SWP 37/88 DEVELOPING INFORMATION SYSTEMS
STRATEGIES - A MODEL

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DEVELOPING INFORMATION SYSTEMS STRATEGIES

- A MODEL

Teaching Notes

A. CAUSES OF *IS* STRATEGIC PLANNING

Based on a sample analysis there appear to be three main reasons why an *IS* strategy is developed:

- reaching the 'transition point' in the stages of growth when the strategic role of *IS* is recognised;

- major corporate changes or actions require the *IS* role to be reconsidered;

- competitive threats or opportunities involve *IS/IT* commitments in direct business action.

In many cases more than one of these causes may coincide. Each cause implies different objectives, scope and emphasis for the strategy.

i. Due to *IS* Evolution

The changing role is usually perceived by (some) users and *IS* management due to the changing nature of demands often in line with Nolan's stage 3 to 4 changes of emphasis.

Since this appears to be the most common reason for the need to develop an *IS/IT* strategy it is worth considering the nature of the transition further.

In spite of criticism of Nolan's six stages (Refs 2 & 3) the transition point between the organisation's perception of managing computers to managing information still appears a very valid observation. This is shown on figure 1. Most organisations, or major parts of those organisations, are lower down the curve in practice than in their visions, and consequently results delivered are generally disappointing.
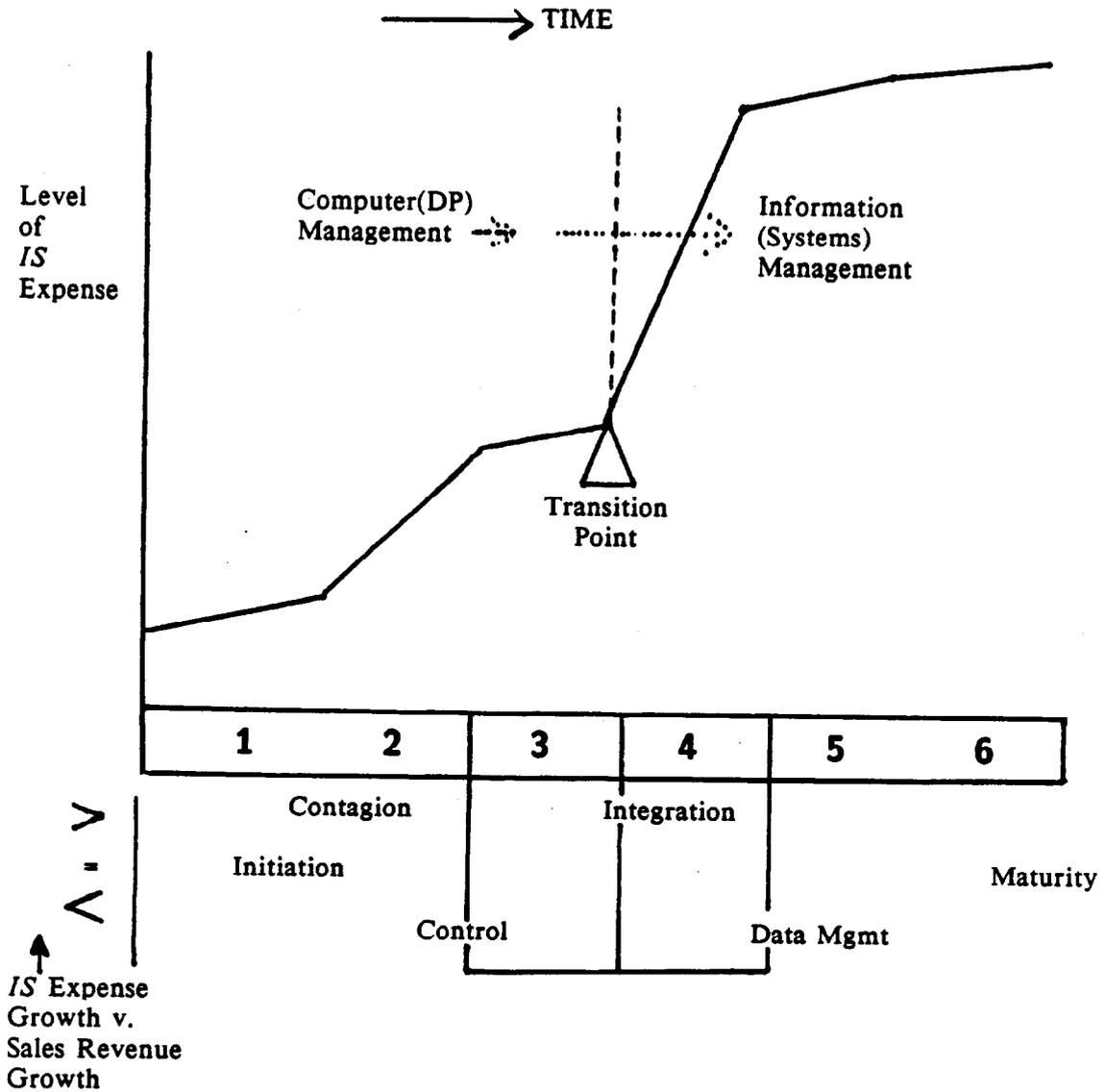
STAGES OF GROWTH/EVOLUTION

