this gives us a starting point!

Remember back in Book 1 Chapter 1, we established that a business was composed of a number of minds, and that all these minds needed to communicate with each other.

What is now needed is the ability to achieve a coincidence of minds. In order to achieve this, the business’ goals must be readily understood by all.

If you are having trouble identifying the total number of goals you need, consider the following rhyme - “early to bed, early to rise makes you healthy, wealthy and wise”.

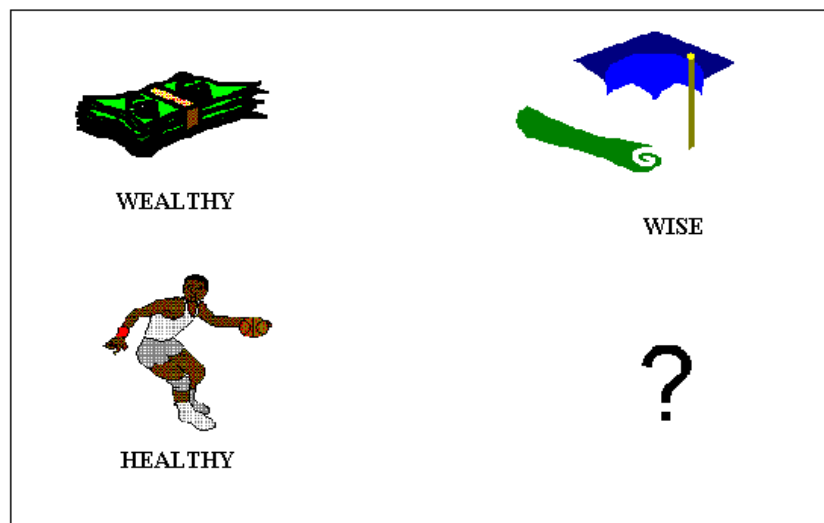


Figure 36 Goals

Would anyone object to the three states mentioned above becoming their goals?

Figure 36 shows these three goals (or missions), however there is one important omission. Could you identify the missing mission?

The following illustration shows the missing mission.

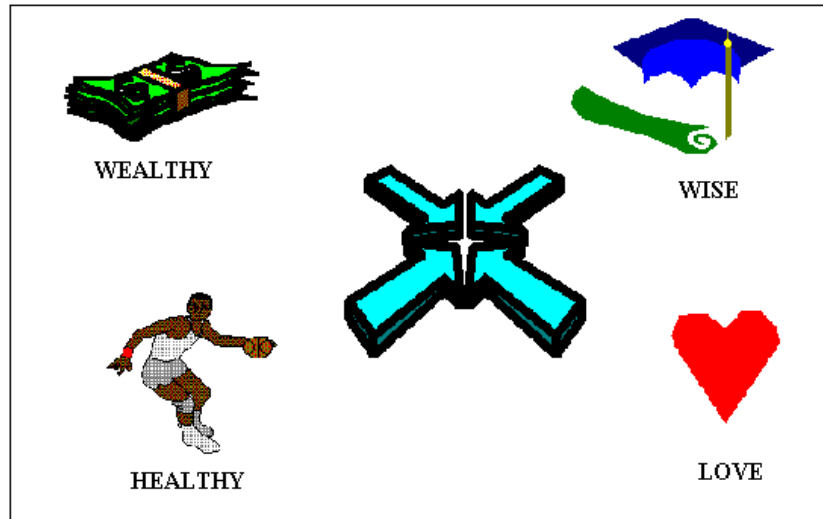


Figure 37 Missions

This may appear to be very simplistic, but it is a start. Before proceeding, let us define the word 'Mission' as: an assignment that is undertaken to fulfil a purpose.

Could you now name the purpose that these four mission statements support?

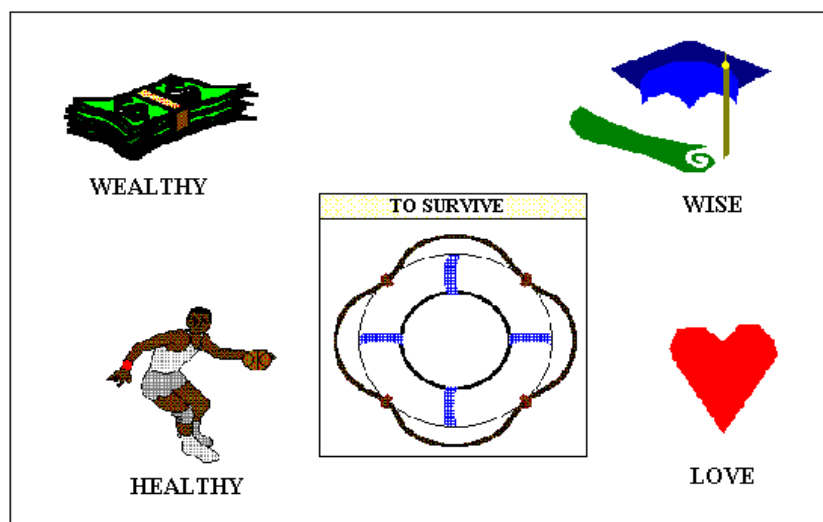


Figure 38 Purpose

From a business point of view, this may seem far too simplistic. So let us find a synonym for each of the above missions.

If we change Wealthy to Prosperity, Healthy to Robust, Love to Esteem and Wise to Perception. By taking the first letter of each mission statement, you achieve the following statement:



Figure 39 PREPare Your Goals

Before continuing, it is important that you understand the meaning of each word. To do this, you must be able to define the terms used. RIPOSE provides the following generic definitions:

SURVIVE:

To be capable of enduring and lasting the distance.

PROSPERITY:

To thrive and flourish.

ROBUST:

To be in good health; To be sturdy.

ESTEEM:

To be held in respect; To be judged highly.

PERCEPTION:

To understand fully; To have knowledge.

Is that all there was to goal setting? Well no, life would be far too simple. We need to identify a few more sub goals to support the mission statements.

So, if the prime goal is to survive and the missions to support survival is prosperity, robustness, esteem and perception, what components can each mission be subdivided? What name can we give to these components?

Firstly these components must assist us achieve our missions. Hence let us use the word “success” as a synonym for achievement. Secondly, these components need to play a vital

role in our success. Hence the name given to these components is a “Critical Success Factor” or CSF.

How many CSFs are there?

Before going on and identify the CSFs, let us identify the relationship between these 3 concepts and how together they characterise the concept of “Goals”.

The following illustration depicts the Anatomy of Goals.

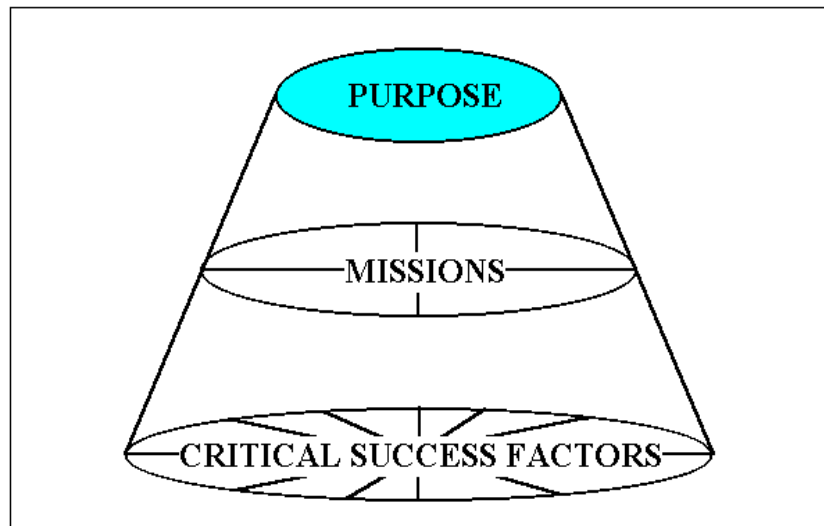


Figure 40 The Anatomy of Goals

Well, let us simplify matters and find out how many CSFs are required to support the Prosperity mission.

Why don't you write down what you think they should be and then look at the next illustration.

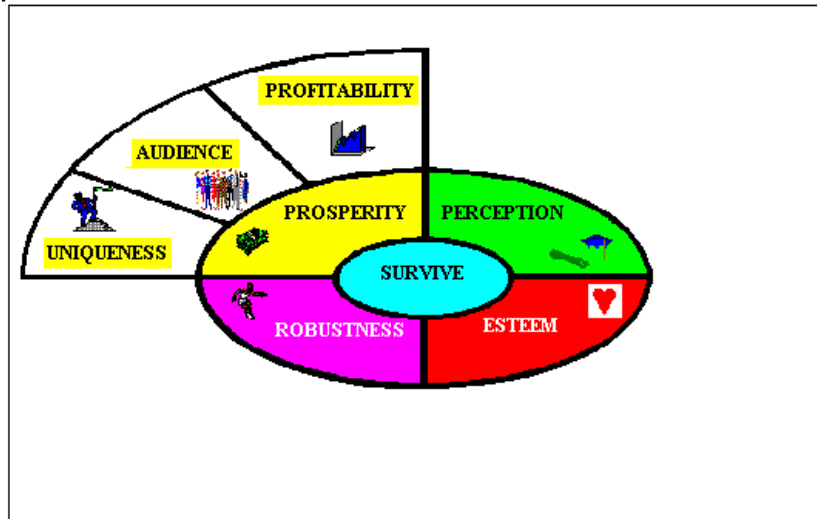


Figure 41 Prosperity Critical Success Factors

It is rather essential that you define each of the words used in the above illustration in your own words.

RIPOSE provides you with the following generic definitions. Whilst you may disagree with some of the definitions, the whole object of this exercise is to define the CSFs to satisfy your own requirements.

PROFITABILITY

To attain a return on investment expected by management and shareholders.

AUDIENCE (MARKET SHARE)

To acquire and maintain a specific share of the market place in which the organisation operates.

UNIQUENESS (COMPETITIVE EDGE)

To maintain a strong market position by monitoring both your own organisation and competitor's organisations

How many CSFs are needed to support the Robust mission?

The following illustration shows 3.

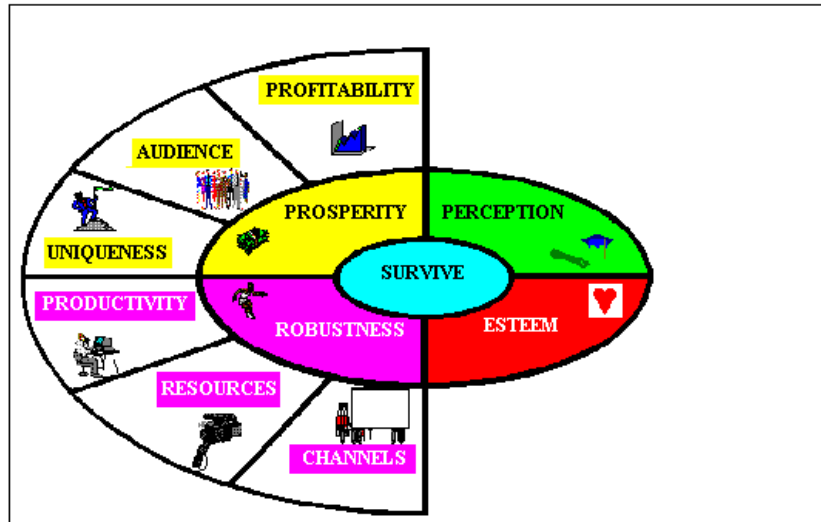


Figure 42 Robust Critical Success Factors

The following definitions have been provided:

PRODUCTIVITY

To ensure that the capacity of the organisation is geared to the ability to produce.

RESOURCES

To maintain the means of supplying all products and services that is needed at all times.

CHANNELS

To penetrate the market place with your particular products services and expertise.

How many CSFs are needed to support the Esteem mission?

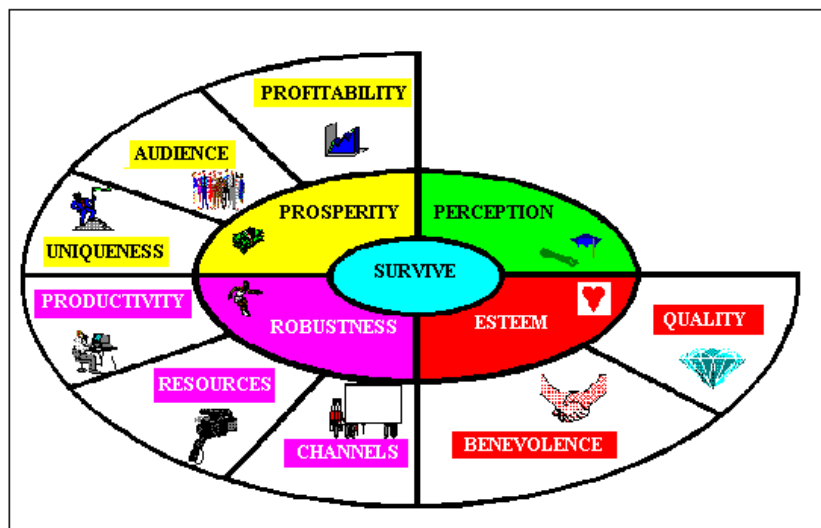


Figure 43 Esteem Critical Success Factors

The following definitions have been provided:

BENEVOLENCE

To be involved in charitable activities, eg donations, sponsorships etc in order to raise the profile of the organisation.

QUALITY

To ensure that the highest possible performing and most efficient products and services reach the market place.

How many CSFs are needed to support the Perception mission?

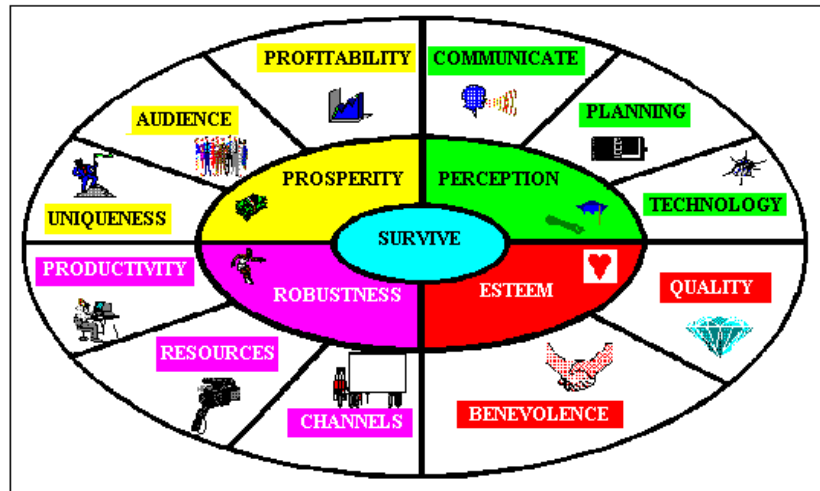


Figure 44 Perception Critical Success Factors

The following definitions have been provided:

TECHNOLOGY

To apply the latest techniques, eg methodologies, computers, communication equipment, etc.

PLANNING

To establish the methods or procedures by which things are to be done.

- Pro active - future events
- Reactive - Historic events.

COMMUNICATION

To enable the spread of information about the organisation's products and services

So there we have it! The 11 Critical Success Factors supporting the 4 Mission Statements which in turn support the Prime Purpose of all of us.

SECTION 6 Goal Priorities

Having identified the 11 Critical Success Factors, all that is left is to discover which one requires your urgent attention. This will require you doing a SWOT (strengths, weaknesses, opportunities, threats) analysis and the Critical Success Factor attracting the lowest value, is the one (or ones) needing attention.

A simple technique to help you achieve this is to decide on what you feel your “needs” and “wants” are.

Each Mission Statement is ranked out of 10. Hence the survival of a Business will be judged out of 40. To rank the Critical Success Factors for the Prosperity, Robust and Perception Missions, it is necessary to establish which Critical Success Factor you “**need**” the most.

