A METHODOLOGY FOR INTEGRATING SAFETY, ENVIRONMENTAL, QUALITY AND RISK MANAGEMENT SYSTEMS

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SUMMARY

The current business and regulatory environment places demands upon organisations to comply with and implement safety, environmental, quality and risk management systems. Development of such systems can be an expensive and labour intensive activity, particularly if they are not effective. Similarly maintenance of such systems may also place significant demands on organisations.

Therefore it is critically important that an integrated approach is undertaken. This will ensure that an organisation's resources are used optimally, and that the impact of changes within one system will be reflected in other systems.

An approach to integration based upon a core process management model is presented. It is shown how by focusing on process management and its associated methodologies it is possible to develop an integrated and interactive management system that addresses safety, quality, environment and risk.

INTRODUCTION

The mining industry is currently faced with many challenges which could impact on the economic viability of organisations within the industry.

Included in these challenges are greater demands by customers, regulators and other parties for improvements in the management of quality, safety, environment and other business risks.

A business is constituted by the many processes which are undertaken as part of its operations. In this paper it will be shown that by focusing on these processes it is possible to provide the basis for a true integration of business processes and activities such as management of quality, safety, environment etc.

BACKGROUND

Process Management is about *understanding* how the various work activities interact to add value to stakeholders of an organisation.

It is a fundamental questioning of what outcomes are planned, to confirm whether the work activities are achieving the planned outcomes, and adjusting the work activities, if required. This is undertaken to continually add value and provide a stable environment for the process operators (workers) and to ensure any measurements of process outcomes are valid.

THE AXION PROCESS MANAGEMENT MODEL
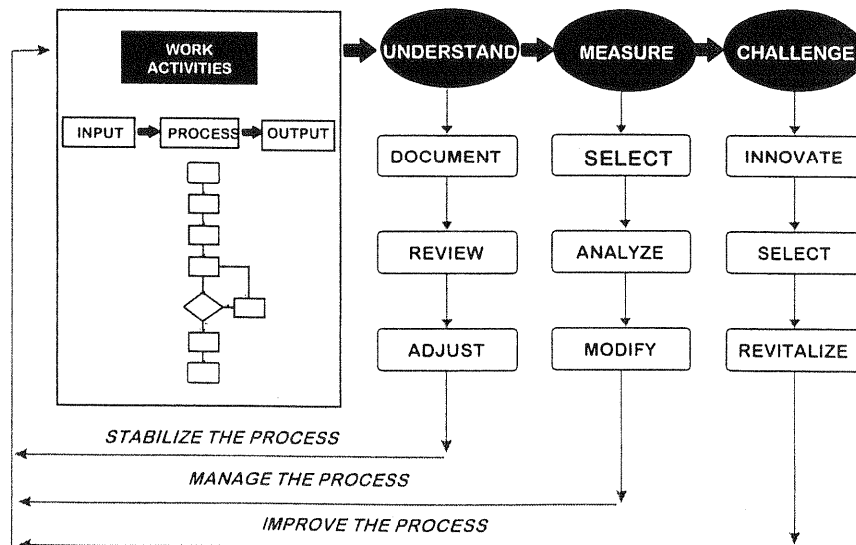
OVERVIEW OF THE MODEL

The Work Activities

It is the work activities that create value for an organisation's stakeholders. This is true for every business organisation whether public or private, product-based or service-based, large or small. Work activities are normally informal, and therefore difficult to manage, co-ordinate, analyse and improve. Integration of other business systems must occur at the work activity for them to be meaningful to those tasked with carrying out the various activities. It is because integration does not exist in many situations that quality, safety and environmental management systems are seen by workers as "tack-ons" and do not address the real issues, which often are self-evident at the worker level.

Understand The Processes

The basis of the process management approach to integration is to recognise and understand the many processes that form a business. It is because these processes necessarily occur as part of a business, e.g. mining and producing coal, that quality, safety, environmental and risk management issues emerge. Therefore understanding processes is the first step towards integration. If the nature of an organisations processes are not known and understood, then their ramifications in fields such as safety or environment cannot be fully appreciated and controlled.

The first step in understanding any process is documentation of the process.