$\longrightarrow$ TIME

Level
of
IS
Expense

Computer(DP)
Management

Information
(Systems)
Management

Transition
Point

1	2	3	4	5	6

Contagion
Initiation

Integration

Maturity

Control

Data Mgmt

IS Expense
Growth v.
Sales Revenue
Growth

(after Nolan)

Figure 1

The transition required is often the biggest step in the management of *IT/IS* since the first computer was installed. In essence, it is a fundamental change in how *IT/IS* resources are to be managed. It can be summarised as a change from 'Computer Management' to 'Information Management'. This is as significant a change for Marketing Management, Labour to Human Resource Management, etc. The relationships involved and the transition required is depicted in figure 2.

TRANSITION OF THE 1980s

```
                    ┌─────────────────┐
              ┌────▶│  IS role in the │──┐
              ┆     │   enterprise    │  │
              ┆     └─────────────────┘  │
              ┆                          │
              ┆     ┌─────────────────┐  │
              └────▶│ Relationship with│◀─┘
                    │ other departments│
                    └─────────────────┘
COMPUTER (DP)              │  ▲        │         INFORMATION
MANAGEMENT                 │  │        ▼         MANAGEMENT
                    ┌─────────────────┐
              ┌────▶│  Managing the   │──┐
              ┆     │  IS department  │  │
              ┆     └─────────────────┘  │
              ┆     ┌─────────────────┐  │
              └────▶│  Managing the   │◀─┘
                    │    activities   │
                    └─────────────────┘
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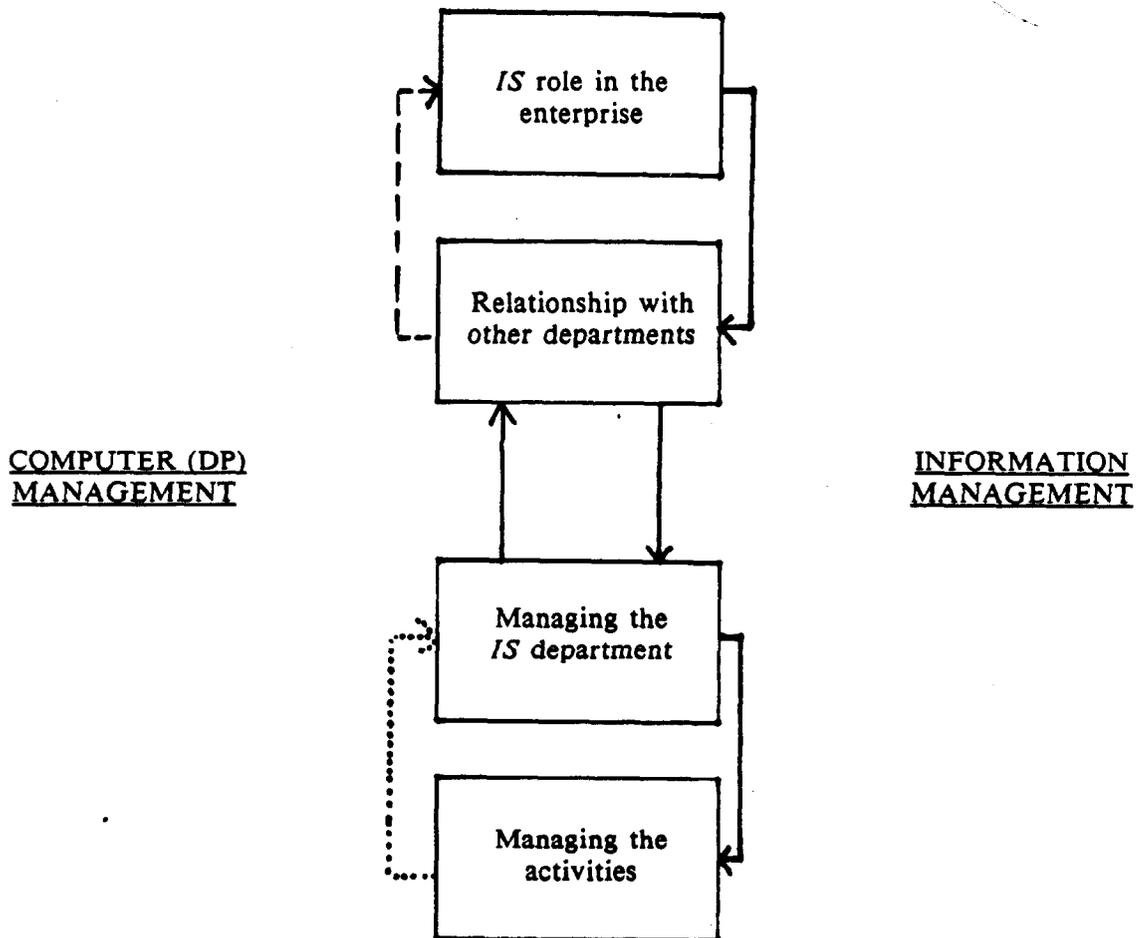
Figure 2

During the early stages of computerisation the pre-occupation is with managing the activities - operations, systems projects, etc. - successfully. In time an organisation is established which can cope with the applications throughout their life and the changing technology. Whilst this has been evolving, relationships with users will have developed: the effectiveness of the interface being dependent on success to date and the users' knowledge of the way computers can be used - often Accounting will be far more advanced than (say) Marketing - not for good business reasons, but due to the ease with which computers can be applied. Occasionally, the role of IS/IT in the organisation may be considered but the haphazard evolution and current problems will prevent an overall picture to be clearly seen.

Up to this point the driving force has been managing computer resources with effort applied in proportion to the technical and application difficulties, without much regard for the value to the business of the applications.

The transition requires a top down approach, defining how IT/IS and the business are related, then how each department/function of the business can benefit from IT/IS and

only then organising the *IS* resources accordingly within which activities can be carried out.

Whilst the *IT/IS* department has become more sophisticated, so have the users. Their attitude to the 'purchasing' of information services will have evolved (see figure 3).
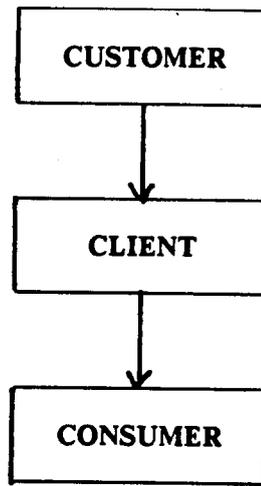
USER EVOLUTION

