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# Improving Colliery Performance Through One Big Team, Many Teams or.....???

C J Seaborn<sup>1</sup>

## INTRODUCTION

A cry that is often heard from front-line employees, particularly as a mine grows or circumstances change is “*We used to be one big team but now they have set up teams for different functions - we don't know what's going on and we don't share resources any more. We used to just get in and do what had to be done, now we can't.*”. It usually occurs after management decides that, with the increasing mine complexity, functions and accountabilities of a manageable size need to be identified and defined for individuals and teams to facilitate optimum performance. However, as the statement indicates, these changes have often not delivered all the intended benefits. This paper will explore the reasons why the full benefits have not been realised and will identify actions which can be taken to improve the likelihood of optimal outcomes.

## ORGANISING THE MINE

### One big team

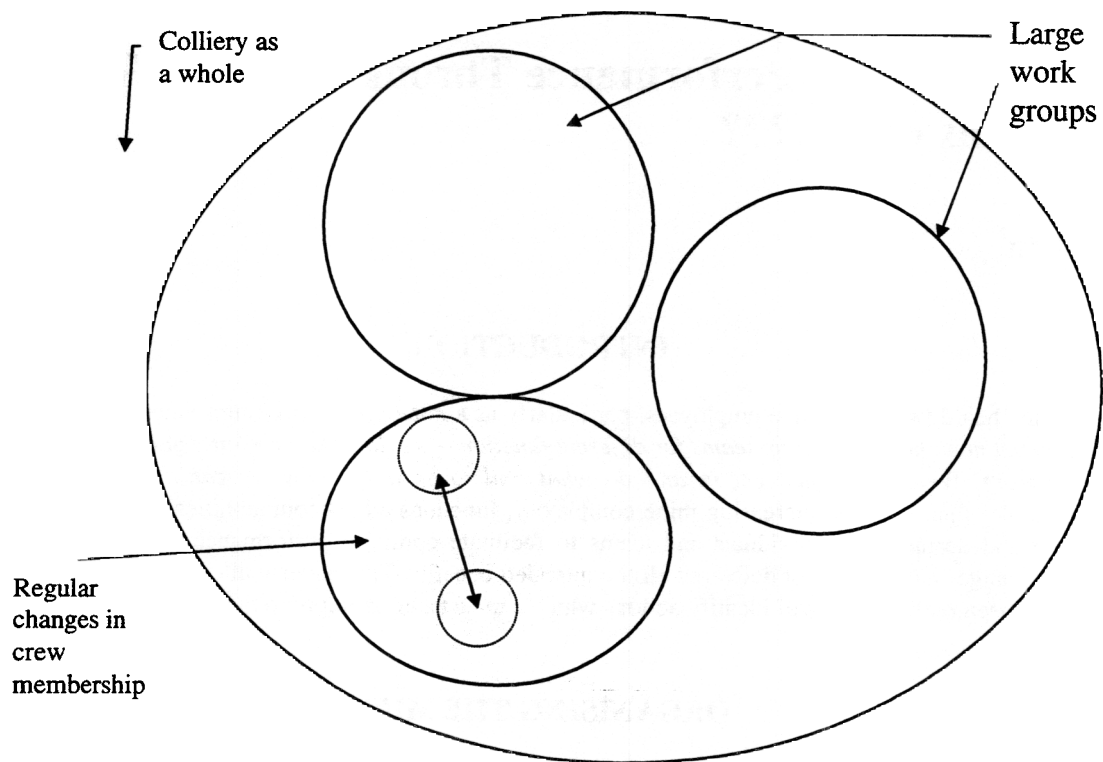
Historically, until recent years, many Australian coal mines, particularly those in the underground sector, were organised along the “one big team” concept. This concept, which is graphically illustrated in Fig. 1, which illustrates, Loosely defined accountabilities within large work groups involved the following:

- loosely defined accountabilities for individuals and crews within large work groups; membership of crews could change quite regularly as a result of factors such as roster arrangements, absentee replacement requirements and overtime needs;
- employees, whilst being notionally in one work area/function, could turn up for a shift and find themselves allocated to another role and area of the mine;
- leaders had wide spans of accountability (eg undermanager for a shift, mine manager for both long and short term decisions).