The purpose of documenting processes is to primarily stabilise them, and is conducted in three steps:

1. Develop the process documentation.
2. Review the processes to identify chronic daily problems and waste.
3. Remove problems and waste by adjusting the process through corrective action.

Documenting processes makes them more formal, visible and tangible, thus allowing improvement.
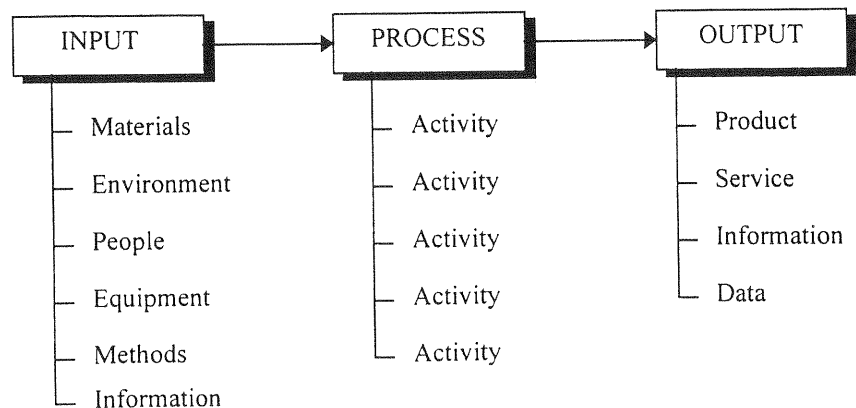
Process documentation must be clear, simple and logical if it is to be of real value. It must be in sufficient detail to be meaningful, and sufficiently simple to aid comprehension. It must define the work processes, without gaps and overlaps.

Measure the Processes

Process Performance Measures are measures of the critical contributing activities that must result in correct outputs of the process. By measuring at the activity level, these measures become meaningful to the Process Owner who can then clearly identify their impact on the organisation's performance. They provide management with the raw data to manage the processes effectively through modifying the process activities. Without stable processes, data collected can contain anomalies and special causes created by unstable processes, thus rendering data analysis meaningless.

Challenge The Processes

Challenging the process only has real value once stable processes consistently create the required outputs, and those processes are managed by measurement and analysis. Challenging the process is the activity of questioning the value of the process through *innovation*, and *revitalising* the process. The objective is improvement whether simply beyond the existing level, or driving past current best-in-class performance. The management "loop" is closed with documenting the improved process to make it visible and tangible thus ensuring future consistency.

WHAT IS A PROCESS?

A process:

- Gets something (the INPUT);
- Does something with it (the activities of PROCESS); and
- Ends up with something (the OUTPUT).

INPUT	PROCESS	OUTPUT
Materials	Activity	Product
Environment	Activity	Service
People	Activity	Information
Equipment	Activity	Data
Methods	Activity	
Information		

Any organisation will have a number of processes which are used to eventually provide a product. Some typical processes are:

- Monitoring how satisfied customers are with the product.
- Formulating business strategies.
- Designing the various work activities into logical work activities (processes) to produce the product.
- Marketing and selling the product.
- Finding the correct materials and supplies for making or obtaining the product.
- Determining the correct equipment to obtain the product.
- Finding the correct people to deliver a service.
- Delivering the product to the customer.
- Invoicing and servicing the customer.
- Managing the human resources of the organisation.
- Managing the financial business of the organisation.
- Ensuring improvements are constantly made.

There are two categories of processes :

Customer processes
Customer processes are activities undertaken to produce/deliver the product from the initial stage to the customer; examples include:

- Taking instructions, or an order.
- Determining what needs to be done to deliver the product.
- Carrying out the activities to deliver the product.
- Packaging the product.
- Delivering the product.

Typical mining industry customer processes include :

- Planning mining strategy
- Clearing overburden
- Blasting
- Heavy equipment operations
- Transporting raw product
- Crushing, washing, processing
- Stockpiling
- Blending
- Transportation of product

It is the customer processes that are the major source of safety, environmental and business risks within an organisation.

Supporting processes
Supporting processes are activities that do not immediately affect the customer, but without which an organisation would not be able to deliver the product. Examples include:

- Recruitment.
- Training.
- Maintenance.
- Computer services.
- Advertising.
- Marketing.
- Safety
- Environment
- Risk

Each of these processes consists of a number of sub processes. For example, under the heading of "safety" there are sub processes such as:

- Consultation
- Policy development
- Inspection
- Accident investigation
- Risk assessment
- Job safety analysis
- Human factors analysis
- Emergency planning

The role of these processes can only be fully understood by reference to associated customer processes.