```
┌─────────────────┐
│    CUSTOMER     │
└─────────────────┘
          │
          ▼
┌─────────────────┐
│     CLIENT      │
└─────────────────┘
          │
          ▼
┌─────────────────┐
│    CONSUMER     │
└─────────────────┘
```

Figure 3

Initial attempts to get users to be customers - to specify requirements and then wait for delivery - prove unsatisfactory. The next stage is client - on-going interaction and review during the development of applications. This delivers better results but is very intensive in resource use - both user and professional and requires continuous good communication in both directions. As users become more sophisticated they can specify and satisfy their own information systems needs in some areas, and they would prefer not to justify or explain what they require! They want the discretion of a consumer, to choose how they use *IT/IS*.

Thus the 'evolution' cause is quite complex and has many detailed causes which combine to produce a desire to manage *IS/IT* resources in new ways. The triggers could be, for example:

-      some users recognise that *IS* has a strategic or competitive value and capability;

-      demand increases generally, requiring significant budget increases - need to integrate technologies - set priorities and improve productivity of *IS* resources;
-      users are dissatisfied with service;

-      *IS* is hamstrung due to resource, technology constraints.

It is evolution, not revolution!

The emphasis of the strategy will be to release the technology to the users whilst ensuring management control is maintained and resources are not wasted.

The scope will be to extend the boundaries of *IS* use, but only to meet 'known' requirements.

The objectives of developing the strategy will be to obtain corporate management understanding and commitment to the revised demand for resources. This means that users and *IS* will have to show how this can be achieved by 'controlled evolution'.

Most *IS* strategies have this as (at least part of) the cause. Some users/functions/units in the organisation may be more retarded in *IS* uses, and to be effective it may be best not to produce a 'total strategy' for everything.

ii.   Due to Major Corporate Changes

These might be:

-    new owners/management due to takeover, etc;

-    major rationalisation programmes for the organisation;

-    major organisational restructuring, eg. to profit centres or strategic business units;

-    a major corporate planning thrust;

-    new products or markets, or major new facilities;

-    or possibly due to general user dissatisfaction with the contribution from *IS*

This will have senior management commitment! The emphasis will be on changing the role of *IS* in the organisation – the strategy should define the new role. Therefore, initially at least, the scope and objectives may be uncertain!

If major changes are occurring in the corporation at the same time, users may not be capable of defining what is required of *IS*.

Often the resulting strategy, produced under organisational stress, is not entirely appropriate.

iii.   Due to External Pressures

These might be:

-    competitive threats (real or potential) based on *IS/IT*;

-    opportunities for *IS/IT* to be used to gain a competitive advantage;

- new potential products or markets created by *IS/IT*;

- major cost factor changes producing an urgent need to improve productivity or lose business.

A strategy is required because these new requirements will require resources to be committed long term - which will probably require resources to be moved from elsewhere. Alternatively, or additionally, new technology may be required which needs to be considered in relation to existing technologies.

The emphases of the strategy will be exploitive/entrepreneurial and this implies new attitudes to the use of *IS/IT* and, probably, in turn new skills, different people and new types of technology to support.

The scope may be limited and focussed on one area of the business. General (senior) management may not be involved, although senior line management in the area concerned may be very involved. It should not be the excuse for an overall review of *IS* strategy, which will inevitably delay progress.

IN SUMMARY

Where the main cause is *IS* evolution, the emphasis will be to maintain control. If the strategy is demanded to satisfy major corporate changes the objective will be to alter the *IS* role - although to what may not be entirely clear. If external pressures are the cause, it is likely the objective will be to exploit *IS* in new ways in a limited area of the business - but this will require redeployment of resources.

It is important to know what the strategy is intended to achieve - its objectives.

B.   NEEDS FOR AN *IS/IT* STRATEGY

In general, the needs to be satisfied in developing an *IS* strategy will be some of the following:

-   coping with increasing uncertainty, differentiating what is important for and relevant to the business;

-   establishing a framework within which changes can be introduced and managed effectively as *IS/IT* is used more widely;

-   obtaining executive management commitment to the role of *IS* in the business, and a consistent management stance;

-   completion of a corporate strategy and revisions where *IS/IT* affects it;

-   obtaining better returns from existing investments in technology and resources - this can often be overlooked, but generally offers considerable scope for improvement;

-   establishing a framework within which investments can be evaluated and technologies adopted.

In general, there will be a need to adopt a formulative rather than reactive approach to *IS* and quite often to stop *IS* being a battleground, or seen as a constraint to business development.

C.   KEY OBJECTIVES OF AN *IS* STRATEGY

Whilst a strategy will have particular objectives to meet, there will be underlying general objectives in both the user and *IS* areas. These may not be the same, given the history and existing role of *IS* in the organisation. However, they should be compatible - as below:

User Objectives	I.S. Objectives
To interpret business strategy and needs in terms of *IS* developments and services.	To identify opportunities for exploiting *IS/IT* capability.
To establish demand and priorities for *IS* activity.	To identify and plan for resources & technologies required.
To reconcile user requirements and avoid duplicated or incompatible investments.	To reconcile requirements and ability to satisfy them.
To get the best values from *IS* resources.	To provide service levels appropriate to business needs.
To regain control of their information and exploit it to improve performance.	To enable users to learn from the experience available in the *IS* specialists.

D. *IS & IT STRATEGIES - RELATIONSHIP*

Michael Earl (Ref 4) has perhaps defined these most pertinently:

