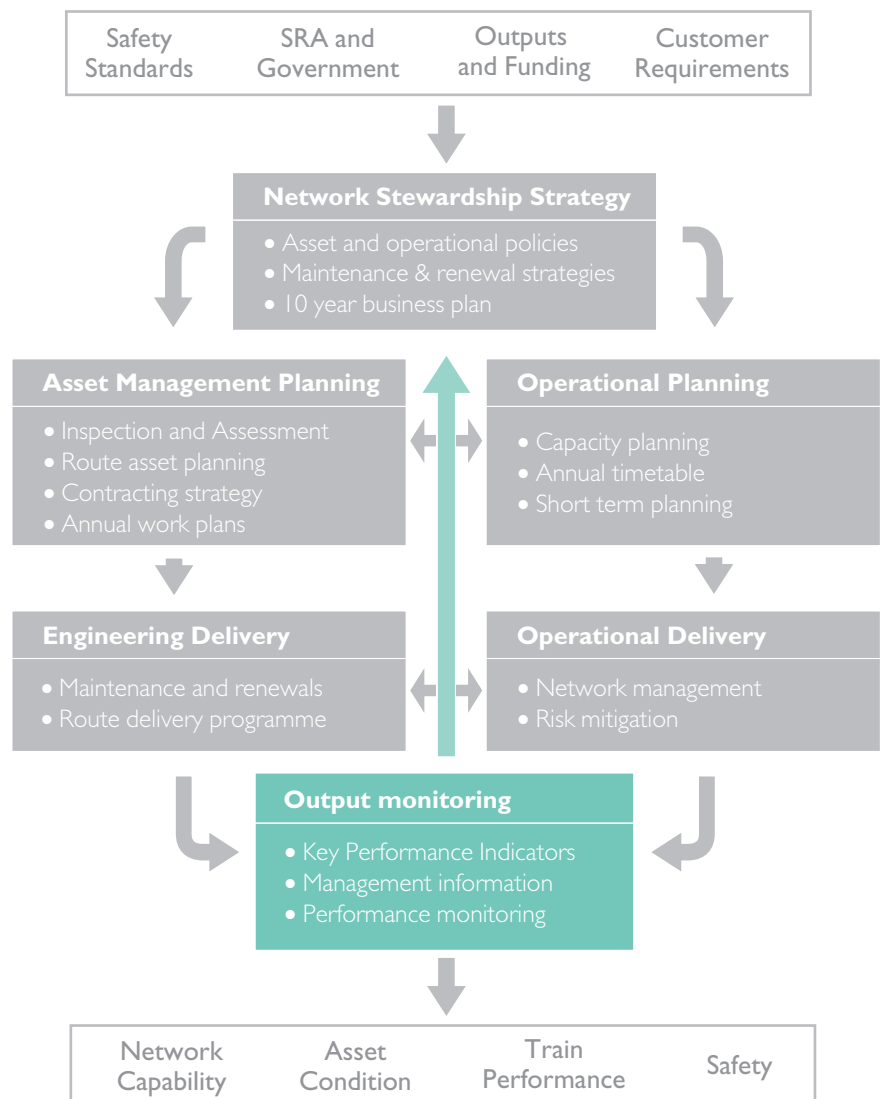


Section 8

Output Monitoring

Having identified the key network outputs it is important that we develop a clear and concise methodology to ensure that what is actually delivered is measured against what was expected to be delivered. Central to this is clearly defined performance targets and key performance indicators (KPIs). Here we explain how we monitor progress against these KPIs and how we provide feedback throughout the organisation to ensure that appropriate and timely corrective action is taken.