Simply ask yourself ‘Do I **need** to be (insert the Critical Success Factor name), or do I **want** to be (insert the Critical Success Factor name)?’ The “**needed**” Critical Success Factor will attract a divisor of 4, the remaining Critical Success Factors, a divisor of 3. Note that “Benevolence” and “Quality” are both ranked out of 5.

The RIPOSE software supporting Goals and Measures, will enable up to 150 people to keep track of their latest ranking values. The RIPOSE software supporting the Knowledge base will support an infinite number of people.

If you are ranking more than 1 person, then the sum total of all rankings will reveal the weakest CSF.

As you establish the divisor, ask yourself the following question: “On the subject of (insert the Critical Success Factor name), how well do I think that I am doing at this moment?” You should only be interested in “now” and not “yesterday” nor “tomorrow”.

Rank your numerator as follows:

- If you feel that you are doing very well, give yourself a top marks ie give yourself a 5/5, 4/4 or 3/3;
- If you feel you are doing well, subtract 1 from the divisor, ie give yourself a 4/5, 3/4 or 2/3;
- If you feel you just breaking even, subtract 2 from the divisor, ie give yourself a 3/5, 2/4 or 1/3;
- If you feel that you could do better, subtract 3 from the divisor for the ‘needs’, ie give yourself a 2/5 or 1/4. Subtract 2 from the ‘wants’, ie give yourself a 1/3;
- For all other cases give yourself a 1/5 or 0/4 or 0/3.

When ranking your goals, please be as honest as you can. If you think it is bad, then accept it as bad. Do not however think it better than it really is.

Now some of you may be cringing to see the results, but remember that the whole purpose of ranking your goals is to find the weakness. Only then can you start to work on that Critical Success Factor that is causing you or your business the most harm.

The following illustration shows how someone may have ranked their goals. This person regarded Uniqueness, Productivity and Communication Critical Success Factors as their “needs”:

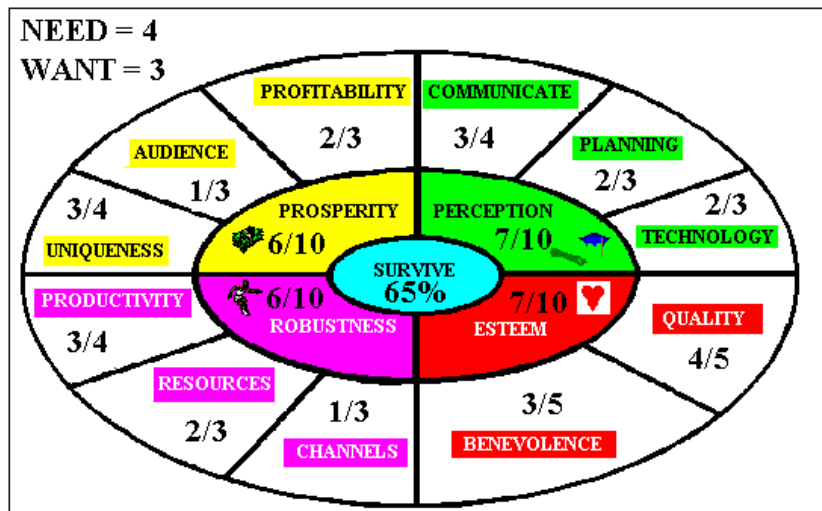


Figure 45 Ranking Critical Success Factors

When using the RIPOSE software, you will notice that when you have completed the Critical Success Factors, you will be faced with another set of factors. These are the Critical Failure Factors. RIPOSE does not want you to concentrate on these for any length of time. They are only there to provide you with another look at yourself or your business.

The following illustration shows the Critical Failure Factors:

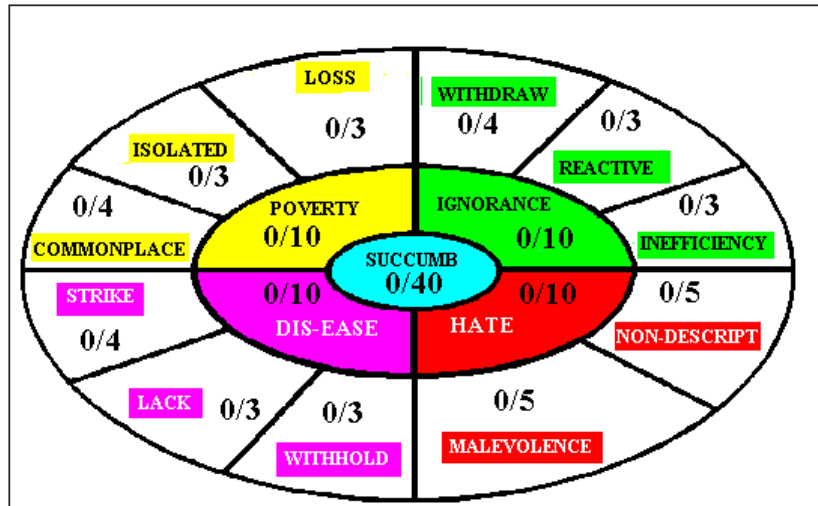


Figure 46 Ranking Critical Failure Factors

Any ranking you give the Critical Failure Factor, will affect the corresponding Critical Success Factor.

On returning to the Critical Success Factor screen, you will now have the final result of your ranking.

You will notice that the person has a 65% chance of surviving. You can regard anything better than 51% as acceptable.

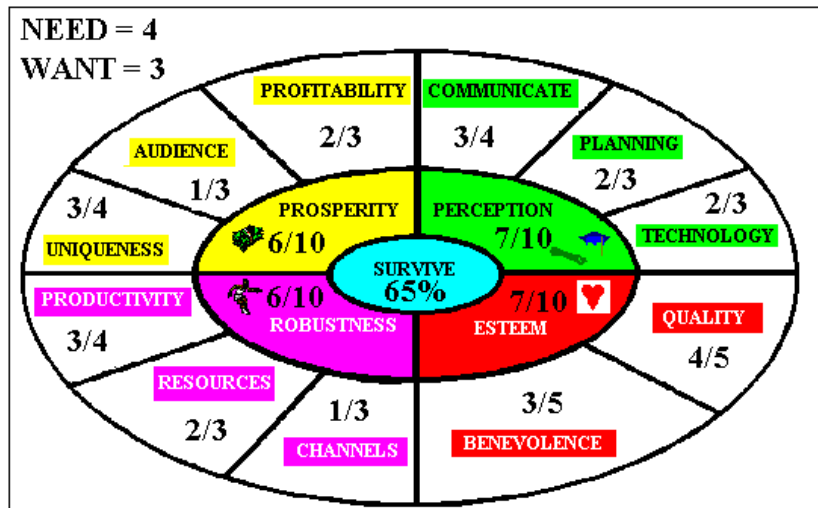


Figure 47 Strengths & Weaknesses

If you now look at the ranked Critical Success Factors you will rapidly identify the person's weaknesses, namely their 'Audience' ('Market Share') and 'Channels'. Both attracted a score of 1/3.

So which one do they need to address first?

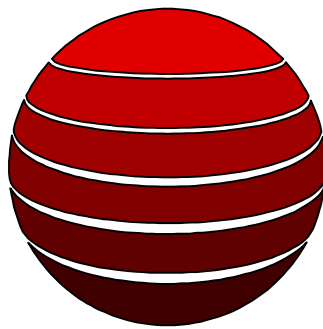
Rule of thumb:

Select the Critical Success Factor on the extremity as the weakest.

Using the above example, it can easily be seen that the 'Audience' CSF can be supported by 'Profitability' and 'Uniqueness', but 'Channels' is on the extremity. Therefore, if the person works on their 'Channels', they should be able to increase their 'Audience'. Hence they should find an increase in their "Survival" rating the next time they rank themselves.

You should rank yourself at least once a week. Or at very least, every time you complete some section of your project to improve your demeanour.

Each time you rank yourself or your business, consider yourself completing 1 cycle of the infinity loop. The next time round, you will shift the axis of the infinity loop by at least 1 degree. After 360 times round you will notice that you have created a sphere.



The next time you rank yourself, the infinity loop will increase its length and hence the sphere will begin to expand. The more times you rank yourself, or the more people who rank the business, the better the expansion for yourself or the business.

The Critical Success Factors are merely a reflection of your Potential. You need to get into some sort of Action (ie reading a book or identifying the measures to support the Critical Success Factors) before you will notice any Results (an improvement in your or your business' Survival).

Once you start to notice some Results, take heed of your Attitude and then watch your Potential increase!

What can you do to increase your rating?

If you are going on to look at RIPOSE's Measures, the answer will be found in the next Chapter. If this is as far as you are going with RIPOSE, then I've got the following advice:

Everyone needs just 2 things to grow:

- Ideas and
- Inspiration.

Having identified your or your business' weakness, where can you find ideas on how to improve the weakness? I'll bet that you will find a library or book store within your reach. There must be at least one book on the subject on the shelves.

For example if your Profitability is the weakest, then perhaps a book like "Think and Grow Rich" by Napoleon Hill will render you some service!

All you now need is the inspiration to obtain the book, read it and absorb the knowledge contained therein.

More than this I cannot do for you. You are indeed a unique person, capable of changing a concept into a reality.

I sincerely hope that you will be able to use RIPOSE to assist you with your future. Once you have started on the RIPOSE journey, I would very much like to hear how you are going.

CHAPTER 2 MEASURES

Measures are the gauges that indicate whether or not the Goal has been achieved. The major problem facing us is the number of measures that must be identified.

Before discussing measures, it is important to understand the concept of viewpoints and conflicts.

Viewpoint

Each one of us has a viewpoint on any number of subjects. That is, we each adopt a stance or an attitude on the subject matter. The more we learn, the more viewpoints we may develop.

The following diagram illustrates this idea:

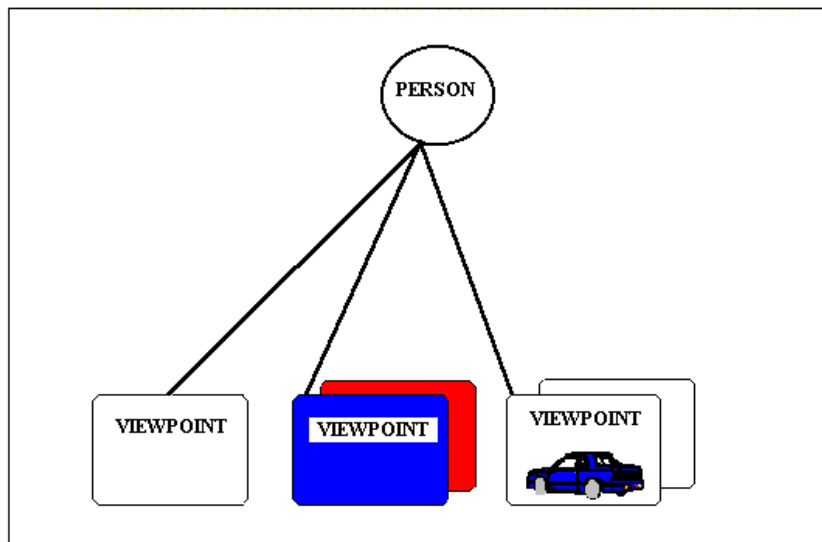


Figure 48 Viewpoints

This is of course the ideal situation. If we are capable of arranging all our viewpoints into a logical pattern, we will be able to breeze through life. Unfortunately, this is not always the case.

As soon as there is a disagreement with one of these viewpoints, a conflict will arise.

Conflict

Arguments will arise whenever two or more people are unable to agree on a given topic. Hence the phrase - we will have to agree to disagree. Indeed a person can even have an argument with themselves.

The following diagram illustrates a conflict:

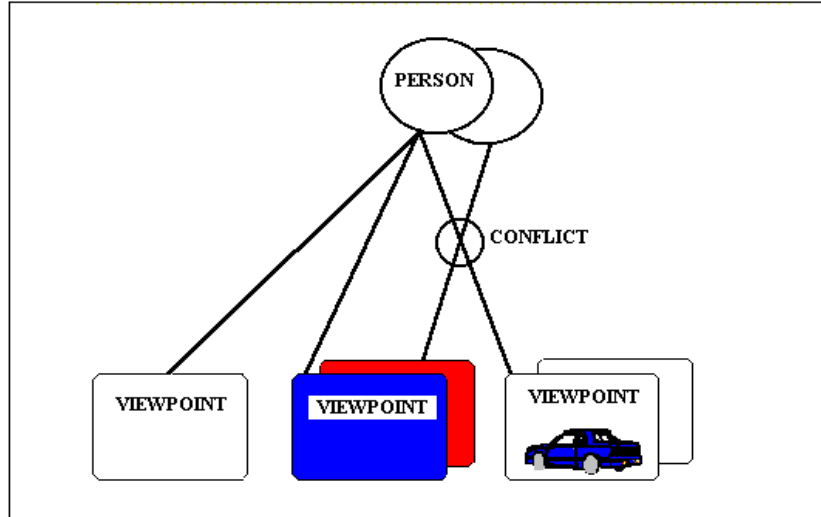


Figure 49 Conflict

Let us assume that viewpoint 2 represents our colour preference and viewpoint 3 our choice of cars. Now let us assume that your first choice of colour for your car is blue, but the sales representative can only offer you a red model. Immediately, a conflict exists. Unless you change your mind about your colour preference (ie the conflict is resolved), no sale will eventuate.

Whenever a conflict exists, very little or no creative activity can take place. Whenever a conflict exists, only destructive activities are possible.

Whilst this is a simplistic example, imagine this paradigm (or model) being extended.

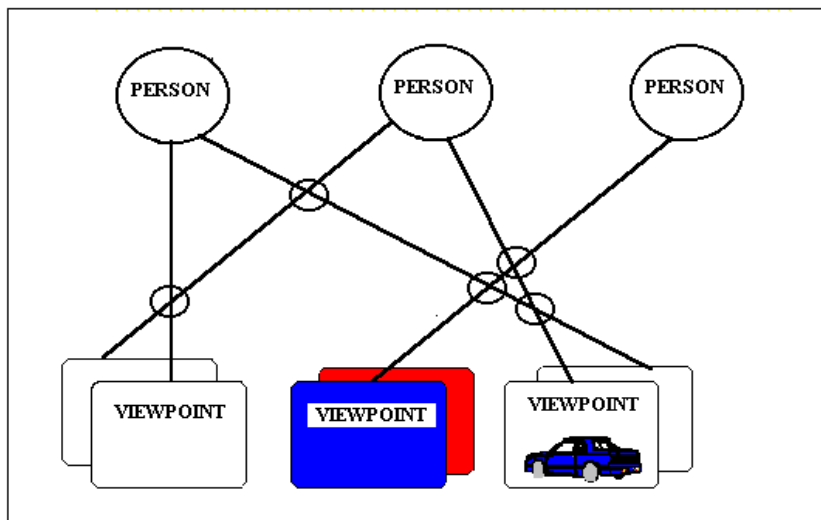


Figure 50 Multiple Conflicts

Technique

The method of resolving a conflict is to first isolate the viewpoint (or goal) which is causing the major trouble and define all the possible areas of conflict. These areas of conflict are basically the measures that need to be isolated and resolved.

There are a number of techniques available to accomplish this. These range from brainstorming, lateral thinking, conflict resolution to meditation and soul searching.

RIPOSE proposes that a measure is an 'indicator' that supports a goal and is key to the performance of the business.