```
┌─────────────────────────────┐
│  IS STRATEGY                │
├─────────────────────────────┤
│                             │        WHAT IS
│  .Business Based            │
│                             │        REQUIRED?
│  .Demand Orientated         │
│                             │
│  .Application Focused       │
└─────────────────────────────┘

      ↑                    │
INFRASTRUCTURE        NEEDS &
      │                    │
& SERVICES            PRIORITIES
      │                    ↓

┌─────────────────────────────┐
│  IT STRATEGY                │
├─────────────────────────────┤
│                             │
│  .Activity Based            │        HOW IT CAN
│                             │
│  .Supply Orientated         │        BE DELIVERED
│                             │
│  .Technology Focused        │
└─────────────────────────────┘
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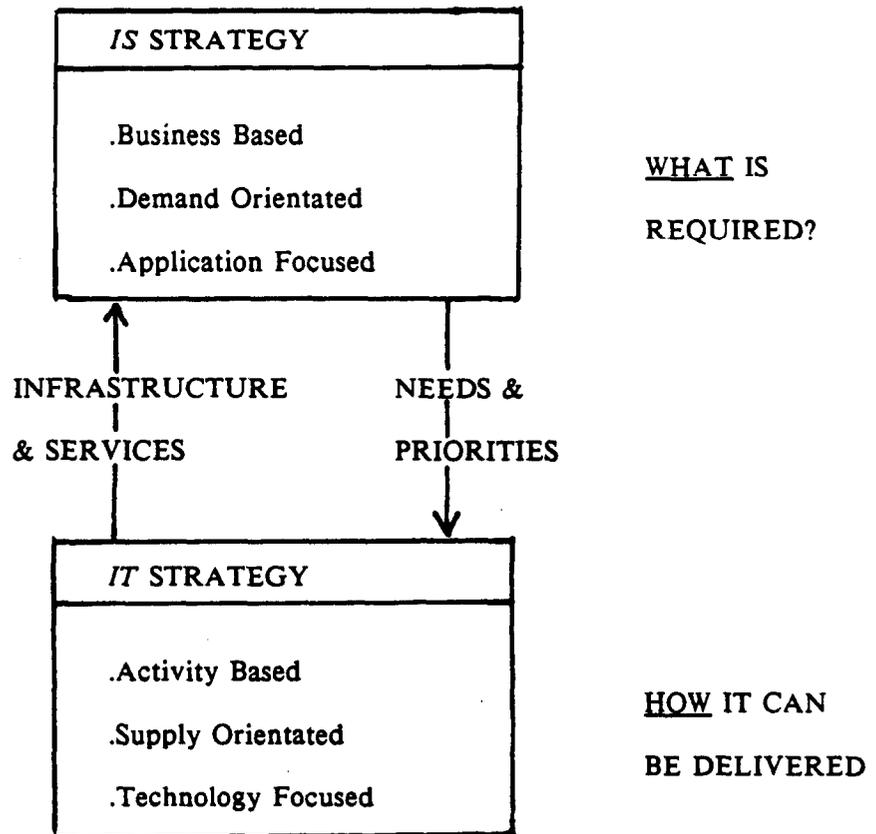
He says:

> *"IS strategy is primarily concerned with aligning IS development with business need and with seeking advantage .... IT strategy is primarily concerned with technology policies and procedures - the modus operandi for the IT function".*

IS strategy is therefore dealing with <u>what</u> the business could and should do and the business management of applications, whereas *IT* strategy focusses on supply management, delivery solutions. The two must be harmonised and supply and demand balanced - this requires an overall management strategy to establish how this balance will be achieved.