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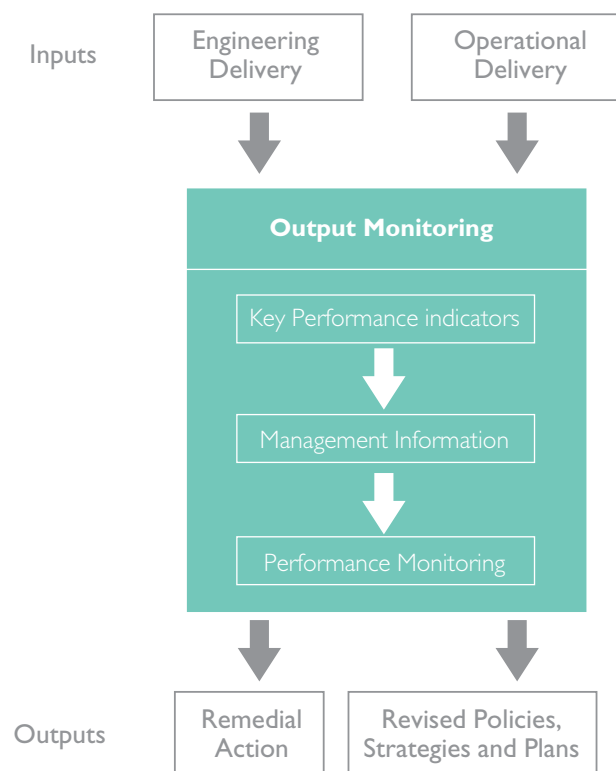
Objective

Our core business processes, described in Sections 3 to 7, can only be delivered effectively if there are appropriate measures in place to assess their effectiveness and these measures are supported by adequate information. Through the Business Plan we set clearly defined performance targets and KPIs that are structured to allow us to assess our effectiveness in meeting our funders' and stakeholders' expectations. There needs to be a clear and concise methodology to monitor and review performance against these targets to ensure that remedial action is taken and that, where appropriate, strategies and plans are reviewed and revised.

Approach

Information needs to be provided to managers, operatives and third parties (for example IMCs) which is easy to interpret and relevant to their individual roles to enable managers to maximise asset and network performance, see the figure below.

Figure 8.1 Output Monitoring



Historical shortcomings in our monitoring and review processes have been:

- limited scope of key performance indicators;
- incomplete cascade of supplementary indicators to identify root causes, accountability for remedial action and lead indicators to proactively resolve issues before outputs are affected;
- management information which is based on manual or outdated systems, difficult to obtain, poorly managed, of variable quality and not produced on a timely basis;
- lack of a systematic approach to business performance review; and
- insufficient management focus on remedial action.

Our goal is to monitor and review our performance in a timely and effective manner through:

- an appropriate, clearly defined, hierarchy of performance indicators;
- timely, comprehensive and accurate management information delivered by world-class systems; and
- systematic and rigorous performance monitoring, root cause identification and swift remedial action.

The key deliverables over the next two years to enable this goal are:

- embedding the recently defined key performance indicators across our core business processes;
- developing a comprehensive suite of supporting cascade indicators, filling existing gaps and eliminating duplications;
- introducing a corporate dashboard across the business which will provide up-to-date information on key performance indicators to all who require it;
- extension of the corporate dashboard to include the supporting of cascade indicators;
- operation of timely and rigorous business reviews across all areas of the company;
- creation of a train performance information warehouse and appropriate analytical tools; and
- develop plans to replace the existing train management systems with readily accessible real-time information.

Our information requirements are complex and considerable work is required to ensure that timely and up-to-date information is available. We intend make significant improvements via the implementation of our Information Plan.

Key Performance Indicators

Our mission has been related to a series of outputs, each of which has measurable objectives as shown in the table below.

Although we are only in control of a proportion of the factors that contribute to the industry-wide objectives relating to safety, performance, capability and relationships, this approach reflects the need to coordinate and align the interests of all industry participants in working together towards the delivery of a better service.

These measures will be developed into a comprehensive suite of supporting indicators which will be designed to ensure that:

- key outputs which contribute to our objectives are identified, measured and monitored;
- planned activities to achieve the outputs are quantified and their delivery is reviewed; and
- activities and outputs are linked with accountable individuals across the organisation.