An illustration of the impact of the “one big mine” concept was the industry’s response to the 1988 Coal Industry Tribunal (CIT) decision. In this decision, the companies were given the right to carry out various production activities on weekends. While from a cost point of view it would have made sense to employ only a small number of people on critical activities on a weekend related roster, the prevailing industrial climate in 1988 required everyone to be treated equally and as a result most employees were put on expensive six or seven day rosters. Often, these rosters involved splitting up small close-knit operating crews for part of the roster and having operating management personnel on different rosters altogether. Hence, the teamwork of the previous five day crews was broken down and line management accountability for issues such as operational planning and communication was often lost.

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**Fig. 1 - One Big Team Model**

The fact that, when the industrial climate changed, many mines have put most of their employees back on to rosters which keep crews together (eg five day rosters with specific weekend crews) indicates the unsatisfactory nature of many initial "one big team" type responses to the 1988 decision.

It should be understood that a "one team" concept may have validity for mines employing a limited number of people (eg 50) and is often the approach used successfully by smaller operators. If, however, the complexity and size of a mine dictates high capital cost equipment, interrelated key processes and a relatively large workforce (eg > 150) then many companies have found it necessary to develop alternative organisational approaches.

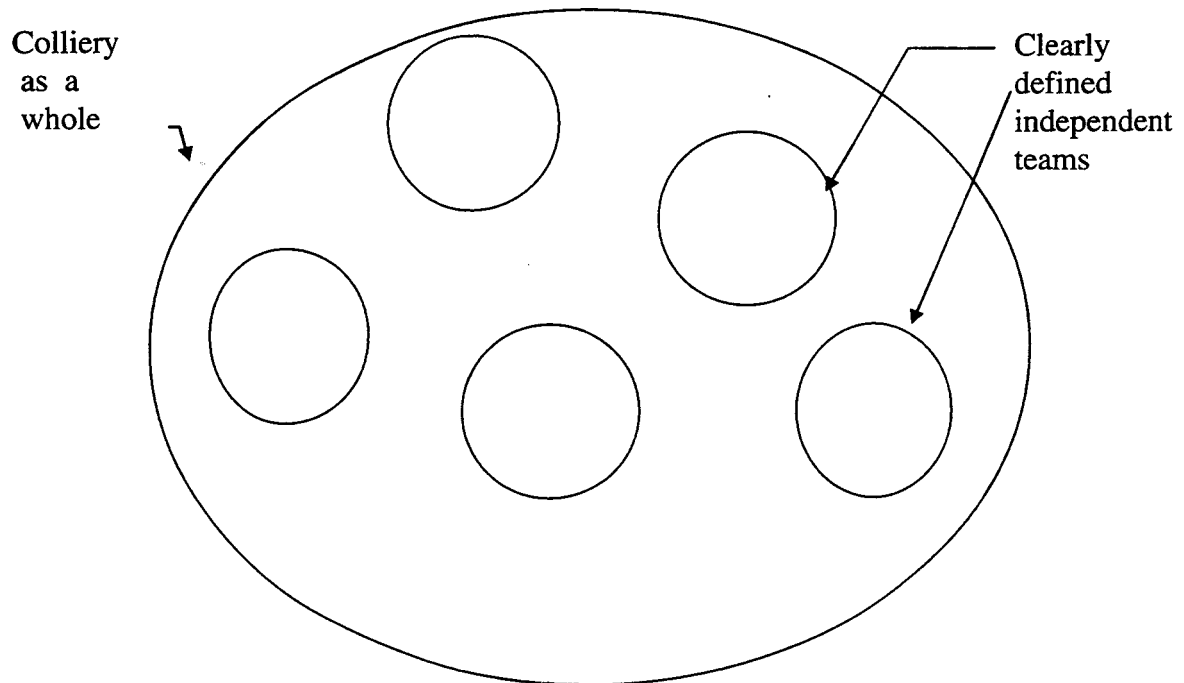
### **Many independent teams**

One approach which has been taken to overcome the limitations of the "one big team" concept is to create many smaller teams, thereby trying to emulate the benefits of smaller operations. This development reflected the changes in organisations generally to flatter structures (Jaques, 1989) and greater emphasis on teams (Katzenbach and Smith, 1993). This approach involved the following concepts:

- functional leaders and teams, together with their accountabilities, are defined in terms of functional requirements;
- there are minimal changes in team membership in the short term.