IS/IT STRATEGY INPUTS AND OUTPUTS

The process of developing an *IS/IT* strategy will be interactive and continuous but, like any information based process, can be described as a set of inputs to be analysed using appropriate tools and techniques to produce a set of appropriately structured outputs.

The 'model' outlined below is one alternative (Figure 4).

IS/IT STRATEGY INPUTS AND OUTPUTS

```
                              ┌──────────────┐
                              │   Current    │
                              │ Applications │
                              │  Portfolio   │
                              └──────────────┘

┌───────────┐    ┌──────────────┐    ┌─────────────┐    ┌──────────┐
│ Corporate │    │   Business   │    │   Social    │    │  IS/IT   │
│  Plans &  │    │ Environment  │    │ Environment │    │  Trends  │
│ Objectives│    └──────────────┘    └─────────────┘    └──────────┘
└───────────┘

┌───────────┐                                    ┌──────────────┐
│ Functional│                                    │  Available   │
│  Business │                                    │ Resources &  │
│   Needs   │                                    │  Capability  │
└───────────┘                                    └──────────────┘

                   ┌──────────────┐        ┌──────────────┐
                   │    IS/IT     │◄──────►│  Strategic   │
                   │  Strategic   │        │  Planning    │
                   │  Planning    │        │  Tools &     │
                   └──────────────┘        │  Methods     │
                                           └──────────────┘

┌───────────┐    ┌──────────────┐        ┌──────────┐