Figure 8.2 Outputs, Objectives and Measures

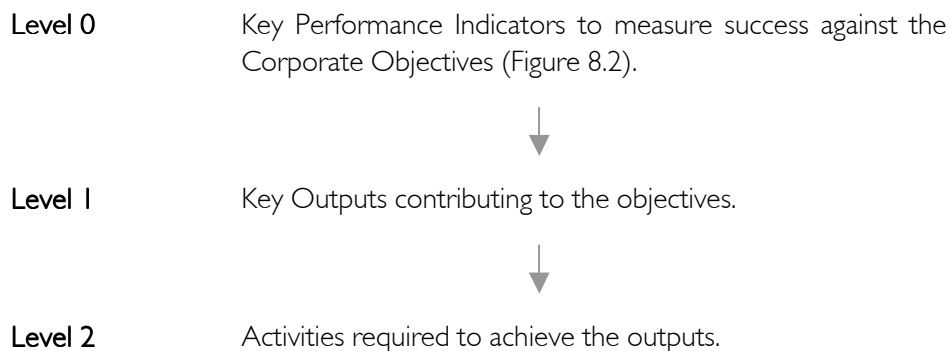
Outputs	Objectives	Measures
Improved Safety	Reduced number of accidents	Public Safety Index
Higher Performance	Better punctuality and reliability	Public Performance Measure (PPM)
Increased System Capability	Facilitate SRA's Strategic Plan to increase passenger and freight usage	RAB adjustment for passenger and freight volume incentives
Improved Customer & Stakeholder Relationships	Increased passenger and Freight Operating Company (FOC) satisfaction	Passenger Complaints per 100,000 journeys; and FOC satisfaction rating
Improved Financial Control	Improved financial efficiency	Financial Efficiency Index
Improved Asset Stewardship	Improved and better value stewardship of the infrastructure	Asset Stewardship Index
Improved Business Performance	Greater employee engagement	Employee Engagement Measure

By using a methodology based on activity linkage we will articulate a clear trail from individual and team activities through to our corporate goals. This will encourage more proactive management of levers rather than reactive management of outputs.

Together with timely information and management review, this will enable:

- rapid identification of problems and causal factors; and
- swift remedial action.

The overall framework will be:



To date we have completed development of the Level 0 and Level 1 measures and these have been used in preparation of this Business Plan. Over the next three months we will embed them throughout our reporting and review mechanisms. As an example the key output measures (Level 1) for Asset Stewardship are shown in the table below

The Asset Stewardship Index is a weighted average of the specific asset measures, using the weightings shown below

Figure 8.3 Asset Stewardship Measures

Asset Stewardship Index	Weighting
Number of broken rails	20%
Level 2 Exceedences (per track mile)	20%
Number of Signalling failures	20%
Poor Track Geometry (PTG)	20%
Number of temporary speed restrictions (TSRs)	-
Traction Power Supply Failures (causing >500minutes delay)	10%
Station Condition (no of stations in condition 3 or worse)	10%

Activity measures (Level 2) have been developed for our objective to improve Asset Stewardship. This includes both volumes of activity and unit cost measures.

During 2003/04 we will:

- complete the full cascade for Asset Stewardship by eliminating historical measures no longer required and linking to accountability statements; and
- develop Level 2 measures for the other Corporate Objectives.

We will also continue to measure and report on all asset condition, serviceability, activity volume and network capability measures and targets as outlined in Sections 2, 3 and 4 respectively, of the 2001 Annual Return to the Regulator, subject to any subsequent modifications agreed with the ORR.

Management Information

The Information Plan describes our overall plans for management information and systems in detail. Whilst at this stage it is not possible to finalise the details of the full information requirements for reporting, as they will inevitably change as the business evolves, the Information Plan identifies the needs as:

- information necessary for improved cost control, such as metrics on unit costs;
- information necessary for us to control our business operations, and deliver safe and reliable infrastructure and operations;
- information necessary to support management reporting, as defined in the Cooperation Agreement; and
- information necessary to enable measurement of the KPIs, disaggregated by region and route.

Detailed information requirements (for example, content, format, frequency, delivery mechanism) will be defined in consultation with the SRA, ORR and other parties in the rail industry.

Information must have in place strict governance rules, and be subject to quality control to avoid errors, duplication and unnecessary cost. Once controlled and assured the information needs to be made available to the business and its stakeholders through an easily accessible and shareable means.

Internal Reporting

A standard information reporting process is required to support the business, regulatory, and management information needs and their evolution. This integrated process will provide to the Board and management the information that supports the development of the Business Plan and also satisfy regulatory requirements. A fundamental part of the process will be the alignment of the information requirements, and consequent Information Systems, to provide the right information in a timely fashion to monitor and report progress.

One of the new requirements for IS support is a network-wide system to report key performance indicators. The Information Plan will provide standardised common information about the network, namely the system-wide measures and internal KPIs.