This "many independent teams" model is illustrated in Fig. 2 which illustrates teams working largely independently to optimise own performance sometimes at expense of overall colliery performance.

While this approach overcame some of the defects in the "one big team" model it also raised some difficulties of its own. These deficiencies became evident when many teams began to work independently to optimise their own performance at the expense of overall colliery or organisation performance.



**Fig. 2 - Many Independent Teams**

### **Many collaborative teams**

An approach which tries to combine the best aspects of the “one big team” and “many independent teams” models could be described as a “many collaborative teams” model. Its key characteristics are as follows:

- functional leaders and teams identified but accountabilities defined in terms of how function contributes to overall colliery performance;
- the teams work collaboratively to optimise colliery or overall business performance;
- the colliery (or business) leader promotes teamwork between functions by own behaviour and organisational systems put in place (e.g. measures, recognition systems, decisionmaking processes).

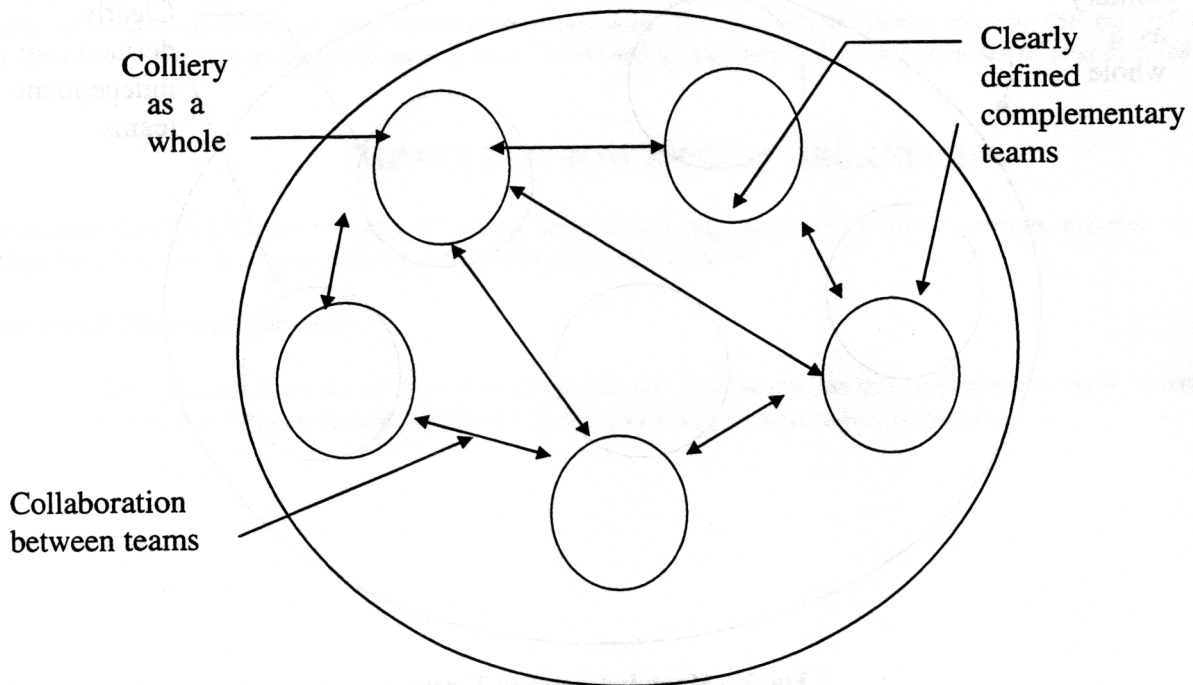
A brief outline of this model is shown in Fig. 3 in which many functional leaders and teams working collaboratively to optimise colliery performance. This model is consistent with concepts such as systems thinking (Senge 1990 and Senge et al 1994), network organisations (Miles and Snow, 1994) and ternary rather than binary modes of operation (Mant, 1997).