│ Business IS│   │  Management  │        │    IT    │
│  Strategy  │   │  Strategy    │        │ Strategy │
└───────────┘    └──────────────┘        └──────────┘

                   ┌──────────────┐
                   │ Application  │
                   │    Plan      │
                   └──────────────┘

                   ┌──────────────┐
                   │    Future    │
                   │ Applications │
                   │  Portfolio   │
                   └──────────────┘
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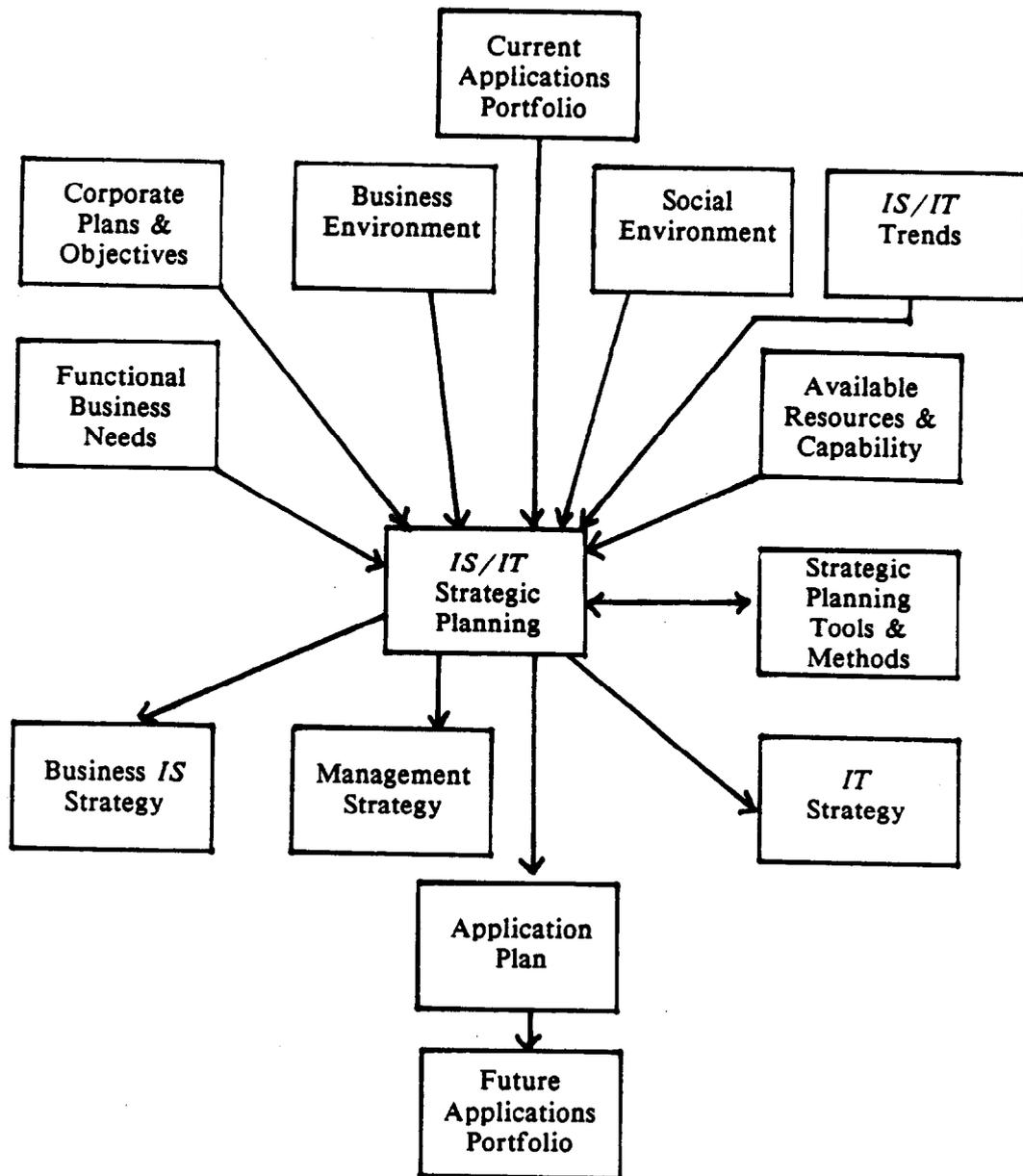
Figure 4

The inputs, their importance and inter-relationships, the planning tools and methods available and their use and the contents of the proposed outputs are detailed later in the course.

At this stage it is sufficient to define them.

Inputs

1. *Current Application Portfolio* - existing systems plus in progress developments and planned projects. Not the backlog, ie. unscheduled applications (see 6).

2. *Corporate Plans and Objectives* - at all and any levels (functional or unit) they are available even if not formally documented as a 'corporate strategy'.

3. *Business Environment* - the economic, industry, competitive climate in which the organisation operates.

4. *Social Environment* - the human factors, individual or organised, internal, ie. employees and external (consumers, pressure groups) and the political climate.

5. *IT/IS Trends & Options* - the technology, its economics and its current and potential applications in the firm's environment.

6. *Functional Business Needs* - business activities which might be beneficially addressed by using *IS/IT* in the foreseeable future.