External Reporting

Our licence conditions require that specific information is supplied to our regulatory bodies. Similarly we have obligations to the HSE and HMRI as well as Local Output Commitments to train and freight operating companies and other interested parties.

Some of the key external reporting requirements are listed below:

- we will provide the SRA with information as set out in the SRA Cooperation Agreement, and any information the SRA reasonably requests to assist in the development and implementation of joint initiatives;
- financial statements, including expenditure forecasts and costs for operations, maintenance and renewals;
- information provided to the HSE and HMRI;
- progress reports detailing performance against the Business Plan;
- Management Incentive Plan to the Regulator; and
- any rail infrastructure cost and performance data (including KPIs), reasonably required, at a disaggregated level, that our information systems allow.

Initial Assessment

An assessment of the ability of our IS estate to meet information requirements, and its state as a basis for moving the business forward to achieve corporate goals, has been carried out recently through the development of a 10 year vision. These assessments identified a number of key issues:

- there are over 1,000 applications supporting the business. Many of these systems replicate data and functionality within other systems and together represent a significant cost in the ongoing support and management of the IS estate; and
- there are gaps in the applications available to the business.

Information System Improvements

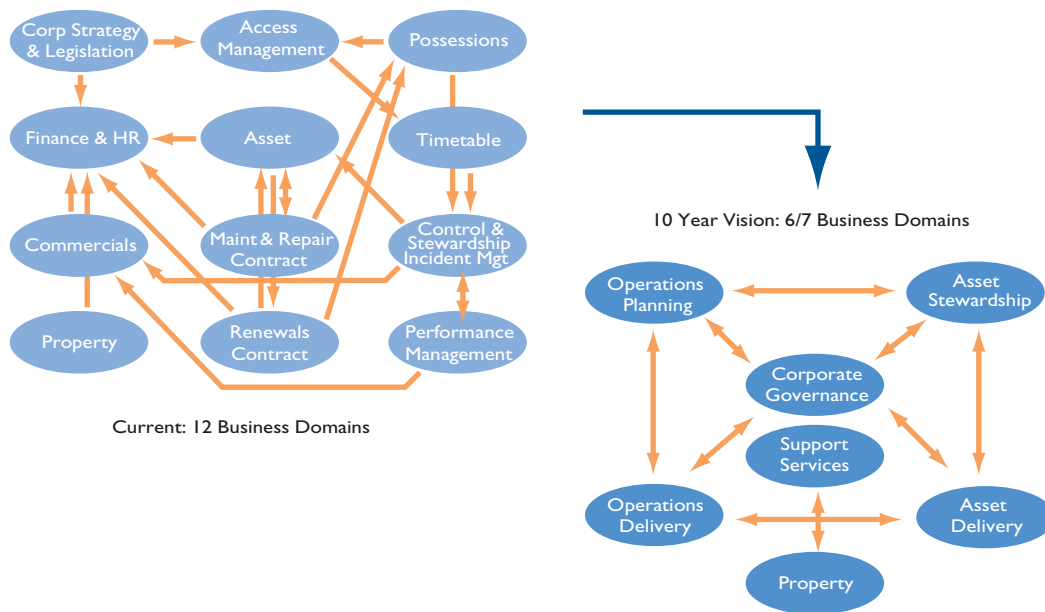
To improve the quality of the information systems within the company, together with the underlying data, requires a significant cultural shift from how information management is delivered today.

We need to capture and monitor a range of data, including information about safety, train performance, financial performance, asset performance and stewardship. It is critical that the data is collected on a consistent basis across the company, in order to be able to identify how successful we are in meeting our stewardship and regulatory obligations, as well as monitoring the costs and other resource implications of our activities. The “10 Year Vision” for IS within the company has been developed to describe, at a high level, the strategy for improved information management that supports the corporate objectives.

The strategy provides the framework and services that transform the current bespoke, disjointed applications, data and technology into a toolset using the same consolidated assured data operating within a secure and extendable infrastructure.

To develop a meaningful vision there needs to be a credible over-arching business model. Based on interviews with senior members of the company, a business domain view (see the figure below) was created for what we believe is the simplest model possible. Verification of this model with the business is currently being undertaken and hence the model should be viewed within this context.