## **IMPACTS OF HOW MINE IS ORGANISED**

Examples of the deficiencies in both the “one big team” and “many independent teams” concepts, together with how these might be overcome in a “collaborative teams” model, are given below.

### **Accountability for performance**

- *One big team* - there are no clear accountabilities and individuals can be involved in too many “crisis” decisions thereby not allowing enough time to do anything else e.g. planning, communications;



**Fig. 3 - Collaborative Teams**

- *Many independent teams* - setting up functional leaders and their teams has led to a clearer accountability for that function's performance, but sometimes circumstances require cross-functional support eg a conveyor belt is buried, which is delaying the whole mine and there is a need to re-allocate resources quickly to fix the problem;
- *Collaborative teams* - define accountability to cover not only individual or team's own output but also how they impact on others' output eg does individual or team behaviour adversely affect internal suppliers or customers to the detriment of the colliery as a whole?; ensure performance measures and recognition systems are consistent with this wider accountability.

#### **Authority to make decisions**

- *One big team* - wide span of control can lead to poorly defined or inconsistent authorities eg front-line leader has no authority to spend resources (time, money) on a cheap improvement idea but can make production decisions with major impacts on bottom line eg continuing production when geological conditions change and a roof collapse results;
- *Many independent teams* - leaders can have decision making power but this can be used to the detriment of other functions; also can claim that extra line functions such as communications, safety, responding to ideas etc have them overworked;
- *Collaborative teams* - clarify authorities (ie the boundaries of discretion) and also give opportunities for employees at each level in the organisation to increase authority eg short term planning, spending authority etc which can reduce workload on leaders who can focus on issues where they can have greatest impact.

#### **Effectiveness of communication**

- *One big team* - results in key players being spread thinly and so busy that time for communication processes is low on the priority list, often relies on the grapevine;
- *Many independent teams* - can result in teams not sharing with or understanding what's happening in other teams;

- *Collaborative teams* - set up processes to ensure an individual team receives all relevant information to do its role effectively, including internal supplier and customer requirements, contextual information on colliery in terms appropriate to team, feedback on performance plus discussion of ideas and concerns.

### **Long term versus short term planning**

- *One big team* - where leaders are accountable for the short term operating performance as well as the long term planning, immediate challenges prevent enough consideration of longer term threats and opportunities eg the focus is on today's production at expense of roadway development or overburden removal;
- *Many independent teams* - where long term planning is off-line there can be inadequate communication and decisionmaking systems to ensure that short term decisions do not adversely affect long term viability eg those negotiating purchase of an adjacent lease delay settlement to get a slightly cheaper price but this delay adversely affects mining options in the longer term at significant cost;
- *Collaborative teams* - set up a structure to enable long term planning to be done off-line with the appropriate level of skill/experience; set up communication/problem solving processes to ensure effective interaction between planning and line functions.

### **Risk management**

- *One big team* - everyone thinks they know what everyone else is doing and so little or no procedures are developed; employees can work in areas where they have limited training or experience eg on overtime, absentee replacement;
- *Many independent teams* - procedures are developed in functional areas but cross-functional interactions not defined eg face personnel were following the designated "normal" procedures but a serious incident still occurred because pre-mining conditions had changed and the procedures had not been altered at the face;
- *Collaborative teams* - need to ensure that the critical interactions between the various functional areas are defined (procedures), understood (training & communication) and carried out (define accountabilities for work, audits etc).

### **Internal customer-supplier relationships**

- *One big team* - no clear process concept so no specific supplier and customer relationships;
- *Many independent teams* - teams and functions have internal suppliers and customers but needs are not understood eg purchasing officer buys timber for underground support at cheapest price, which leads to inadequate roof support; one shift produces a production record requiring next two shifts to stop producing to clean up etc;
- *Collaborative teams* - define and ensure understanding of internal supplier and customer requirements (analogous to that between partners in a contract mining operation) to ensure that decisions are taken to produce optimum overall result.