Key Performance Indicators

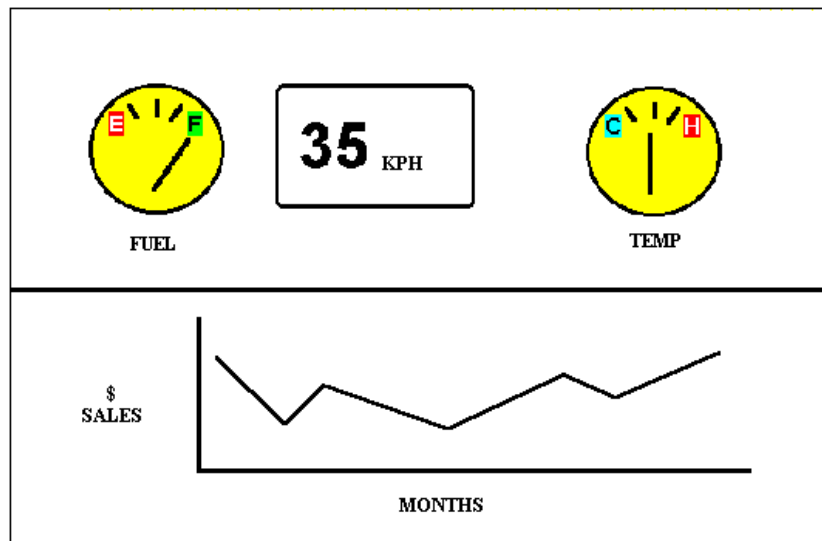


Figure 51 Key Performance Indicators

Whilst the Critical Success Factors never vary from business to business, the same cannot be said for the KPIs. Hence this chapter will only cover the technique that can be adopted to discover the KPIs.

Sessions should run for not more than 1 - 2 hours. As RIPOSE has already identified the problem (namely the weakest CSF) groups of people are able to focus on the key issues and not get side tracked by other issues.

The results of these sessions should be recorded in a central repository. For this purpose, the RIPOSE software has been made available.

As the Goal ranking exercise revealed the weakest CSF, that is the one you will need to address.

Consider the following poem, written by Rudyard Kipling:

I keep six honest serving men,
They taught me all I know
Their names are What and Where and When
And How and Why and Who

Let us use these six questions to flesh out the KPIs, however, let us arrange them slightly differently to the poem. Who, What, When, Where, How and Why.

Let us assume that Planning was your weakest CSF. Start the process by asking yourself or a group of managers the following question - “Who should be involved in planning?”

The answer should be a generic *statement of fact*, backed up by a description of the answer. For example the statement of fact may be called “Management Planning Responsibility” and the description may be “Planning must be carried out by all levels of management”.

How many words or sentences should be used to describe the KPI? Remember the “Rule of 7” (see page 39).

If you cannot describe the KPI in less than 7 sentences (plus or minus 2), then the KPI is probably too complicated and should be broken down further. In addition, the statement of fact should only cover one topic.

Let us assume that the group describe “Management Planning Responsibility” as *“Planning is the responsibility of all levels of management. Senior management must be made aware of their responsibilities for the long term survival of the organisation and hence set the strategic direction. Middle management must be made more responsible for effective tactics to support senior management’s strategies. Operational management must be responsible for the day to day running of the business and must support middle management’s tactics”*.

This single KPI could be sub divided into the following 4 KPIs:

- Management Planning Responsibility:
Description - Planning must be carried out by all levels of management
 - Senior Management Planning Responsibilities:
Description - Strategic planning addresses the long term vision of the organisation
 - Middle Management Planning Responsibilities:
Description - Tactics must be defined by middle management
 - Operational Management Planning Responsibilities.
Description - Day to day planning must be the responsibility of line managers

Let us now suppose that another KPI to support the - Who should be involved in planning? - question is:
Workers planning responsibilities.

The 4 previously defined KPIs can be used to include this KPI by adding one higher level KPI called “Planning Responsibilities”. The new KPI Hierarchy will look like the following:

- Planning Responsibilities
 - Management Planning Responsibility:
Description - Planning must be carried out by all levels of management
 - Senior Management Planning Responsibilities:
Description - Strategic planning addresses the long term vision of the organisation
 - Middle Management Planning Responsibilities:
Description - Tactics must be defined by middle management
 - Operational Management Planning Responsibilities.
Description - Day to day planning must be the responsibility of line managers
 - Work Place Planning Responsibility:
Description - Planning must be carried out by all levels of the work place

The group can now move on to the next question - What is planning? Or ‘What needs to be planned?’

Not every question will reveal a KPI so do not try to force answers.

If insufficient KPIs are discovered, try combining questions.

For example, if you combine the ‘Who’ and ‘What’ you may come up with a question - ‘Who is responsible for what phase of the planning cycle?’.

The KPIs thus discovered, could either start a whole new KPI hierarchy, or could be integrated into an existing KPI Hierarchy. The rule of thumb is that each CSF should be supported by 7 (plus or minus 2) first level KPIs. Each first level KPI can be supported by 7 (plus or minus 2) second level KPIs and so on. Some KPIs may need to be sub divided into 7 (plus or minus 2) lower levels.

The important thing about KPIs is that they provide the focus mechanism that will be needed for the next step. Hence, if the KPI is too generic, the Knowledge base to support the KPI will be too generic. This does not mean that you have to get into too much detail. Be guided by the “Rule of 7”.

The following is a list of questions you may wish to use:

LEVEL 1	LEVEL 2	LEVEL 3
WHO	WHO AND WHAT	WHO, WHAT AND WHO
		WHO, WHAT AND WHEN
		WHO, WHAT AND WHERE
		WHO, WHAT AND HOW
		WHO, WHAT AND WHY
	WHO AND WHEN	WHO, WHEN AND WHO
		WHO, WHEN AND WHERE
		WHO, WHEN AND HOW
		WHO, WHEN AND WHY
	WHO AND WHERE	WHO, WHERE AND WHO
		WHO, WHERE AND WHY
		WHO, WHERE AND HOW
WHO AND HOW	WHO, HOW AND WHO	
	WHO, HOW AND WHY	
WHO AND WHY	WHO, WHY AND WHO	
WHAT	WHAT AND WHEN	WHAT, WHEN AND WHERE
		WHAT, WHEN AND HOW
		WHAT, WHEN AND WHY
	WHAT AND WHERE	WHAT, WHERE AND HOW
		WHAT, WHERE AND WHY
	WHAT AND HOW	WHAT, HOW AND WHY
WHAT AND WHY		
WHEN	WHEN AND WHERE	WHEN, WHERE AND HOW
		WHEN, WHERE AND WHY
	WHEN AND HOW	WHEN, HOW AND WHY
WHEN AND WHY		
WHERE	WHERE AND HOW	WHERE, HOW AND WHY
	WHERE AND WHY	
HOW	HOW AND WHY	
WHY		

CHAPTER 3 KNOWLEDGE

Information Modelling

Information modelling is a technique of creating a “blue print” of the information needs to satisfy the KPIs.

Information Modelling Conventions

Information Requirements can be best expressed in terms of objects required to support the KPIs. It can be expressed in graphical terms or in textual terms. Either way, it is the definition and the constructs of the model that is important, rather than the presentation.

This can therefore be analogous to the architect’s blueprint of a building or a flight simulator used to train pilots. Try to build a building without a blue print and the results could be unacceptable to the client. Try to train a pilot to fly a sophisticated plane without the aid of a simulator and the results could be disastrous.

The Information model is built by using a number of basic building blocks, these will be defined in their relevant section.

Entity Types

An Entity is the knowledge about anything supported by a number of facts. It can also be regarded as the information required to support the User Requirement Statements.

Entities are basically nouns or gerunds (a noun formed from a verb), singular in nature and written in CAPITALS.

Examples: EMPLOYEE, MOTOR VEHICLE, CITY etc

In order to build a composite representation of the knowledge base, a number of different entity types will be required.

NOTE: Entity types should not be confused with the Entity itself. For example, an EMPLOYEE is an Entity, its type could be Untyped Dependant. Each type of Entity can be graphically displayed if required.

Fundamental

A Fundamental Entity is one that is not a subset of any other. Basically it is a homonym (one word meaning different things) without being a synonym (many words meaning the same thing). Looked at in another way, it is a super-set that is not a subset.

These are further subdivided into three categories.

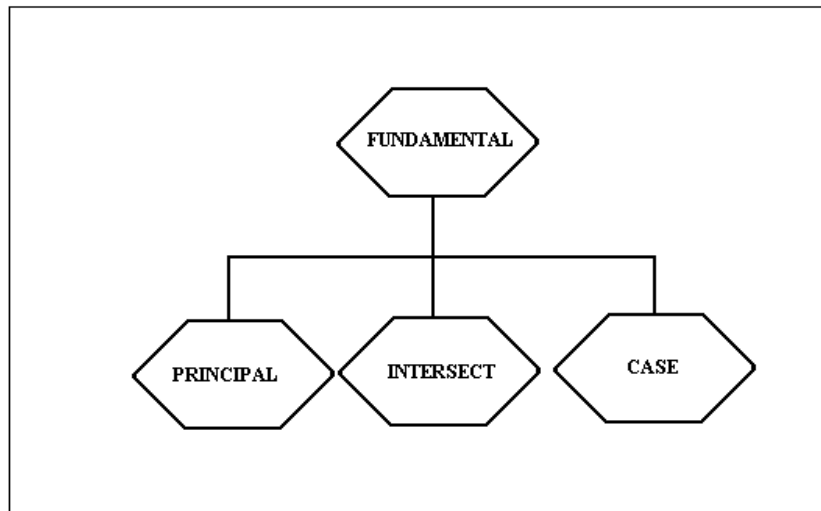


Figure 52 Fundamental Entity Types

RIPOSE assumes that 22 Fundamental Entities exist. For definitions of the 22 please refer to Generic Information Classes.

Principal Fundamental

A Principal Fundamental Entity does not depend on any other Fundamental Entity for its existence.

For example: an IDENTITY exists irrespective of any other Entity.

Intersecting Fundamental

An Intersecting Fundamental Entity is one that depends on another Fundamental Entity for its existence.

For example: A SUPPLY entity exists if and only if one can identify the IDENTITY providing an OFFERING.

Case Fundamental

A Class Fundamental Entity is one that provides types, examples and conditions.

For example: A CLASSIFICATION defines all the types and codes needed by an organisation.

A RULE defines all the conditions and a TRANSACTION defines examples or instances.

Secondary Entity

This is a subset of a Fundamental Entity. It can also be a super-set of further subsets.

Two rules can be applied to these

RULE 1: A Secondary will inherit the properties of its super-set (Fundamental or Secondary).

RULE 2: Rule 1 may not apply to a Functional Entity.

For an expanded view on properties see Attributes.

Secondary Entities can be further sub divided.

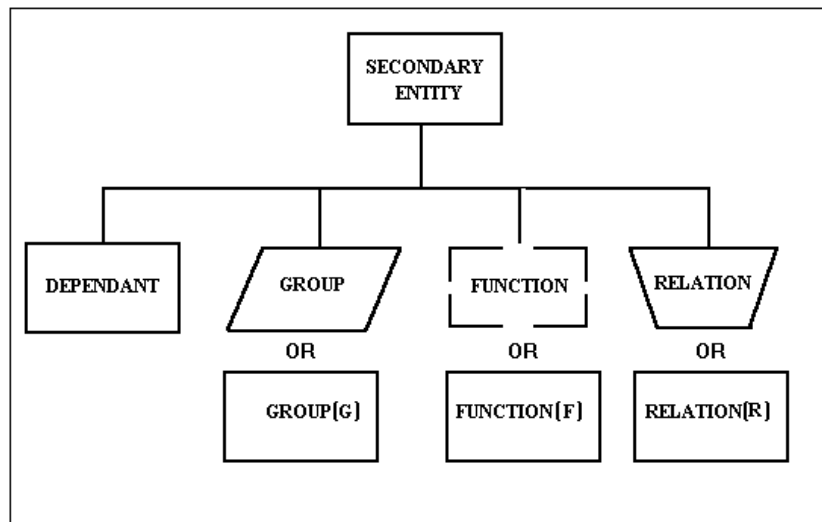
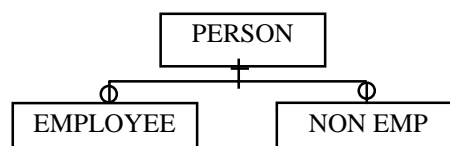


Figure 53 Secondary Entity Types

Mutually Exclusive Secondary

This means that a super-set Entity can be either one of its subsets or another. It cannot be more than one at any time.

For example: A PERSON can either be an EMPLOYEE or a NON EMPLOYEE, but not both. Both the EMPLOYEE and the NON EMPLOYEE must be a PERSON. (See Associations for further clarification)



Typed Dependant Secondary

This is a subset that has subsets of its own.

For example: A PERSON could have subsets EMPLOYEE and NON EMPLOYEE. (See above example)

Untyped Dependant Secondary

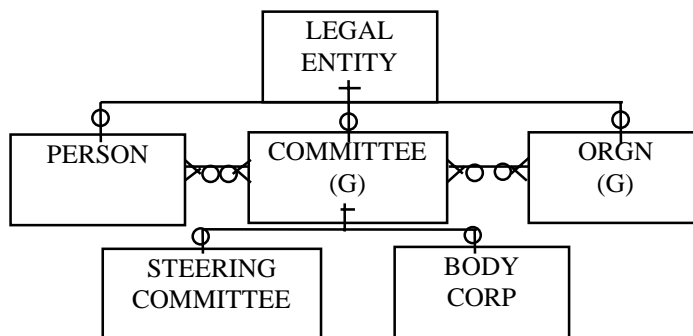
This is a subset that has no subsets of its own. After further analysis an Untyped Dependant could become a Typed Dependant

For example: An EMPLOYEE could have no subsets

Typed Group Secondary

This is a subset that has its own subsets but is itself composed of other peer level subsets. Note that the (G) denotes that the Entity type is a Group.

For example: A COMMITTEE is a subset of LEGAL ENTITY, which has its own subsets (eg STEERING COMMITTEE, BODY CORPORATE) and could be made up of PERSON and/or ORGANISATION. A PERSON may sit on many COMMITTEES.



Untyped Group Secondary

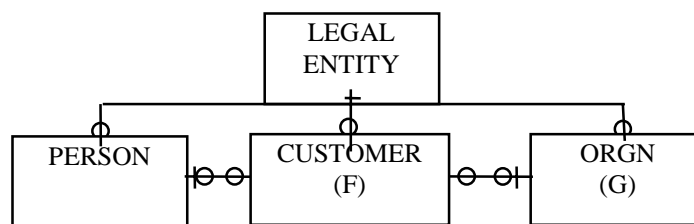
This is a subset that has no subsets but is itself composed of other peer level subsets. It may, after further analysis become a Typed Group.

For example: A BODY CORPORATE that could be made up of PERSON and/or ORGANISATION

Mutually Inclusive Secondary

This means that a super-set Entity can be composed of more than one of its subsets.

For example: A LEGAL ENTITY may be either a (PERSON or ORGANISATION or COMMITTEE) as well as being a CUSTOMER. Hence an ORGANISATION may also be a CUSTOMER, a PERSON may be a CUSTOMER or a COMMITTEE may be a CUSTOMER.



The Mutually Inclusive may inherit none or some of the properties of its super-set. The only property it must inherit is the primary key.

Mutually Inclusive Entities could also be discovered during Data Analysis under the following circumstances. If any Selection or non key Attribute appears to want to exist in two or more Entities, then there is every likelihood that a Mutually Inclusive Entity can be created to resolve the conflict.

For example: If the attribute '\$ balance outstanding' is required in the ORGANISATION Entity as well as the PERSON Entity, then a Mutually Inclusive Entity called CREDITOR could be created into which the '\$ balance outstanding' attribute could be placed.

Typed Functional

This is a Mutually Inclusive Entity that has subsets of its own.

For example: It may be expedient to subdivide CUSTOMER in SMALL CUSTOMER, MEDIUM CUSTOMER or LARGE CUSTOMER.

Untyped Functional

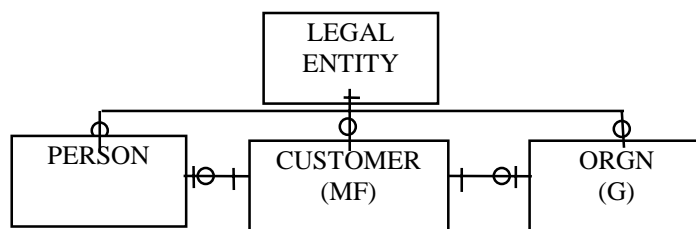
This is a Mutually Inclusive Entity that has no subsets. After further analysis it may become a Typed Functional.