7. *Available Resources and Capability* - both quantity and quality of resources available throughout the organisation to be matched against the requirements of the strategy.

PLANNING PROCESS

The mixture of strategic planning and *IS* management and planning techniques available.

Outputs

1. The Strategies

    (a) *Business IS Strategies* - how each unit or function will deploy *IS/IT* in achieving its business objectives - essentially the applications and services required.

    (b) *Corporate IS/IT Polices* - the common elements of the strategy which apply throughout the organisation, ensuring consistent policies where needed.

(c)   *Information Technology Strategy* - policies for the management of technology and specialist resources.
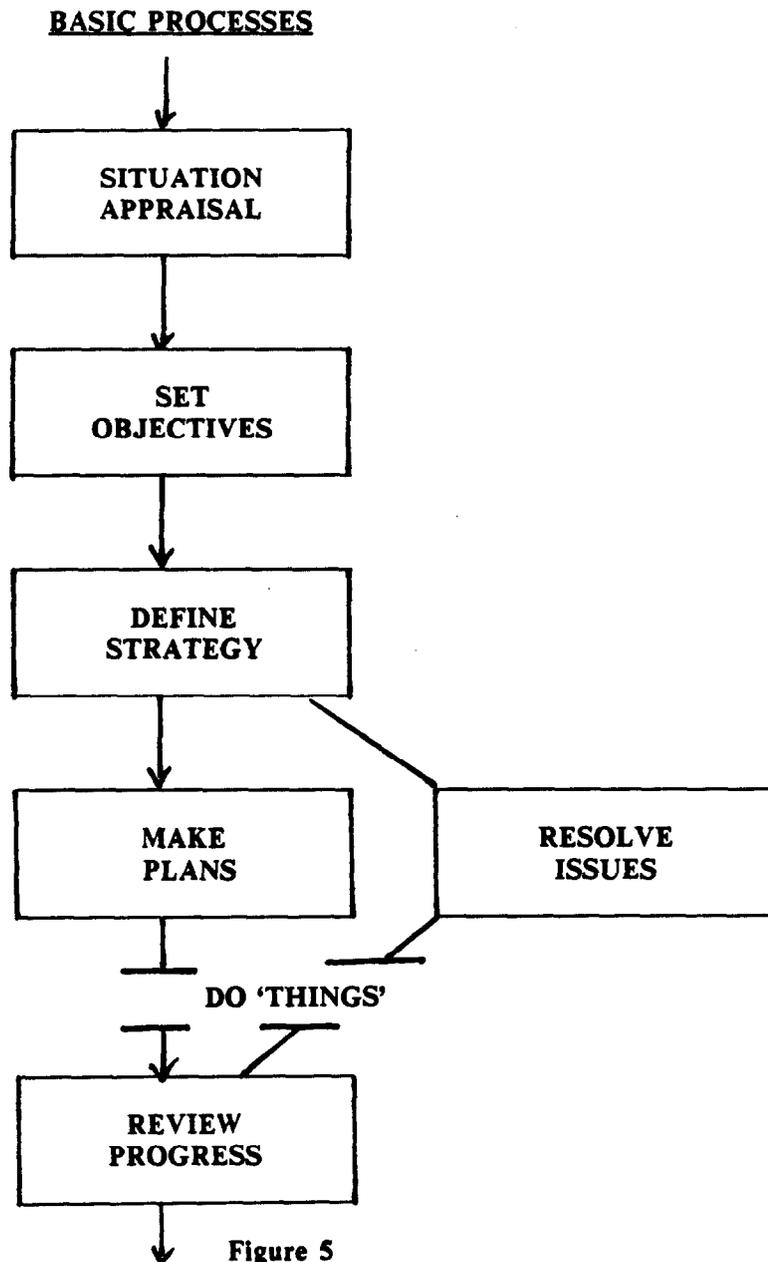
The strategies are a means to an end.

2.   *Application Plan* - specific 'projects' whose cumulative objectives satisfy the strategies and against which resources will be allocated.

3.   *Future Applications Portfolio* - This is the most important output since it is a picture of how *IS/IT* will be used, at some future date, to help manage the business towards achieving its objectives.

E.   *IS* STRATEGY - THE PROCESSES

The processes outlined below are not peculiar to the development and implementation of *IS* strategies - they are applicable to any strategic management process. The process is *interactive, especially in the later steps (Figure 5)*.

The process steps are applicable to producing an overall strategy or considering specific areas of the business or applications of technology.

BASIC PROCESSES