### **Resource usage**

- *One big team* - no clear procedures for allocating resources and no particular ownership or accountability for equipment; no effective support functions to ensure that equipment gets to the right place on time eg crews hide equipment to ensure it is available to them when they need it;

- *Many independent teams* - competing destructively for company resources eg when one mine in a company shut, functional leaders from the other two company mines raced in to claim the equipment first, irrespective of where it would best benefit the company;
- *Collaborative teams* - company leaders need to make it clear that what is best for the company as a whole is the key criterion on which the leaders are going to judge outcomes; leadership behaviour and performance reviews emphasise best outcomes for colliery/company rather than function.

### Sharing ideas

- *One big team* - no structured approach to sharing ideas because it is assumed that people will hear somehow if necessary eg staff in similar/complementary roles in the same organisation but at different locations more likely to meet each other at an external conference rather than within their own organisation;
- *Many independent teams* - “it will not work here because our mining conditions are different” (not invented here) eg leaders not giving crews the opportunity to learn the good operating practices of those in neighbouring panels or mines;
- *Collaborative teams* - need to structure opportunities for idea sharing eg internal site visits, recognition for ideas being provided to others and to those who adapt others’ ideas; monthly leaders’ meetings at a participant’s site including a site visit; develop shared data bases on equipment performance/lessons learnt as carried out by contractors (Cutifani, 1997).

### Decisionmaking processes

- *One big team* - decisions often taken without appropriate input from functional specialists eg a very high capacity, expensive conveyor built and installed which delayed production due to long installation time when a surge bin & smaller capacity conveyor may have been the best option;
- *Many independent teams* - recommendations for improvement dominated by functional outlook eg colliery personnel were asked to recommend what was the highest priority to improve mine performance: mining engineers wanted larger capacity coal cutting equipment while maintenance personnel wanted more sophisticated monitoring equipment - when production data was analysed it showed existing equipment was performing poorly under certain mining conditions and the best improvement project was to modify existing equipment which proved successful;
- *Collaborative teams* - where critical decisions are being addressed set up a problem solving process or task force to have independent review of options, involving internal suppliers and customers to ensure upstream/downstream impacts and potential bottlenecks covered.

### Utilisation of support/services functions

- *One big team* - line personnel have wide span of control and there is often limited involvement of support/services functions to improve the colliery’s performance;
- *Many independent teams* - support/services functions usually put in place but roles, authorities, accountabilities and interactions with line personnel often not clarified by colliery leader;
- *Collaborative teams* - if support/services functions put in place then colliery leader needs to ensure accountabilities/authorities are clear and effective interactions with line personnel are established (otherwise, why have them?) - should be similar to a partnering/contractor model (Elliott, 1997).

### Measurement systems

- *One big team* - as the membership of crews could be readily changed (particularly evident after the 1988 CIT decision) there were no clear accountabilities for specific performance areas eg if there were absentees from a high production area, other crews would be broken up to fill the gaps so that there was limited ownership of performance effectiveness in many areas;
- *Many independent teams* - can lead to contradictory measures eg maintenance team has priority measure “to eliminate breakdowns” which can lead to high cost maintenance plus low availability of equipment to operators (machine being repaired for too long); on the other hand, the production team is being measured primarily on short term output which can lead to delays in putting equipment in for maintenance, resulting in breakdowns and/or inefficient maintenance eg maintenance workload not spread out;
- *Collaborative teams* - identify key performance drivers for the colliery and develop functional team measures to be consistent with these ie ensure measurement systems are consistent with the overall behaviour and outcomes you want; complementary and consistent measures should clearly be spelt out as in contractor/partnering arrangements.

### Recognition systems

- *One big team* - predominantly recognised for mine wide performance eg mine wide bonuses are essentially dominated by one component only, such as longwall production;
- *Many independent teams* - individuals or functional teams being recognised for their own performance only and not also their impact on overall site performance eg the technical expert who refuses to listen to ideas of others; the roadway development team which “cuts corners” to achieve meterage targets but creates unstable gateroads, thereby adversely impacting longwall performance;
- *Collaborative teams* - set up recognition system which not only focusses on individual’s or single team’s actual work outputs but also their impact on overall colliery performance.