For example: It may be expedient to subdivide CUSTOMER in SMALL CUSTOMER, MEDIUM CUSTOMER or LARGE CUSTOMER.

Mandatory Mutually Inclusive

This means that a super-set Entity must be composed of more than one of its subsets.

For example: A LEGAL ENTITY may be either a (PERSON OR ORGANISATION OR COMMITTEE) but must also be a CUSTOMER. Hence an ORGANISATION must also be a CUSTOMER, a PERSON must be a CUSTOMER or a COMMITTEE must be a CUSTOMER.



All other properties of the Mandatory Mutually Inclusive Entity are the same as for the Mutual Inclusive.

Relation

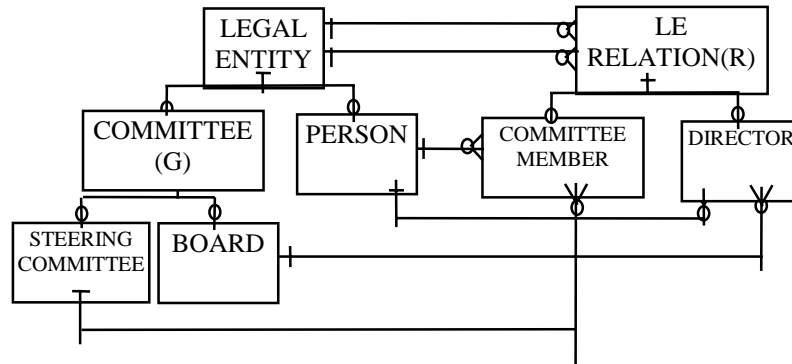
This provides the capability to associate any super-set's siblings with one another. Prior to having a Relation type Entity, ensure that at least one Group Entity type exists.

For example: LEGAL ENTITY RELATION will enable a COMMITTEE to comprise of many PERSONs and a PERSON to sit on many COMMITTEEs.

Typed Relation

This provides the capability of sub-typing a Relation Entity.

For example: A LEGAL ENTITY RELATION could be sub-typed into COMMITTEE MEMBER and DIRECTORSHIP. Whereby the COMMITTEE MEMBER relates a PERSON to a COMMITTEE and the DIRECTORSHIP relates a PERSON to a BOARD OF DIRECTOR



Untyped Relation

This is a Relation Entity that has no subtypes. Like all Untyped Entities, it may become Typed after further analysis.

Association

The Association describes the relationship that exists between two Entities. It establishes the business rule governing the existence of the Entities. The relationship between two Entities is further expanded by:

1. The degree of the Association;
2. The nature of the Association.

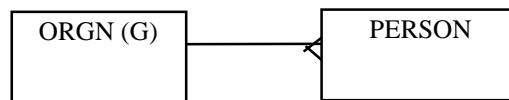
Degree of Association

This defines the number of times one Entity is related to another.

One to Many

This denotes that one Entity can have a relationship with multiple instances of another Entity, whilst the second Entity in the relationship can only ever be linked to one of the first.

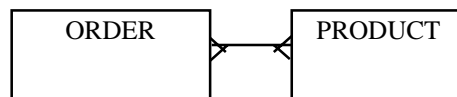
Example: An ORGANISATION may employ many PERSONS



Many to Many

This is indicative of a Repeating Attribute (or Group) appearing in both Entities.

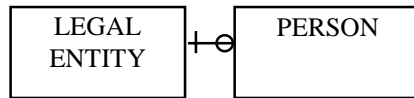
For example: If an ORDER can have **many** PRODUCTS and a PRODUCT can appear on **many** ORDERS then the primary key of PRODUCT will repeat in the ORDER Entity and the primary key of ORDER will repeat in the PRODUCT Entity. This would mean having to apply the 1NF Rule.



The RIPOSE Generic Model has already resolved all Many to Many relationships.

One to One

This is usually reserved for super-set or subset relationships.



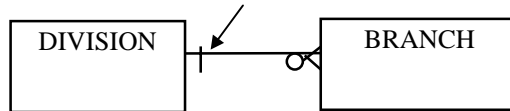
Nature of Association

This governs the existence of the relationship.

Mandatory

This is used to denote that a relationship must exist.

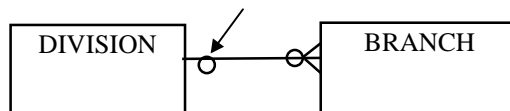
For example: If a relationship exists between DIVISION and BRANCH and a DIVISION must have at least one BRANCH, then the division# in the BRANCH Entity must be mandatory.



Optional

This is used to indicate that a relationship may occur.

For example: If a relationship exists between DIVISION and BRANCH such as a DIVISION has many BRANCHes but a BRANCH does not have to have a DIVISION, then the division# in the BRANCH Entity must be optional.



Optional Becoming Mandatory

This indicates the existence of the subordinate Entity could depend on one and only one of its parents.



In the previous example, the existence of a CUSTOMER (MF) depends on the existence of either a PERSON, or an ORGANISATION and not both. Furthermore, some indication (attribute) must exist to ascertain whether the parent of the CUSTOMER is a PERSON or an ORGANISATION. This attribute can be called a 'file-switch' and could have the value of '1' if the CUSTOMER is a PERSON or '2' if the CUSTOMER is an ORGANISATION.

If you do not fully understand the concept behind the (MF), please re-read the section on Mandatory Mutually Inclusive (page 62).

Generic Information Classes

In order to design a composite picture of the major information requirements, it is essential for management to ask the correct questions. This will ensure that the correct answer(s) can be found. (A wise person once said “There are no stupid questions. Only stupid answers.”).

Asking the right answer at the right time, does not always lead to the right answer at the right time. Sometimes, the same question has to be asked over and over again. In some cases, you will have to be content with the first answer that comes up. There may not be enough time to get the right answer.

What happens if the answer is wrong? It may only take one wrong answer to totally destroy a business. Unfortunately there appears to be no “guaranteed” right answer.

Wouldn't it be great if the correct answer could be obtained first time round. This is probably “Utopia” to some people.

Finding the right answer, may simply depend upon everyone understanding the question. If the question can be simplified, perhaps that would help. Trying to find a simple answer to a complicated question, is almost as inane as trying to find a complicated answer to a simple question.

Further, if you could anticipate just about any question being asked, then you could come up with a series of generic answers. These generic answers would need to be refined for some questions, however, at least you would have a starting point.

So, how many questions do you think you would need to ask?

You have already encountered them when fleshing out the Key Performance Indicators (see Chapter 2, Measures Page 53).

Examples:

QUESTION	SPECIFIC ANSWER	GENERIC ANSWER
Who does your business deal with?	People, other businesses	IDENTITIES
Who deals with your business?	People, other businesses	IDENTITIES
Who are you?	A person	An IDENTITY
What does your business sell?	Products and Services	OFFERINGS
What do you buy?	Products and Services	OFFERINGS
What does your business pay you?	Salary, Wage	An OFFERING

The number of questions could be limitless. However, if a pattern could be found, you could reduce the number of questions to a finite number.

Let us start by grouping the interrogatives into 3 distinct layers The first comprises 6 interrogatives (Who, What, When, Where, How and Why). The second combines any two of the first providing a possible 15 questions (however we will only consider 8 to be of relevance). The third layer is formed by combining some questions from the first and second layers creating a further 25 possible questions of which only 5 will be considered.

Each question can now be answered by providing a Generic meaningful name.

There are a total of 22 Fundamental Entities, 6 of which are Principal Fundamental Entities, 14 Intersecting Fundamental Entities and 3 Case Fundamental Entities.

In theory the number of Fundamental Entities could be as many as 46, however, on closer analysis the additional 24 Entities could be ignored.

The questions that management need answers to and their equivalent Information Class appear below.

QUESTION	INFORMATION CLASS NAME
WHO	IDENTITY
WHAT	OFFERING
WHEN	DOCUMENT
WHERE	LOCATION
HOW	ACTIVITY
WHY	FINANCIAL REGISTER
WHO & WHAT	SUPPLY
WHO & WHEN	REGISTRATION
WHO'S WHERE	RESIDENCY
WHO & HOW	ACTIVITY PARTICIPATION
WHO & WHY	FINANCIAL APPORTIONMENT
WHAT & WHEN	DEMAND
WHAT & HOW	CAPABILITY
WHERE & HOW	EVENT
WHO DOES WHAT TO WHOM	OWNERSHIP PARTICIPATION
WHO'S WHAT IS AT WHO'S WHERE	PRODUCE
WHO WHAT & HOW	EVENT PARTICIPATION
WHEN IS WHO'S WHERE	DOCUMENT LOCATION
MULTIPLE WHO & WHY	FINANCIAL PLANNING

Finally 3 additional Case Information Classes have been added to provide a complete picture to the Generic Model.

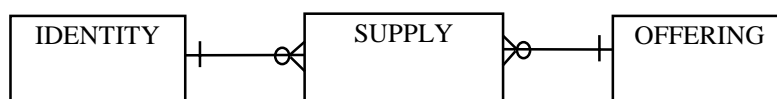
These are as follows:

- CLASSIFICATIONS
- RULES
- TRANSACTIONS

Let us now use the concept of Associations to link the Fundamental Entities into what is called an Entity Relation Diagram (ERD).

Example:

If the SUPPLY Entity answers the question Who does What or Who gives What, then the SUPPLY Entity must be the Intersecting Entity between the IDENTITY (the Who) and the OFFERING (the What). Hence the ERD will look like the following



When combining all possible combinations of the 19 most used questions, the following Generic Information Model will appear.

Note that for the sake of clarity, the Degree and Nature of the Associations have been omitted

Generic Information Model

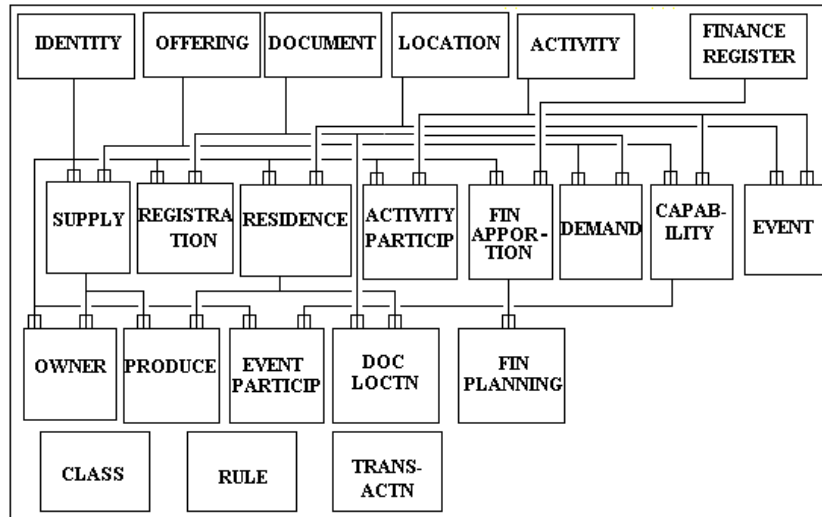


Figure 54 RIPOSE Generic Information Class Model

No Entity is complete until it can be fully defined in terms of its function. If you are not capable of defining each Entity in less than 7 (± 2) sentences, then the Entity is probably too complicated and should be further subdivided.

In other words, the question being answered is not fully understood.

The following table contains the definitions of the 22 RIPOSE Fundamental Entities.

INFORMATION CLASS	DEFINITION	RELATES
IDENTITY	Facts or condition being a specified person or thing	
OFFERING	Facts concerning anything that is available	
DOCUMENT	Facts concerning any historical written evidence	
LOCATION	Facts about a place or area	
ACTIVITY	Facts concerning the transition states, or doing things	
FINANCIAL REGISTER	Facts about records of monies and capital	
SUPPLY	Facts about provision of what to/by whom	IDENTITY OFFERING
REGISTRATION	Facts about who is being written about	IDENTITY DOCUMENT
RESIDENCY	Facts about who is located where	IDENTITY LOCATION
ACTIVITY PARTICIPANT	Facts about who is involved in doing something	IDENTITY ACTIVITY
FINANCIAL APPORTION	Facts about who is assigned what monies or capital	IDENTITY FINANCIAL REGISTER
DEMAND	Facts about the call for a commodity by a consumer	OFFERING DOCUMENT
CAPABILITY	Facts about the proficiency of a commodity	OFFERING ACTIVITY
EVENT	Facts about the location at which a happening occurs	LOCATION ACTIVITY

OWNERSHIP	Facts about who has rights to what is supplied	IDENTITY SUPPLY
PRODUCE	Facts about the residency of any supply	SUPPLY RESIDENCY
EVENT PARTICIPATION	Facts about who is involved with what capability	IDENTITY CAPABILITY
DOCUMENT LOCATION	Facts about the whereabouts of any piece of written evidence	DOCUMENT RESIDENCY
FINANCIAL PLANNING	Facts about estimates concerning the distribution of finances	FIN APPORTION
CLASSIFICATION	Facts about coding, grouping or categorising	
RULE	Facts about conventions and formulae	
TRANSACTION	Facts about snap shot in time of anything	

Information Class Matrix

The Information Class Matrix is the first cut means of cross referencing the Conceptual User Requirements with the supporting Information Classes and hence acts as a window into the world of the Entities.

It is first developed using any commercially available spreadsheet program or by using RIPOSE(V1.0).

Using the Key Performance Indicator from the Critical Success Factor priority list (see in Part 2, Chapter 2), ask the following question for each lowest level KPI about each Fundamental Information Class - "In order to measure 'Insert KPI name', does information about 'insert Class Name' need to be known?".

If the answer is 'yes', then mark the matrix accordingly.

For example: In order to measure the organisation's Market Share, is information about an IDENTITY needed?

In other words, if we want to know what market share we want, do we need to know to whom we are selling, and/or who we are competing against?

If the answer to either of these questions is 'yes' then the Information Class IDENTITY must be selected.

Note: If one of the related Information Classes of an Intersecting Fundamental Entity is not selected, then the Intersecting Fundamental Entity is not selected.

As a rule of thumb, if more than 9 Fundamental Entities are selected, then perhaps the KPI is too generic and should be further subdivided (see Part 2, Chapter 2).

The following is an example of the KPI/Information Class Matrix:

KPI	ID	OF	DO	LO	AC	FR	SU	RG	RE	AP
1										
1.1	X	X	X	X						
1.2	X	X		X	X	X		X		
1.3										
1.3.1	X		X						X	
2	X	X					X			

Note: In order to reduce the space used by the matrix, an abbreviation for the Fundamental Entity has been used. Example ID is the abbreviation for IDENTITY, etc. In addition only 10 of the 22 are shown above.

Constructing the Information Model

There are 2 approaches to constructing the Information Model:

1. Using the Key Performance Indicators as a guide;
2. Hierarchical decomposition.

Key Performance Indicators

The technique behind this approach is to use either the KPI/Information Class Matrix or the Key Performance Indicators Critical Success Factor priority list (see Part 2, Chapter 2).

Ask the following question: - “In order to measure ‘Insert KPI name’ further, what additional information do we need to have about ‘insert parent entity name’?”.

For example: - In order to measure the organisation’s Market Share further, what additional information do we need to have about the IDENTITY?

If you are using the RIPOSE(V1.x) software, you will have been provided with an additional 53 generic entities to give you a boost along. Hence look at the next level below IDENTITY and you will discover the entities LEGAL ENTITY and RESOURCE. Ask the question ‘In order to measure the organisation’s Market Share further, do we need know about the LEGAL ENTITY?’

If the answer is ‘Yes’ then select the entity and then proceed as per the technique described in the hierarchical decomposition section. If the answer is ‘No’, move on to the next peer entity (eg RESOURCE) or select the parent entity and examine it again, or move on to the next Information Class. If you are not using the RIPOSE(V1.x) software, then use the technique described in the hierarchical decomposition section.