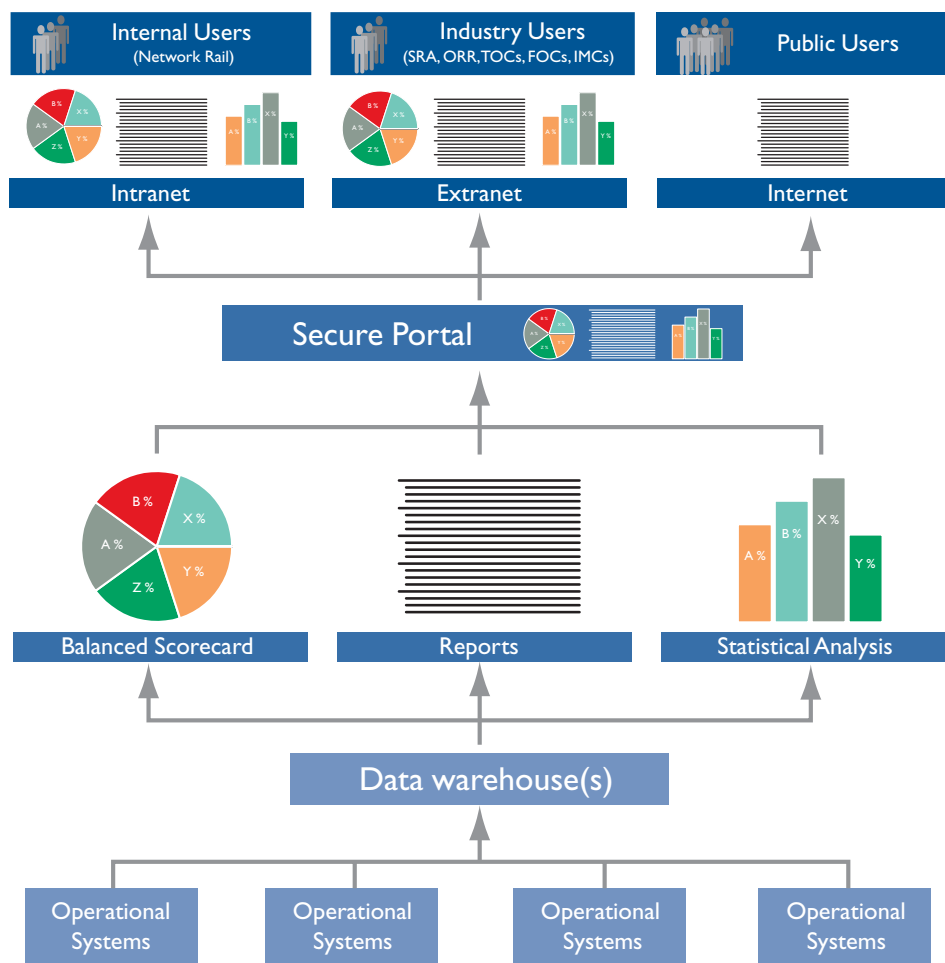
Figure 8.4 Business Domains



Information Delivery Improvements

The data services programme has already implemented a management dashboard to report on initial KPIs. The programme is now focused on establishing which information is needed to satisfy the reporting requirements, building the data warehouse and a secure portal.

The strategy is to deliver information through a secure portal which provides the information in a user-friendly manner at the required level of aggregation. The information must be sourced from both existing and new operational systems whose data has been cleansed and placed under governance. The figure below illustrates information delivery. This strategy also supports, as required, the formation of a secure collaborative environment where information required for joint reporting between ourselves and other rail bodies can be delivered.

Figure 8.5 Information Delivery

Information may be delivered in a variety of ways, depending on requirements, this includes:

- balanced scorecard/management dashboard to display the business' key performance indicators and their effects on corporate objectives;
- reports, providing the detailed information behind the KPIs as well as additional reporting requirements from around the business - for example, for the SRA Cooperation Agreement; and
- statistical analysis tools, which will also be available where appropriate for detailed analysis.

Output from these tools will be published via a secure portal that will allow users to configure a web page with information that they are granted access to. These portal pages will be available over three channels:

- the intranet will provide access for internal staff to information they require;
- a similar extranet policy will allow industry partners to see information that we either choose or are required to make available to them; and
- the internet will allow the general public access to portal information that they would find helpful.