### Involvement

- *One big team* - as there are no clear accountabilities the tendency is for employees to be involved or expect involvement in inappropriate areas and miss involvement in relevant areas eg may expect to make decisions about management re-structuring, but cannot develop simple ideas to improve own workplace;
- *Many independent teams* - each team may wish to develop an independent approach to a mine wide system eg safety approach;
- *Collaborative teams* - mine leadership needs to identify “what’s negotiable and what’s not” eg safe work principles may not be negotiable, but employees will be involved in developing safe work procedures in their area based on these principles.

## OPTIMISING COLLIERY PERFORMANCE

### Action?

As the examples of behaviour under the “one big team” and “many independent teams” concepts indicate, sub-optimal outcomes from a colliery or overall business perspective often result. These deficiencies can often be overcome if leader behaviour and organisational systems are based on a “many collaborative teams” approach. Some of the key components of this concept are summarised in Table 1.

Assuming that the leaders of a colliery or a company containing a number of mines want the organisation to follow a collaborative model then a process for achieving this outcome could be as follows:



1. leaders agree what personal behaviours and organisational systems they want - table 1 could be used as a starting point and check list for developing these ideas;
2. an assessment is conducted to determine how far the organisation is from the ideal - this could be a process of structured interviews or workshops conducted by someone independent of the organisation to facilitate openness of those providing input;
3. leaders determine the priority behaviours and/or organisational systems to change based on a number of criteria eg size of impact on organisational performance, ease of changing behaviour/system, initiatives already under way etc - this step may need to have an external facilitator to ensure that the leaders do not ignore where their own behaviour may need to change;
4. leaders determine the priority initiatives for change (ie the "critical initial few") and the resources required to support them - it is essential that this step is considered carefully, otherwise initiatives may fail due to under resourcing and competing objectives eg the need to maintain production;
5. leaders develop an action plan for the priority initiatives but identify other behaviours/systems which may be affected by these changes so that these may be monitored to ensure they do not cause the priority initiatives to fail;
6. trial(s) of the priority initiatives take place in a part of the organisation eg a change to the performance measurement system for the colliery leader's own team; and
7. lessons from the trials of the priority initiatives are considered by the leaders who then modify the change, if necessary, before implementing across the whole organisation.

This process involves the leadership team in a colliery/company reviewing and agreeing any initiatives undertaken so that issues such as competing priorities can be addressed and lessons learnt from trials in one area will be transmitted throughout the whole organisation. If the process is carried out effectively it will show that "teamwork begins at the top" and that "the not invented here" syndrome is not acceptable in the organisation..