Hierarchical Decomposition

The technique behind this approach is to ask the following question - “What further information do we need to know about ‘insert the entity name of interest’?”. If the answer is ‘Nothing’ or ‘not sure’, then move to the next highest level in the hierarchy and ask the same question.

Entity Definitions

It is imperative that you understand the definition of each term being used, hence as you add new entities, be sure to add meaningful definitions. If the definition is vague, or need 7 plus or minus 2 sentences to define it, then there is the possibility that the entity may need to be decomposed further.

Levels of Decomposition

To how many levels do you need to distil an entity? Well again be guided by the Rule of 7. However, do not be tempted to say “well that may only be an attribute”. Assume that all ideas generated are potential entities.

The number of entities should not constrain your thinking (the CASE tool may). If you find that you have exceeded the Rule of 7, either horizontally or vertically, then perhaps you have gone into too much detail. Re-examine the area for patterns and refine the model accordingly.

Model Representation

The Information Model can be represented in a number of ways:

- In the form of a list;
- Graphically

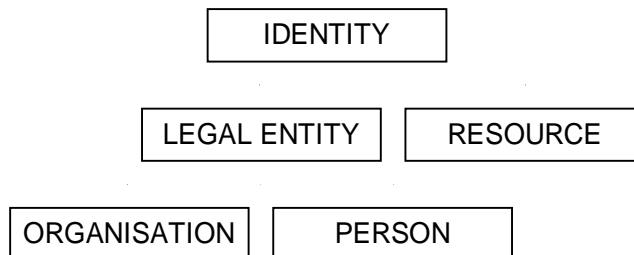
Both representations have their drawbacks:

- The list is not capable of showing all the associations between the Entities. However as the major reason for the associations is the determination of priorities, this drawback is soon reduced by the use of intelligent software;
- The graphical representation requires a great deal of computer memory and the patience of Job to continually manipulate the model in order to make it look presentable.

List Representation

IDENTITY
LEGAL ENTITY
CREDITOR(F)
DEBTOR(F)
ORGANISATION(G)
PERSON
RESOURCE

Graphical Representation



CHAPTER 4 ACTIONS

Actions can be defined as “the mechanics” of achieving an end goal.

To the RIPOSE technique it is the means whereby the strength of the knowledge (identified and gathered in Chapter 3) can be focused for maximum return.

By this stage close to 80% of the knowledge base should have been discovered.

The identification of Actions (or major Business Functions) is a relatively simple task. Examine each Fundamental Entity and ask the following question: - If (insert the plural of the fundamental entity name) were ignored, would the business suffer? If the answer is ‘Yes’, then give the Function a name and define it.

For example:

If IDENTITIES were ignored, would the business suffer?

A number of options are now available to you:

1. A ‘Yes’ answer- In which case name the Action “Identity Functionality”. If you are unable to describe the Function in less than 7 sentences, then treat the answer as ‘No’ and proceed as in option 2;
2. A ‘No’ answer - Look at the next Entity in the Fundamental Hierarchy and ask the same question;
3. A ‘Not sure’ answer should be treated the same way as option 2

Once you have selected a Function covering a natural hierarchy, it should not be necessary to continue with the leaves (children). Proceed to the next Peer or Fundamental Entity, as the case may be. After a few attempts, you will soon get the hang of it.

EXAMPLE: Let us consider the following Hierarchy

IDENTITY

LEGAL ENTITY

CREDITOR(F)

CONTRACTOR

SUPPLIER

DEBTOR(F)

ORGANISATION(G)

EXTERNAL ORGANISATION

CREDIT CARD VENDOR

INTERNAL ORGANISATION

CITY OFFICE

PERSON

CLIENT

OPERATOR

PROVIDER

RESOURCE

Select IDENTITY and ask - "If IDENTITIES were ignored, would the business suffer?".

Let us assume that the answer is 'Not sure', then select LEGAL ENTITY and ask - "If LEGAL ENTITIES were ignored, would the business suffer?".

Again let us assume that the answer is 'Not sure'. Select CREDITOR and ask - "If CREDITORS were ignored, would the business suffer?". The answer here has to be 'Yes'. Therefore, give the Function a name - eg Creditor Function, and define it as "the means whereby suppliers, contractors and staff are paid for their services and products".

You do not need to consider either the CONTRACTOR or the SUPPLIER as they are siblings of the CREDITOR, hence move on to the DEBTOR.

If you feel that the business carries out a function that had not been identified, then it is indicative that the knowledge to support such a function had not been identified (Book 1, Part 2 Chapter 3). It may be necessary to revisit the Measure Activity (Book 1, Part 2 Chapter 2) and identify the missing Key Performance Indicator.

Do not worry too much if you do not get "it right" on the first attempt. After a little practice you will soon get the hang of it.

CHAPTER 5 SYSTEMS

A system is the logical grouping of common programs, applications or plans.

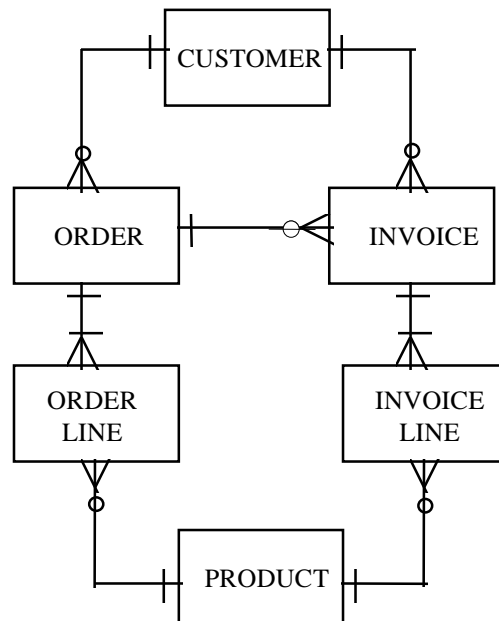
To accomplish this task, it will be necessary to ensure that all the associations between the Entities have been identified. This is because system's boundaries invariably depend upon the relationships between objects.

Example:

Let us consider the following Entities

- CUSTOMER (DEBTOR)
- ORDER
- ORDER LINE
- INVOICE
- INVOICE LINE
- PRODUCT

Let us assume that the following relationships had been established between them:



The natural hierarchy from the above model would look like the following:

CUSTOMER
 PRODUCT
 ORDER
 ORDER LINE
 INVOICE
 INVOICE LINE

Further, let us assume that during the Action Phase of RIPOSE, the following Business Functions were identified:

- **DEBTOR FUNCTION** (Entity CUSTOMER)
 Description:- This function will ensure that all monies owed to the business are fully monitored
- **PRODUCT DEVELOPMENT** (Entity PRODUCT)
 Description:- This function will enable the business to maintain a high quality profile
- **ORDER FUNCTION** (Entity ORDER)
 Description:- This function will ensure that all requests made on the business will be dealt with speedily and efficiently

Examine each Entity in the above hierarchy, starting with the CUSTOMER ask the following question - “Which Function best supports the existence of the CUSTOMER?”. The answer to this question is easy. You will note that the DEBTOR Function was created because of the CUSTOMER. Hence it is obvious that the DEBTOR FUNCTION is the only answer.

The next question you need to ask is - “What type of System would be needed to create a CUSTOMER?”. The answer to this could be a CUSTOMER SERVICE SYSTEM.

Let us use another Entity as an example. Look at the INVOICE Entity and ask - “Which Function best supports the existence of the INVOICE?” Look at the list of functions to find the answer. You will notice that the DEBTOR Function fits the answer best. Hence the DEBTOR Function should be chosen as the obvious choice. If it is not so obvious, then you will need to look at the definition of the Entity and the definition of the Function to try to find a match.

Now for the System. “What type of System would be needed to create an INVOICE?”. At first you may be tempted to answer “ the INVOICING System”. With a little systems analysis experience the answer could soon be changed to the ACCOUNTS RECEIVABLE System.

Be sure to define each System. Be guided by the “Rule of 7”.

Hint - Once a System has been discovered, enter the name into a System Register so that you can re-use it. For example: When dealing with the INVOICE LINE, the System that could create it would be the ACCOUNTS PAYABLE System

After examining all the entities in the above model the following Business Function/System/Entity Matrix has been developed:

BUSINESS FUNCTION	SYSTEM	ENTITY
DEBTOR FUNCTION	CUSTOMER SERVICE	CUSTOMER
	ACCOUNTS RECEIVABLE	INVOICE INVOICE LINE
PRODUCT DEVELOPMENT	PRODUCT DEVELOPMENT	PRODUCT
ORDER FUNCTION	ORDER PROCESSING	ORDER ORDER LINE

The order of delivering the above systems depends entirely on hierarchical dependency of the Entity. This means that all the Associations of the Entity must be taken into consideration. These include its owners as well as its owner's owners.

In the above example, the solution is as follows:

```
[PRODUCT DEVELOPMENT]
  {PRODUCT DEVELOPMENT}
    PRODUCT
[DEBTOR FUNCTION]
  {CUSTOMER SERVICE}
    CUSTOMER
  [ORDER FUNCTION]
    {ORDER PROCESSING}
      ORDER
      ORDER LINE
    {ACCOUNTS RECEIVABLE}
      INVOICE
      INVOICE LINE
```

Legend: Business Functions shown between []
Systems shown between { }

Or put another way:

1. The ACCOUNTS RECEIVABLE System cannot be delivered until the ORDER PROCESSING System has been completed
2. ORDER PROCESSING System cannot be delivered until both the CUSTOMER SERVICE and the PRODUCT DEVELOPMENT Systems have been completed.

The Business Functions would represent the highest level menu options with the systems slotting in as lower level menus. The creation of each entity is the responsibility of the System to which it has been attached.

WHERE TO NEXT?

The above example is a rather simplistic attempt to describe the System Architecture Phases of RIPOSE. Naturally most business needs are not as simple as the above example suggests. However, the example will suffice for the moment.

Basically, RIPOSE has delivered the Strategic Implementation blue-print, by analysing the Information and System Architecture for both Users and Information Technology Professionals, in a language that both can understand. Hence RIPOSE has bridged the communication gap described in Part 1, Chapter 2 Section 1.

The RIPOSE software has been designed to handle all the phases described so far.

The delivery mechanism still has to put in place. That will be the subject of the next book.

The next few chapters will take you through a real life example, showing each step in the RIPOSE life cycle described thus far.

PART 3 A WORKING PARADIGM

This section will take you through a real live example of the RIPOSE deliverables for each phase.

CHAPTER 1 GOALS

BACKGROUND

The Domestic Inc company had a requirement to automate the way in which they conducted their business.

As their budget to produce such a system was limited, they required a technique that would not take more than 3 months to complete the project.

Bearing this in mind it was essential to get the requirements right first go, followed by a means of rapidly prototyping a system that could then be used as the finished product.

If, however, performance was an issue, then the prototype could be used as a working specification to develop the system in another language, and use a more effective data base management system.

The techniques used on this project were as follows:

- 1 RIPOSE was used to identify the conceptual and logical user requirements
- 2 RIPOSE was used to design the most effective data base schema
- 3 Omnis7 was used to rapidly develop the required programs

Let us start with RIPOSE and take you through the full design procedure

THE PEOPLE

Domestic Inc provided two Users to define the User Requirements:

- Dean (Managing Director)
- Mary (Operations Manager)

Between the two of them they had sufficient strategic and operational knowledge of the business.

A RIPOSE specialist was used as the facilitator.

THE PURPOSE

To arrive at a Purpose statement for the business.

Within the first 15 minutes, both users agreed upon the following purpose statement:

“To be the best provider of domestic help in the Sydney metropolitan area. Further, to be capable of expanding rapidly into any other Inter/Intra state area.”

CRITICAL SUCCESS FACTORS

After ranking both users view of the business, the following overall rating was discovered

OVERALL RANKING 56%

MISSION	CSF	ALL	MD	OPS
PROSPEROUS		51%	50%	50%
	PROFITABLE	43%	50%	33%
	MARKET	43%	33%	50%
	UNIQUE	67%	67%	50%
ROBUST		46%	40%	67%
	PRODUCTIVITY	33%	33%	50%
	RESOURCES	38%	25%	33%
	DISTRIBUTION	67%	67%	50%
ESTEEM		65%	60%	67%
	BENEVOLENCE	60%	60%	70%
	QUALITY	70%	60%	80%
PERCEPTION		60%	60%	60%
	TECHNOLOGY	67%	67%	67%
	PLANNING	57%	50%	67%
	COMMUNICATION	57%	67%	50%

NOTE: Differences between the sum of the individual score and the overall score is due to weightings.

This gave the business a better than even chance of surviving in the short term, but not a great chance for the long term. The combined rankings helped both users realise that their major weaknesses lay in the area of:

1. PRODUCTIVITY (CSF 4);
2. RESOURCES (CSF 5);
3. PROFITABILITY (CSF 1) and
4. MARKET SHARE (CSF 2).

Hence it was necessary to look at the Key Performance Indicators that could help lift their ranking.

All this analysis took place in a 4 hour Joint Enterprise Modelling (JEM) Session.

CHAPTER 2 MEASURES

Having identified the major areas of concern, a further 2 three hour Joint Enterprise Modelling sessions were scheduled.

During each session, two areas were addressed and the following Key Performance Indicators were discovered:

CSF 4: PRODUCTIVITY

To ensure that the capacity of the organisation is geared to the ability to produce.

KPIs

- 4.1 REDUCE PAPER WORK: To reduce the amount of hand written documents
- 4.2 REDUCE TIME ON THE PHONE: To have the information about Providers and Clients always at hand
 - 4.2.1 EFFICIENT CLIENT DETAILS: To ensure that Clients data is up to date
 - 4.2.1.1 CAPTURE LATEST DETAILS: Ensure latest address & telephone number
 - 4.2.2 EFFICIENT PROVIDER INFORMATION: To ensure that the details about Providers are always current
 - 4.2.2.1 PROVIDER LOGON: To know which Provider is available on any day
- 4.3 PRE BOOKINGS: To be capable of taking bookings from a Client for a particular Provider in advance and able to monitor them

CSF 5: RESOURCE

To maintain the means of supplying all products and services that is needed at all times.

KPIs

- 5.1 BEST AVAILABLE PROVIDERS: To have the most capable and reliable Providers
 - 5.1.1 FEEDBACK: To get feedback from the Client and the Provider on completion of a Job

CSF 1: PROFITABLE

To attain a return on investment expected by management and shareholders.

KPIs

- 1.1 NET RETURN ON EACH JOB: To assess the amount of money made per assignment
- 1.2 NET RETURN AFTER TAX: After tax profits

CHAPTER 3 THE KNOWLEDGE BASE, ACTIONS AND SYSTEMS

The Knowledge Base

After 3 four hour Information Modelling Sessions (Joint Requirements Modelling) with the Operations Manager (using the technique described in Part 2 Chapter 3) the following Conceptual model was produced. (This model has been purposefully doctored).