```
                    │
                    ▼
        ┌───────────────────────┐
        │     SITUATION         │
        │     APPRAISAL         │
        └───────────────────────┘
                    │
                    ▼
        ┌───────────────────────┐
        │        SET            │
        │     OBJECTIVES        │
        └───────────────────────┘
                    │
                    ▼
        ┌───────────────────────┐
        │      DEFINE           │
        │     STRATEGY          │
        └───────────────────────┘
                    │
                    ▼
        ┌──────────────┐      ┌──────────────┐
        │    MAKE      │      │   RESOLVE    │
        │    PLANS     │      │   ISSUES     │
        └──────────────┘      └──────────────┘

              DO 'THINGS'

        ┌───────────────────────┐
        │      REVIEW           │
        │     PROGRESS          │
        └───────────────────────┘
                    │
                    ▼
```

Figure 5

REFERENCES

1.   Nolan 'Managing The Crises In DP' (HBR March/April 1979)

2.   Sullivan 'Systems Planning In The Information Age' (SMR Winter 1985)

3.   Drury 'An Empirical Assessment Of The Stages Of DP Growth' (MIS Quarterly June 1983)

4.   Earl 'Formulation of Information Systems (*IS*) Strategies - A Practical Framework' Pergamon Infotech 'Information Management' report 1987.