Short-Term Programme and Timescales

The short-term programmes of work establish a stable basis for moving the long-term strategy forward. The table below provides indicative timescales for some of these key activities.

Figure 8.6 Short-Term Implementation Programme

IM Strategy Based on the "10 Year Vision" a more detailed description of the 10 year strategy is produced (including proposed system architecture).	30th May 2003	Started
IM Strategy First cut of the corporate data model	30th May 2003	Started
IMP Develop Customer and Supplier Service and Service Level Frameworks - Resolve Service Management.	31st December 2003	Started
Knowledge Management Strategy for NR implementation of KM developed together with prioritised potential projects, design of suitable pilot(s) and pilot implementation.	January 2004	Started
Data Services Extension of management dashboard to incorporate secure portal, data warehouse, reporting needs and cascading KPIs. Data Management – delivery of a corporate data model and framework that enables current data to be stabilised and forms the basis for provision of required information	On-going phased delivery until March 2004	Started
Asset Systems and Knowledge MIMS – Migration strategy NMP – IM support for processes Management - Infrastructure in place to support the provision of Data Management services such as tools for ETL, Data Discovery and profiling	On-going phased delivery until March 2004	Started
Enterprise Solutions Delivery of further services, likely to include HR, Payroll, Sourcing - these services are to be confirmed as this programme is further defined.	On-going phased delivery	

Corporate Network Model

A Corporate Network Model (CNM) is being developed which will deliver one sustainable master set of data that describes the railway network. This traversable model of the railway network can be used as the base for reliable and detailed understanding of relationships between asset maintenance, traffic timetabling and recording, and fault management. The CNM will also establish the necessary business processes and data standards to support the transfer and maintenance of network model information between different business domains.

Work has already been undertaken to collate and document the business needs that will be satisfied by the use of network modelling techniques, and to evaluate the ability of current models to meet these needs. The validation of requirements and definition of the functional and data specifications is expected to be complete by April 2003, with the production of the model forecast for completion by the end of July 2004. This will then allow the retirement and replacement of some existing systems.

Performance Monitoring

Having developed a comprehensive suite of indicators to measure our activities, outputs and achievements against our corporate objectives, and developed the information systems to deliver a timely and accurate assessment of business performance, it is essential that we implement mechanisms to ensure robust management review and swift remedial action.

There are three key components to this:

- short-term ongoing reviews of real-time and daily or weekly information, by accountable individuals with proactive and timely short-term responses;
- medium-term regular reviews of team and business unit performance with senior management, formally identifying remedial actions and monitoring their progress; and
- long-term review of performance, through internal and external reports, as part of the annual business planning process or other ad hoc reviews, to inform future objectives, policies and plans.

Short-term

Across much of the business this will primarily be achieved through the cascade of performance indicators, together with desktop delivery and appropriate training. This will be supported by the HR Managing for Success process which provides a basis for regular monitoring and review against qualitative as well as quantitative objectives.

For our train regulation and control, however, every minute counts, and it is therefore essential that real-time information is available to our signallers and controllers. Information on our plans for improvement are included below.

Medium-term

Over the last two years, management reviews have increasingly been squeezed out by urgent short-term pressures. We have recently introduced monthly business reviews for each of the operating regimes, led by the Deputy Chief Executive. Quarterly reviews, led by the Chief Executive, will be held for all business units from the start of 2003/04.

All reviews are:

- based on comprehensive management reporting packs;
- clearly focused on key business issues;
- formally minuted; and
- provided with a follow-up report to ensure that remedial actions are delivered.

Long-term

As documented in sections 3, 4 and 6 of this Plan, all of our asset management and operational planning processes are highly dependent on accurate information and robust decision support tools.

As improved information emerges from the systems described in this section, it will be fed back into the planning processes to better inform and shape the future of the business and enhance our capability to deliver what we promise.

Train Performance Monitoring and Reporting

Performance data is collected through the TRUST mainframe system to support the industry performance regimes and to provide information to support performance analysis and improvement. A great deal of data is collected about performance, including the delay minute impact and cause of incidents that lead to train delay. Regular performance reports are developed from spreadsheet applications linked to TRUST via a mainframe database for both internal and industry performance management purposes. However, these systems have been found to be increasingly incapable of providing either consistent data at the detail level or a platform for essential analytical support features. Most of the systems currently in use have their origins in the pre-privatised railway and have been adapted piecemeal in an attempt to provide some current day business support. The result is a haphazard collection of system applications that require intensive manual re-working of data to provide even the most rudimentary analyses.