IDENTITY

LEGAL ENTITY

CREDITOR(F)

CONTRACTOR

SUPPLIER

DEBTOR(F)

ORGANISATION(G)

EXTERNAL ORGANISATION

CREDIT CARD VENDOR

INTERNAL ORGANISATION

CITY OFFICE

PERSON

CLIENT

OPERATOR

PROVIDER

OFFERING

ENTITLEMENT

FINANCIAL ENTITLEMENT

COMMISSION

DOCUMENT

FINANCIAL DOCUMENT

GENERAL LEDGER JOURNAL

PAYABLE

RECEIVABLE

CREDIT CARD

MANIFEST(G)

NON FINANCIAL DOCUMENT

JOB

ORDER

etc

Actions

After a 1/2 hour Joint Requirement Modelling session, the following Business Functions were identified:

- CLIENT FUNCTION
- OFFICE FUNCTION
- FINANCIAL FUNCTION

After a further 2 hour session, the following Matrices were developed

Business Function/system matrix

BUSINESS FUNCTION	SYSTEM	ENTITY
OFFICE	OFFICE	TYPE SERVICE ACTIVITY CATEGORY ACTIVITY CREDIT CARD VENDOR CITY OFFICE OPERATOR PROVIDER WORK DAY PROVIDER ACTIVITY COMMISSION PAGER
CLIENT	BOOKINGS	CLIENT CREDIT CARD CLIENT ACTIVITY JOB PROVIDER JOB LOG RECORD JOB TRANSACTION
	FUTURE BOOKING	BOOKING
FINANCIAL	DEBTOR	DEBTOR
	GENERAL LEDGER	LEDGER GROUP G/L ACCOUNT AUTOMATIC G/L POSTING MONTHLY ACCT AMOUNT G/L TRANSACTION
	DAY END	COMMISSION XCTN
	CLOSE JOB	CHARGE LINE

Business Function/system/entity matrix.

[OFFICE FUNCTION]
{OFFICE}
|TYPE
|SERVICE
|ACTIVITY CATEGORY
||ACTIVITY
||||CREDIT CARD VENDOR
||||CITY OFFICE
||||OPERATOR
||||PROVIDER
||||WORK DAY
||||PROVIDER ACTIVITY
||||COMMISSION
||||PAGER
[CLIENT FUNCTIONS]
||||{BOOKINGS}
||||CLIENT
||||CREDIT CARD
||||CLIENT ACTIVITY
||||JOB
|||||{FUTURE BOOKING}
|||||BOOKING
|||||{BOOKINGS}
|||||PROVIDER JOB
|||||LOG RECORD
|||||JOB TRANSACTION
|||||{|DAY END}
|||||COMMISSION TRANSACTION
[FINANCIAL FUNCTIONS]
||{DEBTOR}
||DEBTOR
{GENERAL LEDGER}
|LEDGER
|GROUP
||G/L ACCOUNT
|||AUTOMATIC G/L POSTING
|||MONTHLY ACCOUNT AMOUNT
||||G/L TRANSACTION
|||||{CLOSE JOB}
|||||CHARGE LINE

BOOK 2 HOW TO DO IT

PART 1 THE LOGISTICS FOR A BETTER FUTURE

CHAPTER 1 FACTS

Facts are the basic building blocks of knowledge. Without facts, knowledge has nowhere to go. Without knowledge, facts lead to chaos.

Perhaps you can now see why it was imperative to get the knowledge base squared away before tackling facts. There are too many facts about and hence too much detail.

A Fact is also known as a Datum or Attribute. (Data is a collection of facts and is therefore analogous to knowledge.)

Definition: A fact (attribute) is any thing that supports the existence of Entity. It adds characteristics to and qualifies the Entity.

Examples: tax file number, motor vehicle registration number, city name etc

Each attribute can be subdivided into a number of types. They are:

- Key Attribute;
- Candidate Key Attribute;
- Primary Key Attribute;
- Foreign Key Attribute;
- Compound Foreign Attribute;
- Selection Attribute;
- Non Key Attribute.

Note: From a Conceptual Viewpoint (ie during the creation of the knowledge base), the only attribute that needs to be defined is the Key Attribute.

Attributes are linked to their Entities via an Attribute List (also called an Entity List).

Key Attribute

This is a fact used to provide a rapid access to an occurrence of an Entity.

Note: the symbol # will be used to denote a key

Candidate Key Attribute

This is an artificially created attribute that could be used to ensure unique occurrences for each Fundamental Entity.

For example: name, tax file number, motor vehicle registration number.

Note: The RIPOSE Generic Model would already have rationalised the candidate key for each Fundamental Entity by assuming it is the name of the Fundamental Entity itself.

Primary Key Attribute

This is the Candidate key attribute chosen to ensure that each occurrence of a Fundamental Entity is unique.

For example: identity id will be the primary key for the IDENTITY Entity.

Note: In the relational world a compound primary key exists. The RIPOSE Generic Model only ever has a single attribute as the primary key (See Repeating Attributes, for further detail).

Foreign Key Attribute

This is an attribute that appears an Entity that appears in another entity as the primary key.

Foreign keys are the means whereby a relationship is established with an Entity with the same key as the primary key.

Compound Foreign Attribute

This is where more than one foreign key is used in an Entity (see Grouped Attributes).

Selection Attribute

A Selection attribute is any attribute that does not uniquely identify an occurrence of an Entity but provides an alternate means to select an occurrence of an Entity.

For example:

1. Employee name. As many EMPLOYEES may have the same name, employee name will not be unique,
2. Tax file number. However, in order to satisfy the Australian Tax Office, the tax file number will have to be unique.

Non Key Attribute

Any attribute that does not uniquely identify an occurrence of an Entity.

Attribute Functionality

Any attribute can have additional purposes. It can be:

- Grouped;
- Repeating;
- Optional;
- Unique;
- Derived.

Grouped Attribute

This is where a number of single attributes are categorised under a common topic.

For example: consider the attribute 'order line number'. This can be made up of the following foreign keys (document#, offering#). Hence a group attribute called 'order line number' can be created which will ensure that no two order lines will have the same OFFERING on them.

Note that the attribute demand# is sufficient to uniquely identify each DEMAND LINE.

Repeating Attribute(s)

An attribute (or group) is said to be repeating if they can occur more than once and the number of occurrences can be predicted. If the number of occurrences cannot be predicted then it will be necessary to apply the First Normal Form Rule.

First Normal Form (1NF) Rule:

Project the repeating attribute (or group) into a new entity.

According to Codd's 1NF, a compound primary key is created formed by the primary key of the Entity from whence the repeating group came, together with a newly created key from the repeating group.

RIPOSE suggests that the new Entity gets its own primary key and turn the compound primary key into foreign keys.

For example: If only 2 PERSONs can appear on a MARRIAGE CERTIFICATE, then two foreign keys (ie identity#) can be created in the MARRIAGE CERTIFICATE Entity, otherwise the REGISTRATION Entity can be used to record the n-ary occurrences.

Note: The primary key of REGISTRATION would be identity#, document#, however RIPOSE suggests that the primary key be registration# with identity# and document# as foreign keys.

Optional Attribute

This is where the value of the attribute may be null. In most cases, this will have been resolved by using a subset in which the attribute would be mandatory. Use with caution.

Unique Attribute

This is where the value contained in the attribute (or group) may only appear once for all occurrences of the Entity.

For example: tax file number

Derived Attribute

A derived attribute is one whose value depends on another attribute(s) or on a formula.

For example: employee pay-roll number may be derived from branch number plus 3 characters of the surname plus a check digit.

Discovering Attributes

How does one go about discovering attributes? A good way is to take each Entity in the System/Entity Matrix (see Book 1 Chapter 5) ask the following question - “What do we want to know about ‘insert name of Entity’?”. Another way is to look at the definition of the Entity and see if you are able to discover the facts about it.

For example: - If the Entity of interest was CUSTOMER, ask the question - “What do we want to know about a CUSTOMER?”. You may come up with the following list:

- Customer name;
- Customer number;
- Customer Address;
- Customer date of birth;
- Customer phone number;
- Customer credit limit.

It is now noteworthy that a number of facts appear to be foreign to the Customer. Take a look at Customer name. Whilst every CUSTOMER must have a name, what does the name mean? Is it the first name, or surname, or middle name? If the CUSTOMER is another BUSINESS, then why should it have a first name.

If you were to examine the knowledge base, you may be pleasantly surprised to see the following

IDENTITY
 LEGAL ENTITY
 PERSON
 ORGANISATION
 CUSTOMER (F)

If you remember what the (F) stands for, you will soon realise that a CUSTOMER could be either be a PERSON or an ORGANISATION. In addition, a LEGAL ENTITY could be either a PERSON or an ORGANISATION but not both. If you are having trouble with this concept, then perhaps you should re-read Book 1, Part 2 Chapter 3.

Perhaps it will now be evident that the Customer name might well be shared amongst a number of entities as follows

- LEGAL ENTITY - Known name;
- PERSON - First name, middle name;
- ORGANISATION - trading name;
- CUSTOMER - well it looks as though there is no further need for a name.

One thing that you must remember at this stage is that you should **not** be trying to develop a Physical representation of the Entities. If you try to constrain the Logical Data Model too soon, you will pay the price later on.

Let us now look at the attribute 'Customer date of birth'. One way is to ask the following question - 'If the CUSTOMER was an ORGANISATION, would it have a date of birth?'. If the answer is no then the date of birth would be optional, depending on the type of CUSTOMER, hence it is time to find a better logical place for it.

Well, it is almost obvious that it should be placed in the PERSON entity does it not? Hold on one moment. Ask yourself the following question - "Where would you look to find a PERSON's date of birth?".

The natural answer is the BIRTH CERTIFICATE. If you were to look at the Knowledge base (and if it was defined with the need to have a BIRTH CERTIFICATE), then the logical place to put the attribute customer date of birth would be in the BIRTH CERTIFICATE.

If however the business had no need to record the BIRTH CERTIFICATE, then place the attribute in the next best logical place ie PERSON.

This then leads me to establish the following rule:

Only accept facts that would be totally natural to the Entity!

Where would you place the customer address attribute? Well, the answer can be anywhere!

If the Knowledge base had been built with the need to record a RESIDENCY, then the natural place would be somewhere in the RESIDENCY fundamental hierarchy. You could have the following:

RESIDENCY

 ADDRESS

 MAILING ADDRESS

 DOMICILE ADDRESS

 BUSINESS ADDRESS

Another way of looking at the customer address is to ask yourself - "Is this a repeating group?". Codd's first normal form rule says, project the repeating attributes into an intersecting entity. Surprise, surprise, that is exactly what the RESIDENCY entity was provided for.

Looking back at our CUSTOMER example, you could end up with the following:

- LEGAL ENTITY - Known name;
- PERSON - First name, middle name, date of birth;
- ORGANISATION - trading name;
- CUSTOMER - credit limit, customer number;
- ADDRESS - address, phone number.

Fact finding missions are relatively simple if you have the supporting Knowledge Base. Normalisation can now be used as a last measure, rather than as a necessity.

CHAPTER 2 DATA BASE DESIGN

This section of the book will address the steps necessary to develop the most flexible data base design with the business needs in mind.

Once you have achieved a stable logical data model it is now time to analyse the different ways in which the data can be stored physically. It will be necessary to use a really sophisticated software program to achieve this. RIPOSE has provided a module specifically designed for this task.

To explain the technique, it is necessary to look at an example. If we look at the example of the CUSTOMER perhaps it will become more clear.

- LEGAL ENTITY - Known name;
- PERSON - First name, middle name, date of birth;
- ORGANISATION - trading name;
- CUSTOMER - credit limit, customer number;
- ADDRESS - address, phone number.

Let us assume that you want the following configuration:

L	LEGAL ENTITY
P	PERSON
P	ORGANISATION
P	CUSTOMER (F)
P	ADDRESS
L	MAILING ADDRESS
L	DOMICILE ADDRESS
L	BUSINESS ADDRESS

Where P = Physical

L = Logical

Then the Data Base design will look like the following:

- PERSON - Known name, First name, middle name, date of birth;
- ORGANISATION - Known name, trading name;
- CUSTOMER - credit limit, customer number;
- ADDRESS - address, phone number, file switch (ie either it is the ADDRESS for the PERSON, or for the ORGANISATION).

Consider the following configuration:

P	LEGAL ENTITY
L	PERSON

L	ORGANISATION
L	CUSTOMER (F)
P	ADDRESS
L	MAILING ADDRESS
L	DOMICILE ADDRESS
L	BUSINESS ADDRESS

Then the Data Base design will look like the following:

- LEGAL ENTITY - Known name, First name(o), middle name(o), date of birth(o), trading name(o), credit limit, customer number, legal entity type (either a PERSON or an ORGANISATION);
- ADDRESS - address, phone number

One of the main reasons organisations settle for the first data base design their Information Technology departments comes up with, is that the number of computations can be daunting. To try to design more than one data base where there are over 100 entities could well be impossible.

Invariably, the data base designs will be altered during the programming phase. This is then a major cause to project “blow out”.

However with a product like RIPOSE, it is now possible to avoid this from happening. See Book 2, Part 2 Chapter 2 for some more examples.

CHAPTER 3 PROCESSES

Processes can be regarded as the construction of the activities that will be required to support both the fact base as well as the knowledge base.

Each Logical Data Set (or Logical System) will require a number of activities to be performed against it Hence a number of Logical Procedures have been prepared to assist with this task.

In some cases, a number of Logical Data Sets will need to be grouped together and the procedures applied to them as a group.

Should you feel that additional procedures need to be identified, please incorporate them as part of your standards. You could advise RIPOSE Pty Ltd of them, so that others may benefit from your wisdom.

The following Procedures have been identified:

1. FIND AN OCCURRENCE
2. RETRIEVE NEXT OCCURRENCE
3. RETRIEVE PREVIOUS OCCURRENCE
4. ADD AN OCCURRENCE
5. CANCEL AN OCCURRENCE
6. REINSTATE A CANCELLED OCCURRENCE
7. MODIFY AN ATTRIBUTE IN ALL OCCURRENCES
8. MODIFY AN ATTRIBUTE IN A SELECTED OCCURRENCE
9. DISPLAY ANY ATTRIBUTE(S) FOR ALL OCCURRENCES
10. DISPLAY ANY ATTRIBUTE(S) FOR A SELECTED OCCURRENCE
11. DISPLAY GRAPHICAL VALUES OF ATTRIBUTES
12. ARCHIVE A CANCELLED OCCURRENCE
13. DELETE A CANCELLED OCCURRENCE
14. INCREASE OR DECREASE AN ATTRIBUTE IN ALL OCCURRENCES
15. INCREASE OR DECREASE AN ATTRIBUTE IN A SELECTED OCCURRENCE
16. REQUEST ARCHIVE FOR ANY CANCELLED OCCURRENCE
17. REQUEST DELETION FOR ANY CANCELLED OCCURRENCE
18. REQUEST FOR AN OCCURRENCE TO BE ADDED
19. REQUEST THAT A CANCELLED OCCURRENCE BE REINSTATED
20. REQUEST AN INCREASE OR DECREASE FOR AN ATTRIBUTE IN ALL OCCURRENCES
21. REQUEST AN INCREASE OR DECREASE FOR AN ATTRIBUTE IN SELECTED OCCURRENCES
22. REQUEST TO MODIFY AN ATTRIBUTE IN ALL OCCURRENCES
23. REQUEST TO MODIFY AN ATTRIBUTE IN A SELECTED OCCURRENCE
24. REQUEST TO DISPLAY ANY ATTRIBUTE(S) FOR ALL OCCURRENCES
25. REQUEST TO DISPLAY ANY ATTRIBUTE(S) FOR A SELECTED OCCURRENCE
26. REQUEST TO DISPLAY GRAPHICAL VALUES OF ATTRIBUTES
27. CREATE A LIST IN MEMORY OF ALL OCCURRENCES
28. DISPLAY A MESSAGE
29. TEST FOR A CONDITION
30. CALL A SUB ROUTINE

31. ENTER DATA
32. REPEAT PROCESSES
33. DISPLAY A WINDOW
34. DISPLAY A MENU
35. SELECT A SEARCH PATTERN
36. TRANSFER PROCESS
37. END CONDITION
38. END REPEAT
39. CASE CONDITION
40. END CASE
41. SELECT MODE
42. PRINT REPORT

CHAPTER 4 APPLICATIONS

This is a formal approach to drafting the processing framework to support the knowledge base.

The input into this section is the Business Functions/Systems/Entity Matrix as well as the physical data base designs.

By the time you reach this section of RIPOSE, you should be capable of stitching an application together.