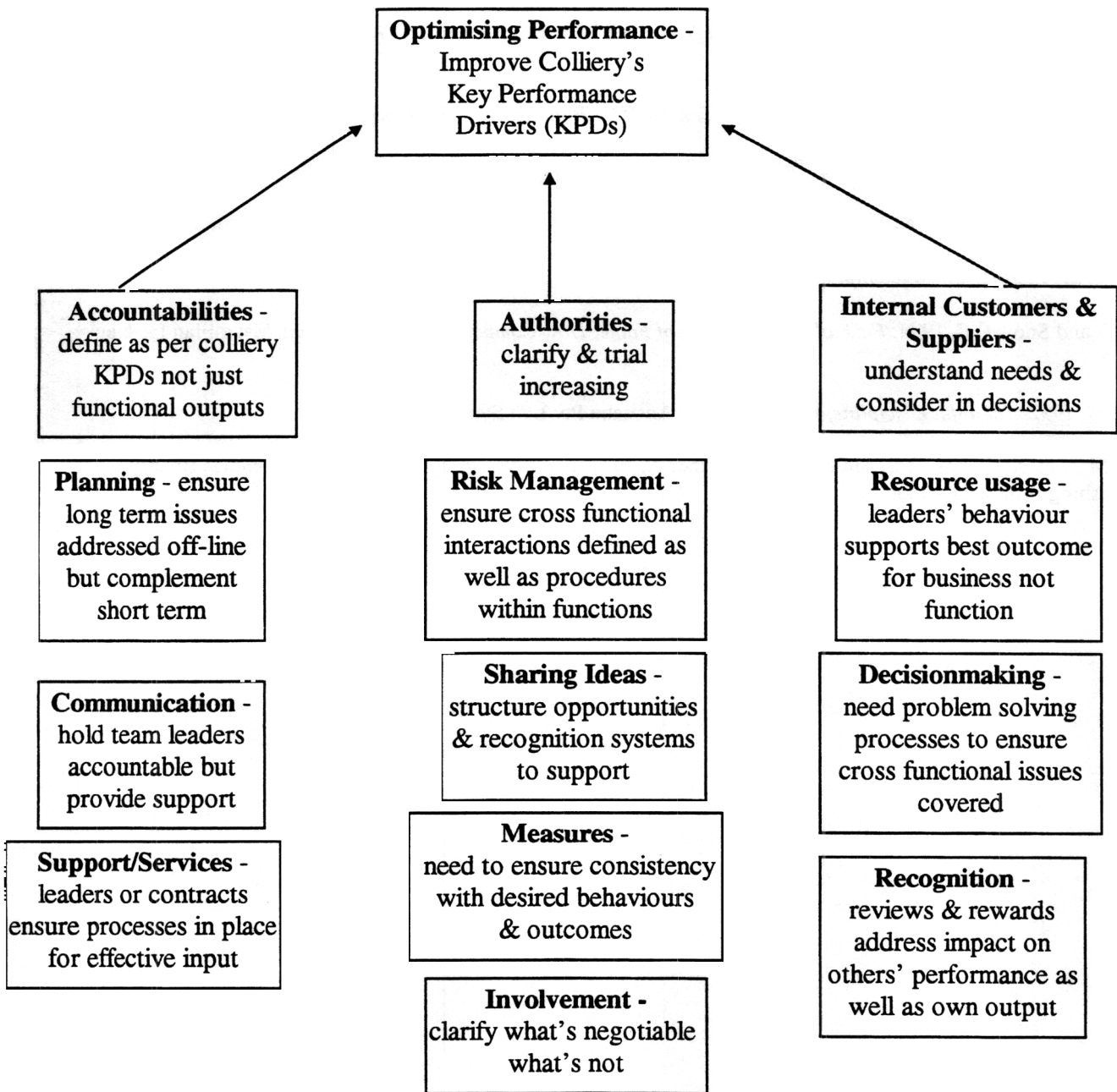
### **Other improvement approaches**

From the description of the "many collaborative teams" model, it can be seen that this approach is predominately about what leaders do ie their behaviour and the organisational systems they support. It is the leaders who create the organisational environment which determines the limits to performance of individuals and teams. Therefore, this approach should be seen as complementary to other organisational improvement initiatives which aim to improve individual or team performance. For example, a colliery may have a quality programme to train operators in problem solving to improve their processes. Inevitably some solutions generated will involve cross-functional interactions. If the leaders' behaviour and the systems they support (eg measures of performance) are not consistent with achievement of optimal colliery outcomes, then ultimately the quality initiative will either not reach its potential or even fail altogether. Furthermore, front line personnel will clearly see the waste that lack of cross-functional collaboration causes and will become increasingly cynical about any improvement initiative.

In summary, this "many collaborative teams" model is about leaders' behaviour and teamwork, together with the organisational systems which support these objectives.

Unless a collaborative approach is evident from the top of the organisation, optimal performance will not be achieved. Lack of success in a particular improvement initiative, which has been successful in other organisations, may indicate poor collaboration across functions. This outcome may then become a trigger for initiating the seven step process outlined in the previous section.

**Table 1 - Optimising Colliery and Business Performance**



## CONCLUSION

As coal mines have become more complex (e.g. through the move to longwall in underground operations, larger capacities in multi-seam open cuts), organisation issues and relationships between functions have also become more challenging if optimal overall outcomes are to be achieved. Key components in addressing these challenges are the way the colliery is structured into functions, organisational systems and leaders' behaviour. An approach to achieve optimal outcomes has been described in a "many collaborative teams" model. The challenge for colliery (or company) leaders is to ensure that their own behaviour and the organisational systems they support are consistent with the desired outcomes.

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