INTEGRATION

The diagram on the following page is a representation of the Process Management approach to integration. By focusing on customer processes as the basis of integration, the focus continually returns to those processes that are actually occurring within the business, and which generate the business risks. Therefore the process management approach is a "bottom-up" approach, and is based upon identification, documentation, measurement and improvement of work processes, not some externally imposed management system.

The process management approach clearly specifies the role of activities such as safety and environment as supporting processes. Using common documentation and problem solving methodologies ensures that changes to any process will be documented and that the impact of those changes on associated processes will be evaluated.

The Process Management approach provides meaningful integration through:

- Use of a common method for defining customer and supporting processes
- Development of a framework that allows for true questioning of the various activities and how other processes, or systems, impact on the activities.
- Use of a common framework of control mechanisms.
- Use of a common methodology for reviewing the processes.
- Use of a common methodology for forming problem solving teams.

- Use of a common methodology towards problem solving using simple problem solving tools
- Development of a shared understanding of how processes cross organisational boundaries and that all processes rely on some support mechanisms.
- Development of a shared understanding of the importance of the internal customer concept where the output of one Process becomes the input of another process.

Integration Diagram :
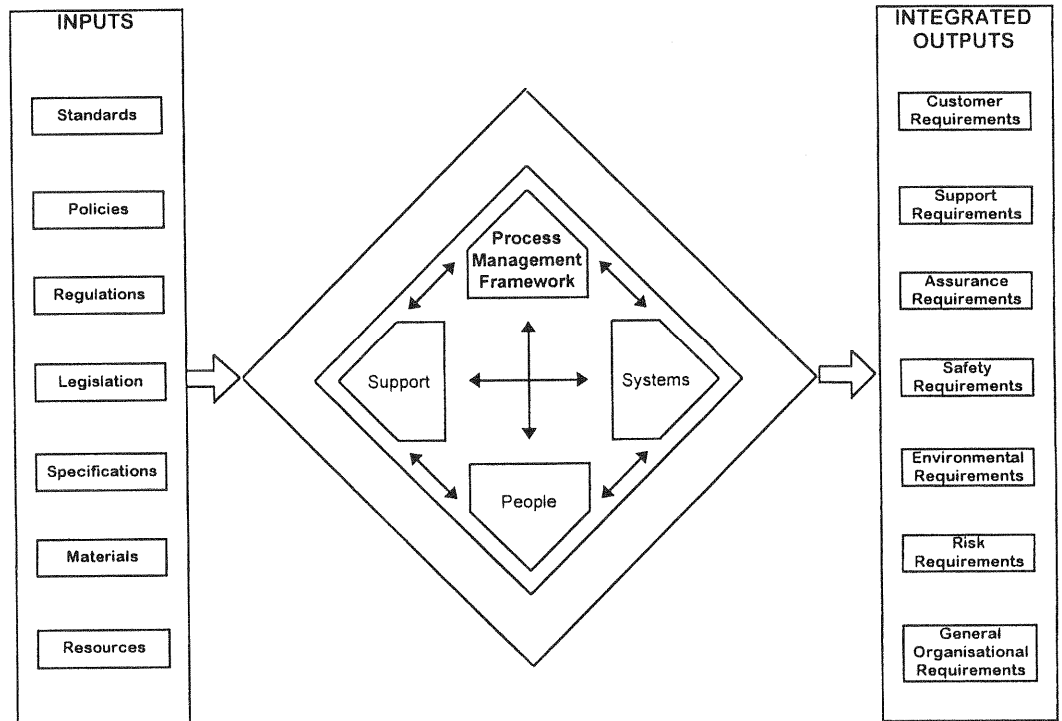
CONCLUDING REMARKS

Traditional approaches to safety, environment, risk etc. often fail because they are imposed from outside of the many processes that form the business. In the process management approach such issues emerge from understanding and documenting an organisation's processes. By focusing on processes it is possible to make the distinction between customer and supporting processes, and obtain improvements in business processes which reflect, in an integrated manner, greater productivity, quality, safety etc.