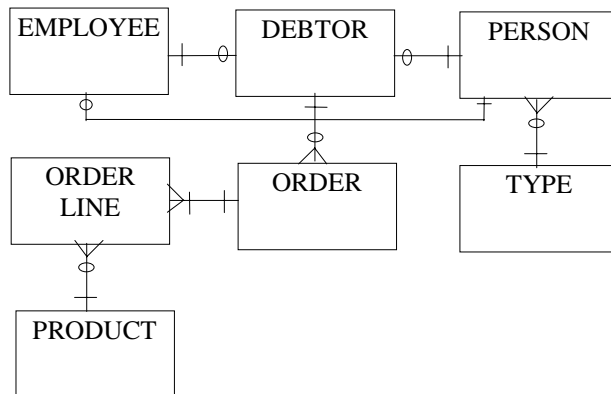
But be warned, the old maxim that says ‘Garbage in, garbage out’ still applies.

Because you have identified a number of possible data base designs, it is the applications that will ultimately help you decide on the most appropriate design.

You need to start your application development by identifying those tables which have no owners. The Systems supporting these tables need to be developed first. To this end, you will need the System/Entity matrix and the Physical data base design.

For example.

Let us consider the following data base design:



It is fairly obvious from the simple model above that the TYPE and PRODUCT applications be developed before any other. In very large models, this will not be so obvious, however, because RIPOSE already knows the order of association, this would not be a problem.

During the System Design Phase (see Book 1, Part 2 Chapter 5) the following System/Entity Matrix would have been developed:

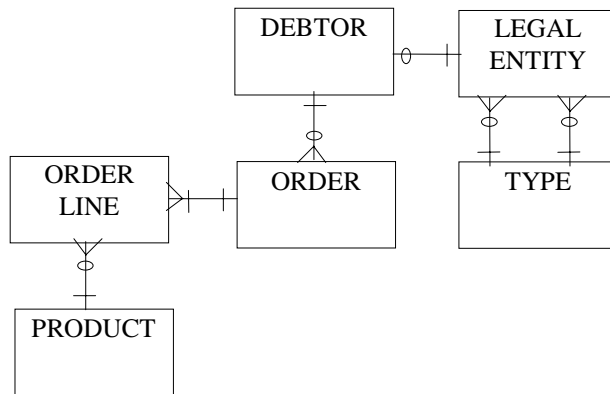
<u>SEQ</u>	<u>SYSTEM</u>	<u>TABLE</u>
1	TYPE	TYPE

1	PRODUCT	PRODUCT
2	CUSTOMER	PERSON
		DEBTOR
3	PAYROLL	EMPLOYEE
3	ORDERS	ORDER
		ORDER LINE

The following applications can be developed:

1. Maintain Types (To add, modify and cancel Type entries);
2. Maintain Products (To add, modify and cancel occurrences of Products);
3. Maintain Customers (To add, modify and cancel occurrences of Persons and possibly Debtors);
4. Maintain Employees (To add, modify and cancel occurrences of Employees);
5. Take an Order (To add an occurrence of an Order and Order Line as well as to update the Debtor occurrence).

Let us now consider the following alternate data base design:



As you can see, the basic model remains the same as the first but in this example, the LEGAL ENTITY table will support both the PERSON and the EMPLOYEE, hence the possible need for the double association to the TYPE table.

The sequence of system development will be as follows

<u>SEQ</u>	<u>SYSTEM</u>	<u>TABLE</u>
1	TYPE	TYPE
1	PRODUCT	PRODUCT
2	CUSTOMER	LEGAL ENTITY
		DEBTOR
3	PAYROLL	(LEGAL ENTITY)
3	ORDERS	ORDER
		ORDER LINE

The following applications can be developed:

1. Maintain Types (To add, modify and cancel Type entries);
2. Maintain Products (To add, modify and cancel occurrences of Products);
3. Maintain Legal Entities (To add, modify and cancel occurrences of Employees, Persons and possibly Debtors);
4. Take an Order (To add an occurrence of an Order and Order Line as well as to update the Debtor occurrence).

As can be seen from this design, there is one less application, however, the design of the Maintain Legal Entity may be more complicated than that of Maintain Employees and Maintain Customers.

To discover the merits of both designs, you should develop some form of pseudo code and compare the two. Pseudo code created for the common applications (ie Maintain Types, Maintain Products etc) should be re-useable.

The RIPOSE Software tool provides this level of functionality. It uses the Processes and the data base design to create a comprehensive pseudo code design of each application.

For example.

The pseudo code for Maintain Type could look like the following:

<u>Seq #</u>	<u>Process</u>	<u>Extension</u>
1	DISPLAY A MESSAGE	START OF PROCESS
2	DISPLAY A WINDOW	TABLE
3	SELECT MODE	C R M P Q
4	CASE CONDITION	C
5	ENTER DATA	
6	ADD AN OCCURRENCE	TYPE
7	CASE CONDITION	M
8	CALL A SUB ROUTINE	FIND A TYPE
9	ENTER DATA	NEW FIELDS
10	MODIFY AN ATTRIBUTE	TYPE
11	CASE CONDITION	R
12	CALL A SUB ROUTINE	FIND A TYPE
13	PRINT REPORT	TABLE
14	CASE CONDITION	Q
15	CLOSE WINDOW	TOP
16	END CASE	

The Sub Routine FIND A TYPE could look like the following:

<u>Seq #</u>	<u>Process</u>	<u>Extension</u>
1	ENTER DATA	TABLE KEY
2	FIND AN OCCURRENCE	TYPE

The above examples came directly from the RIPOSE Application Pseudo Code Design Module.

The RIPOSE Software provides the facility to export these designs in an ASCII format. You could now translate this logical design into a physical program using a code generator which is capable of translating the pseudo code into a machine recognisable language.

All changes to the code should be maintained at the Logical level, and re-generated.

Using this approach, whole systems can be generated at a fraction of the time and cost experienced currently.

The rest is up to you.

PART 2 THE PARADIGM CONTINUED

CHAPTER 1 FACTS

During the System Definition Phase, it was decided that it was necessary to implement all 8 systems, hence the conceptual entities needed to support them, were brought forward as logical tables. The systems were:

1. OFFICE;
2. BOOKINGS;
3. FUTURE BOOKING;
4. DEBTOR;
5. DAY END;
6. GENERAL LEDGER;
7. CLOSE JOB.

The following list shows some of the tables in their implementation sequence.

```
||LEGAL ENTITY
  ||DEBTOR (F)
  ||ORGANISATION (G)
  ||EXTERNAL ORGANISATION
  |||CREDIT CARD VENDOR
  |||INTERNAL ORGANISATION
  |||CITY OFFICE
  ||PERSON
  |||CLIENT
  |||OPERATOR
  |||PROVIDER
  ||ENTITLEMENT
  ||FINANCIAL ENTITLEMENT
  |||COMMISSION
  |SERVICE
  ||FINANCIAL DOCUMENT
  ||RECEIVABLE
  |||CREDIT CARD
  ||NON FINANCIAL DOCUMENT
  |||JOB
  ||STAFF DOCUMENT
```

||||BOOKING
 |||||LOG RECORD
 ||TELECOM LINE
 ||||PAGER
 ||ACTIVITY
 ||G/L ACCOUNT

It was then necessary to identify the attributes to support all of the entities.

The following list shows examples of these attributes:

ENTITY LEGAL ENTITY		
K	LEGAL ENTITY	LEGAL ENTITY KEY ATTR
	NAME	Surname followed by first name
FU	IS A DEBTOR	FUNCTIONAL ATTRIBUTE
FK	TYPE	TYPE KEY ATTRIBUTE
ENTITY CREDIT CARD VENDOR		
K	CREDIT CARD VENDOR	CREDIT CARD VENDOR
	ACCOUNT NUMBER	KEY ATTRIBUTE Acct number given to the Internal Organisation
ENTITY CLIENT		
K	CLIENT	CLIENT KEY ATTRIBUTE
	ADDRESS LINE	Address
	TELEPHONE NUMBER	In order to contact client
	RISK	If the client is a risk or not
	CLIENT COMMENTS	General comments by the Client
	PAYMENT TERM	Cash or Credit Card
FK	CITY OFFICE	CITY OFFICE KEY ATTR
ENTITY PROVIDER		
K	PROVIDER	PROVIDER KEY
	AVAILABILITY FLAG	ATTRIBUTE 0 = Available 1 = Not Available 2 = Left
	PROVIDER DETAILS	General description
FK	CITY OFFICE	CITY OFFICE KEY ATTRIBUTE
ENTITY COMMISSION		
K	COMMISSION	COMMISSION KEY ATTR
	COMMISSION PERCENT	
FK	PROVIDER	PROVIDER KEY ATTR
ENTITY SERVICE		
K	SERVICE	SERVICE KEY ATTRIBUTE
	SERVICE NAME	Name of the Service
	SERVICE COST	Amount of money charged

Legend: K = Primary Key FK = Foreign Key
 FU = Functional usage (Yes/No)

CHAPTER 2 DATA BASE DESIGN

Once all the attributes were identified, the following data base structures were considered.

Design consideration 1 (only a subset of entities is shown)

L ||LEGAL ENTITY
L |||DEBTOR (F)
L |||ORGANISATION (G)
L |||EXTERNAL ORGANISATION
P |||CREDIT CARD VENDOR
L |||INTERNAL ORGANISATION
P |||CITY OFFICE
L ||PERSON
P |||CLIENT
P |||OPERATOR
P |||PROVIDER
L ||ENTITLEMENT
L ||FINANCIAL ENTITLEMENT
L |||COMMISSION
P |SERVICE
L ||FINANCIAL DOCUMENT
L ||RECEIVABLE
L |||CREDIT CARD
L ||NON FINANCIAL DOCUMENT
P |||JOB
P ||STAFF DOCUMENT
L |||BOOKING
L |||LOG RECORD
L ||TELECOM LINE
L |||PAGER
P ||ACTIVITY
P ||G/L ACCOUNT

The Data Base attributes are follows (only some entities selected)

CHARGE LINE amount charged for a particular service
PK M 1 CHARGE LINE
 M 1 AMOUNT CHARGED
FK M 1 JOB
FK M 1 SERVICE

CLIENT Person for whom a Job will be done

PK M 1 CLIENT
M 1 NAME
M 1 IS A DEBTOR
M 1 ADDRESS LINE
M 1 TELEPHONE NUMBER
M 1 CLIENT COMMENTS
M 1 RISK
M 1 PAYMENT TERM
FK M 1 CITY OFFICE
GK O 2 CREDIT CARD
O 2 EXPIRY DATE
O 2 CREDIT CARD NUMBER
FK O 1 TYPE
FK O 1 TYPE
FK O 2 CREDIT CARD VENDOR

CREDIT CARD VENDOR An institution than provides
Credit Card Facilities

PK M 1 CREDIT CARD VENDOR
M 1 NAME
M 1 IS A DEBTOR
M 1 ACCOUNT NUMBER
FK O 1 TYPE

PK = Primary Key FK = Foreign Key LF = Logical Foreign
Key PF = PSEUDO FOREIGN KEY GK = Group Key M =
Mandatory O = Optional Numeral denotes how many times
the attribute repeats

Design consideration 2 (only a subset of entities is shown)

P ||LEGAL ENTITY
 L |||DEBTOR (F)
 L |||ORGANISATION (G)
 L ||||EXTERNAL ORGANISATION
 L ||||CREDIT CARD VENDOR
 L ||||INTERNAL ORGANISATION
 L ||||CITY OFFICE
 L |||PERSON
 L ||||CLIENT
 L ||||OPERATOR
 L ||||PROVIDER
 L ||ENTITLEMENT
 L |||FINANCIAL ENTITLEMENT
 L ||||COMMISSION
 P |SERVICE
 L ||FINANCIAL DOCUMENT
 L |||RECEIVABLE
 L ||||CREDIT CARD
 L ||NON FINANCIAL DOCUMENT
 P ||||JOB
 P |||STAFF DOCUMENT
 L ||||BOOKING
 L |||||LOG RECORD
 L ||TELECOM LINE
 L ||||PAGER
 P ||ACTIVITY
 P |||G/L ACCOUNT

CLIENT ACTIVITY The sort of activities a Client wants

PK M 1 CLIENT ACTIVITY
 LF M 1 LEGAL ENTITY
 FK M 1 ACTIVITY

JOB Record of details about an assignment

PK M 1 JOB
 M 1 DATE
 M 1 START TIME
 M 1 END TIME
 M 1 JOB TOTAL
 LF M 1 LEGAL ENTITY
 LF M 1 LEGAL ENTITY
 LF M 1 LEGAL ENTITY

LEGAL ENTITY Any existing body which has rights sanctioned by laws

PK	M 1	LEGAL ENTITY
	M 1	IS A DEBTOR
	M 1	NAME
	O 1	AVAILABILITY FLAG
	O 1	PROVIDER DETAILS
	O 1	ADDRESS LINE
	O 1	TELEPHONE NUMBER
	O 1	RISK
	O 1	CLIENT COMMENTS
	O 1	PAYMENT TERM
	O 1	ACCOUNT NUMBER
LF	O 1	LEGAL ENTITY
FK	M 1	TYPE
GK	O 1	PAGER
GK	O 7	WORK DAY
GK	O 1	COMMISSION
	O 1	COMMISSION PERCENT
	O 1	PAGER NUMBER
	O 7	WORK FLAG
FK	O 1	TYPE
FK	O 1	PROVIDER
FK	O 1	TYPE
FK	O 1	TYPE
FK	O 1	PROVIDER

CHAPTER 3 PROTOTYPING

After comparing a number of data base designs, it was felt that the first design was the appropriate one.

Due to the time saved (by using the RIPOSE technique) it was felt that a Rapid Joint Application Development Approach be adopted.

To this end, the first data base design was translated into the Omnis7 format. Some of the files are detailed below.

File format: ACTIVITY

1	ACT_NO	Sequence	IND	ACTIVITY NUMBER
2	ACT_NAME	Character 50	IND	ACTIVITY NAME
3	ACT_TYPE	Number 0 dp		0 = CHARGEABLE 1= NON RECOV 2 = FREE
4	ACT_AMT	Number 2 dp		ACT STD CHARGE

File format CLIENT

1	CLNO	Sequence	IND	CLIENT NUMBER
2	CLNAME	Character 50	IND	NAME
3	CLADDR	Character 100		ADDRESS
4	CLTELNO	Character 15	IND	TEL NUMBER
5	CLPAYPREF	Integer		0 = CASH 1= CR CARD
6	CL_CCNO1	Character 25		CR CARD NUMBER 1
7	CL_CC1	Number 0 dp		CR CARD CO NO 1
8	CL_CCNO2	Character 25		CR CARD NUMBER 2
9	CL_CC2	Number 0 dp		CREDIT CARD CO 2
10	CITY	Number 0 dp	IND	CITY FOREIGN KEY
11	CL_NAMECC	Character 50		NAME ON CR CARD
12	CL_CC1EXP	Character 5		EXP DATE CR CARD 1
13	CL_CC2EXP	Character 5		EXP DATE CR CARD 2
14	CL_RISK	Boolean		RISK FACTOR
15	CLCOMMENT	Character 500		
16	CL_PRIV	Integer		PRIVILEGED CUST
17	CL_CC	List		Other Credit Cards. Structure of Fields 8, 9 & 12

The Omnis7 environment is an extremely powerful prototyping tool, hence once the files were defined, they were ready for use with no need to generate any additional table code.

MAIN MENU:

The main menu of the system is a graphical representation of the Business Function/system matrix (developed in Book 1, Part 3, Chapter 3).