A vital step in the performance improvement process, both at a national strategic level and at local level, is to have access to meaningful management information about current performance levels and the key drivers of that performance. The ability to analyse the situation is an essential precursor to being able to form diagnoses of what opportunities there are to take, to ensure that prognoses of options for management action are correctly targeted. In addition, the ability to be able to forecast the likely outcome of management action or to model the likely impact of options are essential features of a robust process for performance improvement.

Train Performance Systems Strategy

To address this challenge, the company has developed a Performance Systems Strategy (PSS) with the aim of transforming the current unsatisfactory position to one of modern Information Management solutions that can deliver the essential analytical and reporting needs and are integrated with key systems in other parts of the company.

Its purpose is to deliver

- one consistent set of data linked to the source application resolving significant data management problems and limitations with existing multiple systems and records;
- automatic consolidation and summaries at appropriate management levels, geographies, functions and periods;
- the ability to drill down into the source information;
- the ability to do structured and ad hoc queries; and
- availability to all in the industry, probably via an intranet presentation layer.

The Performance Systems Strategy is likely to be delivered in three phases, with phase 1 due for implementation during 2003/04.

Phase 1 - Data Warehouse and Reporting Tools

The creation of a data warehouse and associated reporting and analytical tools will be carried out in three stages with expenditure authorised in summer 2002, with completion planned for autumn 2003. This phase is expected to provide the foundation for a more proactive approach to performance management that has the following characteristics:

- current reporting of performance on an accurate and consistent basis at appropriate levels of detail throughout the company;
- ready access to sufficient data to allow full analysis of the root causes and drivers of performance;
- an aid to diagnosis and prognosis about the required management actions, including decision support tools;
- the ability to track the delivery of performance management initiatives and actions; and
- the ability to generate forecasts of performance that have a high confidence factor, using statistical analysis techniques that establish a robust baseline and enable planned inputs to be translated to a numerate expression of the expected output.

This will deliver the off-line performance management information and tools described above. It will also make initial recommendations on Phases 2 and 3 which will be subject to rigorous business case review.

Phase 2 - Replace Legacy Train Management Systems (2003 – 2005)

Subject to this review it is planned to replace the current 1970s system platform that monitors real-time performance and provides the principal data source for subsequent performance management and analysis. It is envisaged that, with the data warehouse environment in place, it will be possible to move to a greater granularity of data about train positioning and running that will enable the incidence of delay to be captured with greater accuracy and a semi-automation of the processes of identification and attribution of causation.

Phase 3 - Create Integrated Train Operations Management System (2004-2006)

In this phase it is envisaged that train planning and train monitoring are brought together into an integrated solution.

These later phases, that address the real-time monitoring and data capture, are intrinsically linked with the work on Network Control Strategy and Information System development described in earlier sections. We will ensure that the elements of PSS are aligned with the corporate objective of a comprehensive Information System, developed in conjunction with the Corporate Network Model and the Network Availability Model (see below).

The development of systems solutions will not by themselves lead to improvements in train performance. For the power of Information Management to be realised the new technology must be accompanied by a change in the analytical capability and procedures at various management levels. The work already described as being undertaken to support ADGs will be accompanied by work to enhance the analytical needs of those groups.

Network Availability Model

The Network Availability Model (NAM) seeks initially to establish the impact of asset failures on the availability of the network, identify areas where availability is compromised to cause pinch points, and prioritise these for investment, based on the related delay penalty exposure. It will then seek to relate this availability to the demand on and capability of the network and identify the headroom required above availability to ensure that the demand is met. Demand and availability can then be traded to achieve an optimal solution for the network.

The NAM will enable the company to identify locations and route sections which are causing the greatest delay penalties from asset failures. It will initially be used to prioritise maintenance and renewal expenditure on the network. In later stages it can be used to find the optimal business balance between the train service pattern (demand), maintenance and renewal spend, and the required performance standard. In the longer-term it will help identify the best locations to enhance the network.