THE OPTIMUM COMMUNICATIONS ARCHITECTURE FOR DEEP LEVEL GOLD MINING

by

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SYNOPSIS

"THE OPTIMUM COMMUNICATIONS ARCHITECTURE FOR DEEP LEVEL GOLD MINING"

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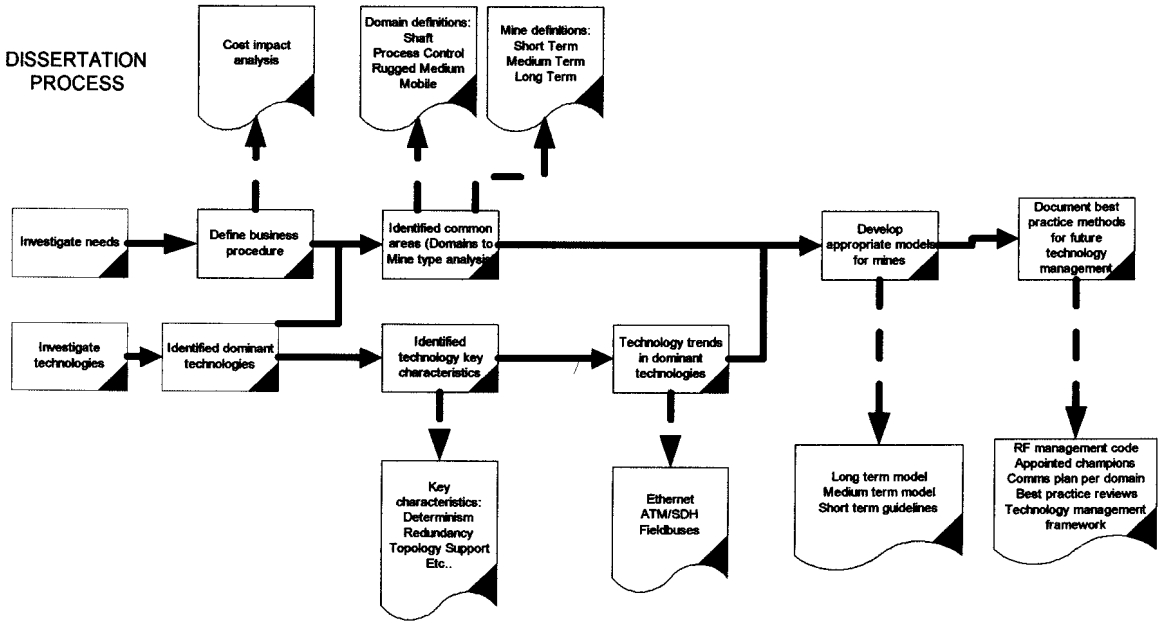
If systems for multi media communication are implemented haphazardly in a business then one can end up with a 'patchwork' of communication systems, difficult and expensive to maintain and expand. The objective of the dissertation was to develop the vision or generic models for future communication systems in deep level gold mines, and to identify and define the more important engineering and technology practices necessary for the implementation of this vision.

APPROACH

The approach taken is best summarised by the flowchart below where the needs of the business were analysed and applicable technologies available investigated. These combined led to the concept of 'domains' which was developed and defined in order to rationalise the number of communication systems required.

Technology trends were investigated further and finally appropriate models were developed for classified types of mines. Additionally the more important practices and measures were also defined.



RESULTS

The cost of communication systems was found to be significant and appropriate engineering is required to reduce the total cost of ownership. The profit opportunity enabled through communication systems is also enormous, and therefore 'downtime' is of major significance.

This emphasised the need for generic design guideline models, and the development of critical measures or practices to be adhered to within the business.

Three classes of mines ('Long', 'Medium' and 'Short Term') were identified in preparation for the technology models, primarily differentiated on the basis of automation requirements, expected life, and how much of the envisaged communications infrastructure was already in place. Four communications domains were identified as necessary for the 'Medium Term' mines, but with the possibility of reducing this for the 'Long Term' mines.

Models were developed for use as a guideline or vision for the long and medium term mines, and a set of criteria developed for the use as a guideline for technology choice of short term mines.

A number of measures were identified as necessary for the optimum management of communication system type issues and are listed as follows:

- Firstly the systems must be documented as they are, and planned with future need in mind.

- In the radio domain a 'Code of Practice Guideline' was developed primarily to control frequency spectrum use and critical aspect to radio systems
- The concept of 'Best Practice Reviews' was developed and implemented in order to maximise the benefits available with the professional resources deployed in the business units, and to recognise the dynamic and sometimes volatile nature of the technologies dealt with in the communications field. This is intended to be used, together with the proposed tailored project management process, as a solution for comprehensive 'Communication Systems Life Cycle Management'.

CONCLUSIONS

It is believed that if the mines use these models as a guideline for the choice and engineering of their future communications systems, together with the methods developed during the dissertation, then the optimum benefit available from communications technology will be obtained

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CONTENTS