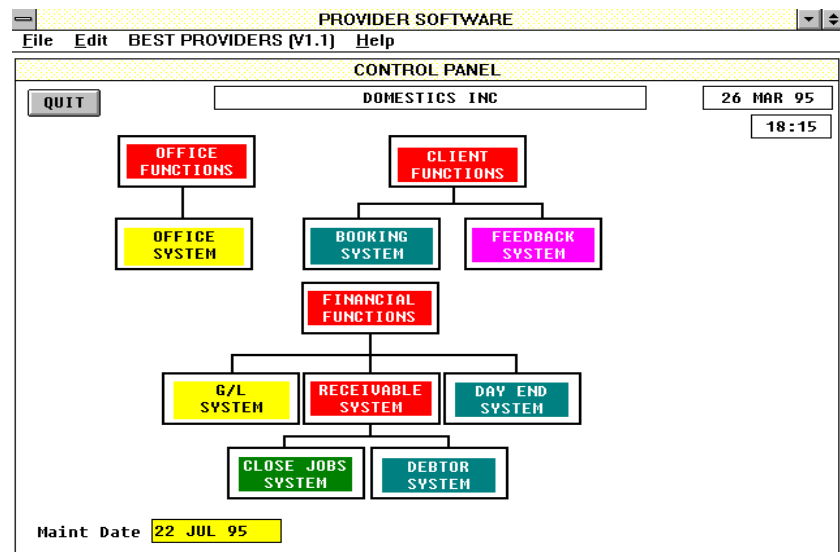


Figure 55 System Main Menu

DEVELOPMENT STATISTICS

The following table details the full development statistics:

Phase	Description	Deliverable	Duration
1	Strategic Planning		1.5 days
1.1	Information Architecture		1 day
1.1.1	Goal Setting	Success Factors	1 hour
1.1.2	Objectives	Key Indicators	4 hours
1.1.3	Information Modelling	40 Entities	2 hours
1.2	System Architecture		3 hours
1.2.1	Function Decomposition	3 Business Functions	1 hour
1.2.2	Systems Modelling	9 Business Systems	2 hours
2	Data Architecture		1 day
2.1	Data Modelling	130 Attributes	3 hours
2.2	Data Base Design	17 Physical Tables	4 hours
3	Prototyping		24 days
3.1	Menu Design	7 Menus	
3.2	Screen Design	70 Screens	
3.3	Program Design	30 Programs	
3.4	Report Design	8 Reports	
4	Existing System Integration		3 days
		1 System G/L	
		43 Attributes	

		11 Physical Tables	
		3 Menus	
		12 Screens	
		14 Programs	
		8 Reports	

Total Hours 80
Working Days 30
Elapsed Time 6 weeks.

Hence the system was completed well within the 3 month time limit and supported the concepts of the business management.

QED

APPENDIX 1

Alternatives To RIPOSE

This appendix has been added to give you a general view of other available methods. It is meant to be an overview of the author's findings based on years of research and development. It is not meant to be an in depth expose. Errors and Omissions Excepted.

The following 6 approaches have been selected for your consideration:

- Business Systems Planning (BSP);
- Data Engineering (also known as Information Engineering);
- Software Engineering (now called Business re-engineering);
- Computer Aided Software Engineering (CASE);
- Object Oriented Design;
- Miscellaneous Techniques.

If anyone has another approach and would like to take up the challenge of analysing it, please let us know about it.

Each approach has been divided into the following sub-sections:

1. Technique used;
2. Their Strengths;
3. Their Weaknesses;
4. The Opportunities they provide;
5. The Threats they hide.

SECTION 1

Business Systems Planning

Business Systems Planning is an approach that tries to identify user requirements by undertaking a number of clearly defined steps. These vary from vendor to vendor, however in essence they provide similar results. The following two techniques have been identified to accomplish BSP:

- Management Questionnaires;
- Matrices.

As Matrices are part of the CASE alternative, they will be addressed in section 4.

1.1

Management Questionnaire Technique

The common approach used by this method is to circulate a questionnaire to just about every manager and user in the organisation. Managers are asked a series of questions and requested to answer and/or comment on them.

1.2

Strengths

The major strength of this approach is the attempt to get an overview of what the business is trying to achieve. This was achieved by isolating factors common to most businesses such as Markets, Products, Services and Channels.

1.3 Weaknesses

Although these questionnaires are a great way of gathering a lot of useful information, they also tend to gather a lot of useless stuff. The weaknesses of this approach are:

- Takes too long to distribute;
- Takes too long to get replies;
- Difficult to collate;
- Redundant information is collected;
- Questions open to interpretation;
- Correct question may not be asked;
- Some users are too busy to answer or they simply delegate;
- There is far more to a business than its Markets, Products, Services and Channels.

Consequently, trying to identify the major information requirements from these questionnaires is prone to vagueness and misinterpretation.

1.4 Opportunities

The opportunities provided by this approach are:

- Creation of specialised in-house personnel to undertake such tasks;
- Outsourcing of tasks.

1.5 Threats

- Takes too long to accomplish - between 6 months and 2 years (by this time the business requirements have probably changed);
- Deliverables are often misunderstood - have to be reworked a number of times;
- The computer professionals usually end up “doing their own thing” anyway (What analysts do with the information depends largely on their experience);
- No effective way of insuring that the end product (ie the computer or manual systems) meets with the BSP framework.

SECTION 2 Data Engineering

Data Engineering (also known as Information Engineering or Information Analysis) was developed in the early 1970s and grew out the need to graphically represent the data bases businesses needed. This idea identified the redundant nature of data and hence two approaches were spawned, namely:

- Data Modelling;
- Binary Relation Modelling.

2.1 Data Analysis (aka Data Modelling)

2.1.1 Technique

The techniques behind Data Analysis are as follows:

- Use some form of BSP to identify User needs;
- Build a high level Entity Relation (ER) Model to graphically represent the existence of those needs;
- Use some form of “brain storming” to identify the characteristics (called attributes) of each Entity;
- Use normalisation techniques to remove redundant attributes or to create new Entities for “imprecise” attributes;
- Use Data Model as the Data Base Design;
- Use the Data Model to assist the formation of processes.

2.1.2 Strengths

- Draws on the output from the BSP phase for its input;
- Develops an overview of the Data needs.

2.1.3 Weaknesses

- Hides the weaknesses of BSP;
- Difficult to validate the quality of the high level Data Model;
- Difficult to validate the quality of the attributes;
- Normalisation techniques prone to error and interpretation;
- The Data Base design depends upon the outcome of normalisation;
- Processes depend upon the correctness of the Data Base design.

2.1.4 Opportunities

- Improve the quality of the BSP output;
- Improve the quality of the Data Model.

2.1.5 Threats

- See 1.5;
- The cost of developing systems can become prohibitive Two projects (one costing \$150m and the other well over \$800m) were cancelled before completion.

2.2 Binary Relation Modelling (aka Information Analysis)

2.2.1 Technique

Binary relationship modelling is based on semantics. The way that this is achieved is to examine the meaning of words and then establishing the potential relationship between any two. Once all possible relationships have been established, groups of objects are formed into a Data Model.

2.2.2 Strengths

- Definitions of words must be established and understood;
- Works well for small models;

2.2.3 Weaknesses

- Takes too long to analyse (too many objects need to be identified);
- Large models are difficult to handle;
- Formation of the Data Model open to interpretation;
- Processes depend upon the validity of the Data Model.

2.2.4 Opportunities

- Develop a Data Dictionary to automate the process.

2.2.5 Threats

- The cost of developing systems can become prohibitive;
- Learning curve too steep to train support analysts;
- Not user friendly. Business users usually distance themselves from the process.

SECTION 3 Software Engineering

Software engineering is a popular term for structured analysis. It also forms the basis for Business re-engineering.

3.1 Technique

- Identify the high level processes used by the business;
- Develop current physical model by functionally decomposing these high level processes into their component processes;
- Develop new logical model by:
 - Identifying data flows between each non elementary process node;
 - Identifying data stores required for each elementary process node;
 - Identifying data elements for each data store;
 - Developing program structure charts for all process nodes.

3.2 Strengths

- Top down technique;
- Processes are tightly coupled
- Great for batch processes

3.3 Weaknesses

- Business processes may not be correct;
- Business processes may be redundant;
- Takes too long to analyse;
- Not “friendly” to business users;
- No guarantees that the right problem is being addressed.

3.4 Opportunities

- Sharpen an analysts intuition;
- Automate software to support hand drawn diagrams.

3.5 Threats

- The cost of developing systems can become prohibitive;
- Learning curve too steep to train support analysts;
- Not user friendly. Business users usually distance themselves from the process.

SECTION 4 CASE

In recent years a technique called CASE has emerged. This approach was developed in an attempt to identify User requirements by analysing them from a “top down” perspective. In most cases, CASE has endeavoured to automated BSP, Data Modelling and Software Engineering. In addition CASE tools have added the capability to generate code.

4.1 Technique

The following is a summary of four CASE approaches (current at the time of writing).

Example	PHASE
1	Information System Planning Business Analysis Business System Design Technical Design Construction Transition Production
2	Commitment Definition Survey Analysis Decision I/S Development
3	Planning Analysis Design Construction
4	Business Definition Business Analysis Prototyping Construction

4.2 Strengths

- Top down approach;
- Automation of time consuming activities;
- Automatic checking for model consistency;
- 4th Generation Languages;
- Screen painters;
- Report writers;
- Code generation.

4.3 Weaknesses

- An expensive Computer Aided Design tool;
- Weak methodologies. Tries to integrate BSP, Data Modelling and Software Engineering paradigms:
 - BSP Matrices are used (You may need to develop up to 38 separate matrices);
 - Data Modelling tools not flexible. Each entity placed in the data dictionary becomes a physical table. Sometimes extremely difficult to use in multi user mode;
 - Process Modelling tools not mature enough;
- Generated object code images often too large;
- Needs large amounts of memory, disk space and processing power.

4.4 Opportunities

- Better integration of the 3 paradigms;
- Reduced Instruction Set Code needs to be developed;
- Improved graphics;
- Better process engines.

4.5 Threats

- The cost of developing systems can become prohibitive;
- Learning curve too steep to train support analysts;
- Not user friendly. Business users usually distance themselves from the process.

SECTION 5 Object Oriented Design

Object oriented design is the latest buzz word in the Information Technology industry. It has been around for a number of years and is gaining popularity due to the failure of the previously mentioned techniques.

5.1 Technique

The object oriented paradigm is based on two premises, namely classes and inheritance. That is, every object can be subdivided into classes and every subordinate class inherits the properties of its parent.

The paradigm has the following structure:

- Discover the Classes;
- Develop the data structures for the classes;
- Identify the operations;
- Build the class hierarchies;
- Identify user interfaces.

5.2 Strengths

- Rich library of classes available
- A number of good programming languages are available;
- Scientific programs;
- Class concepts.

5.3 Weaknesses

- May not work easily for large commercial models;
- Data bases and process models too tightly coupled;
- No formal methodology to identify user needs;
- Too much like the software engineering paradigm.

5.4 Opportunities

- Restructure the paradigm;

5.5 Threats

- The cost of developing systems could become prohibitive;
- Learning curve too steep to train support analysts;
- May not be friendly to business users.

Perhaps you may have come across some other approach. Here are 5 other techniques:

1. State Transition Analysis;
2. Lateral Thinking;
3. Rapid Iterative Prototyping;
4. Function Point Counting;
5. Trial and Error.

6.1 State Transition Analysis

State Transition Analysis is the technique of expressing the life cycle of a business object.

1. Relies on the successful identification of business objects (which in turn rely on a stable data model);
2. States are open to interpretation;
3. Events are open to interpretation.

6.2 Lateral Thinking

Lateral thinking is the process of trying to identify all possible solutions for a given problem.

1. Assumes the problem being analysed is the correct problem;
2. Requires an experienced facilitator to keep sessions going;
3. Requires sessions to be recorded (either recorded, printed or video taped);
4. Results have to be circulated and agreed to by the participants;
5. Development of systems open to interpretation.

6.3 Rapid Iterative Prototyping

Rapid Iterative Prototyping is the process of developing a first cut data model and refining it by using automated products.

1. Scope of project is open to interpretation;
2. Simple pilot projects mask real problems;
3. Time box concept open to interpretation;
4. When developing the second and subsequent systems, there is often a need to revisit and maintain previously implemented systems due to the lack of addressing integration issues.

6.4 Function Point Counting

This is the process of identifying the number of activities a business needs to consider.

1. Scope of project is limited to known projects
2. Requires a stable data model.

6.5 Trial and Error

Trial and Error is the process of trying one of the above and when that technique leads nowhere, changing to another technique.

Conclusion

Not a pretty picture.

RIPOSE has combined the best features of the above techniques to ensure that the end product is:

1. Fast;
2. Understood;
3. A quality product every time;
4. Easy to learn;
5. Inexpensive;

RIPOSE takes the “pain” out of Joint Enterprise Modelling (Strategic Planning), Joint Requirements Modelling (Information Architecture, System Architecture, and Data Modelling) and Joint Application Development (Data Base Design, Program Development and/or Prototyping).

INDEX

A

Actions, 85
Anatomy of Goals, 52
Application, 114
Association, 63
Attribute Functionality, 104
Attributes, 102

B

Binary Relation Modelling, 119
Business, 15
Business Components, 32
Business Effectiveness, 25
Business Functions, 85
Business Systems Planning, 117

C

Candidate Key, 103
CASE, 122
Cause of Project Blow Out, 111
Class Fundamental Entity, 58
Communication, 18
Compound Foreign Attribute, 104
Conflict, 62
Constructing the Information Model, 69
Critical Failure Factors, 58
Critical Success Factor, 52
Cycle of Failure, 45
Cycle of Opportunity, 39
Cycle of Success, 42

D

Data Analysis, 119
Data Base Design, 110
Data Modelling, 119
Datum, 102
Derived Attribute, 106
Discovering Attributes, 106

E

Entity Types, 56
Esteem, 55
Export, 116

F

Facts, 102
Foreign Key, 104
Function Point Counting, 125
Fundamental Entity, 56

G

Generic Information Classes, 64
Goal Priorities, 57
Goals, 39
Graphical Representation, 71
Grouped Attribute, 105

H

Hierarchical Decomposition, 69
Hierarchical Management Structure, 21

I

Identifying Goals, 49
Increased Business Effectiveness, 26
Increased System Effectiveness, 29
Information Class Matrix, 68
Information Modelling, 56
Intersecting Fundamental Entity, 57
IT Department Structure, 30
IT Professional Expertise In The Business, 27

J

Joint Application Development, 25
Joint Enterprise Modelling, 23
Joint Requirements Modelling, 24

K

Key Attribute, 102
Key Performance Indicators, 63
Knowledge, 56

L

Lateral Thinking, 125
List Representation, 71

M

Management Expertise, 24
Management Structures, 20
Managing a Business, 21
Managing the Business Structure, 21
Mandatory, 64
Mandatory Mutually Inclusive, 60
Many to Many, 63
Measures, 61
Minds, 17
MIS, 22
Missions, 50
Mutually Exclusive Secondary, 58
Mutually Inclusive Secondary, 60

N

Needs, 57
Network Structure, 31
Non Key Attribute, 104

O

Object Oriented Design, 124
One to Many, 63
One to One, 64
Optional, 64
Optional Attribute, 105
Optional Becoming Mandatory, 64

P

People, 16
Perception, 55
PREPare Your Goals, 51
Primary Key, 103
Principal Fundamental Entity, 57
Processes, 112
Prosperity, 53
Pseudo Code, 116
Purpose, 50

R

Ranking Critical Success Factors, 58
Rapid Iterative Prototyping, 125
Rebuild the Cycle of Success, 47
Relation, 61
Repeating Attribute, 105
Resolving a Conflict, 63
Results In Advance, 48
Robust, 54
Rule of 7, 49

S

Secondary Entity, 58
Selection Attribute, 104
Software Engineering, 121
State Transition Analysis, 125

SWOT, 57
System Effectiveness, 28
Systems, 87

T

The Mind of Businesses, 20
Trial and Error, 125
Typed Dependant Secondary, 59
Typed Functional, 60
Typed Group Secondary, 59
Typed Relation, 62

U

Understanding, 18
Unique Attribute, 105
Untyped Dependant Secondary, 59
Untyped Functional, 60
Untyped Group Secondary, 60
Untyped Relation, 62
User Expertise, 27

V

Viewpoint, 61

W

Wants, 57