

The development of an industry wide framework for the

# COLLECTION AND MANAGEMENT OF CONTRACTOR HOURS AND COMPETENCY

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## Abstract

This paper discusses the development of an open communications framework that will allow the collection of contractor hours, competency and general OH&S information from any site (including contractors themselves) regardless of the means by which the information is collected. This framework is built around existing MineIT technology in the form of our mesh internet services.

The information collected could be used to solve current problems such as contractors working for unsafe periods of time, even across multiple sites, and would add value to the generic induction process for both contractors and mine sites as it would allow industry to track the currency of a generic induction based on its work history. The *open-ness* of such a framework is essential if it is to be adopted industry wide as it must be capable of bringing together information from, and delivering information to, a wide variety of sources.

This paper will examine the technology behind the development of such a framework, examine why the industry needs it and take a look at the issues that could inhibit its development and how to overcome these issues. Examples will be taken from existing MineIT clients in the coal mining industry.

## The author

Clifton Cunningham is the founder and Managing Director of MineIT Pty Ltd. He is a graduate of the University of Queensland with a Bachelor of Engineering (Electrical & Computer Systems) with First Class Honours. He has worked in the underground coal mining industry in Queensland and New South Wales and is now based in Mackay.

## The company

MineIT was founded in early 1999. The first products included the Competency & Training System, Mine Reporting System and Statutory Event Scheduling System. The core focus of the company always remained firmly on the Competency & Training System and as such this remains the 'flagship' product. MineIT prides itself on being at the cutting edge of technology and as such providing fast, cost effective and flexible solutions.

## Why does industry need a centralised framework?

There are a number of reasons why any industry with high usage of contractors in high risk environments needs a centralised method of determining and managing information such as competency, work hours or accident/incident reports. Many of these reasons can be traced back to concerns about safety and fatigue, while others

are purely driven from an administrative time and cost perspective. Regardless of what reason you see as the most important, mine sites, contractors, workers and regulatory agencies would all derive benefit from a centralised and standardised framework managing this information.

## Management of contractor competency

It is now a requirement that there be a training framework at each mine site that manages how a person is identified as competent to perform a duty or operate equipment and how that competency is maintained. As many sites (and contractors) are building this framework around the National ITAB CULP's they are inevitably heading in the same direction. A centralised framework developed at the same time most mine sites are developing their procedures could save a considerable amount of hassle in the future arguing over definitions and terminology.

**Key Point:** An electronic framework must have a way of defining each individual competency linked to a recognised standard. It must go 'inside' the competency units to the level of actual equipment being operated. This is how things are done on an operational level and it is these people that the framework is designed to help.

One of the most important aspects of competency-based training is in determining the currency of a particular competency. An example of this that is particularly applicable to contractors is the currency of the generic induction. Under the current system, even if a contractor works continuously in the industry over a two-year period (attending several site specific inductions in the process) they have to waste time and money redoing the course. By linking existing on-site management procedures to the framework (such as swipe in/out units) work hours across multiple sites can be centrally monitored.

**Key Point:** An electronic framework can be used to track the amount of time spent working in the industry which can then provide a gauge of generic induction currency.

## Transportability of contractor competency

If everyone is trained by accredited trainers to a nationally recognised standard then why shouldn't they then be allowed to use that competency at another site with only a small site-specific induction? This is particularly important to contractors who now waste a considerable amount of time and money getting their workforce authorised to operate the same piece of equipment at different sites.

**Key point:** An electronic framework provides a means of allowing each contractor and site to train people to a recognised standard through an auditable process and then communicate this information in a common format.

### Managing safety and fatigue

By linking existing site systems for management of contractor hours to the electronic framework a simple method of managing contractor work hours and fatigue across multiple sites emerges. The system does not need to (though potentially could) be configured to warn in 'real time' of excess work hours. It could simply monitor individual work hours over predetermined periods and generate exception reports when required.

**Key point:** An electronic framework could monitor contractor work hours across multiple sites and provide early warnings of unsafe work hours.

### Unlimited potential

One key aspect to this framework is its ability to manage any type of information. It simply requires the central definition of a data type and then the transmission of that definition to all clients using it.

This framework can be extended to manage information such as safety bulletins, contractor work hours (collated from local swipe in/out systems), industry news or shift reports (between remote site and head office or contractor and mine site).

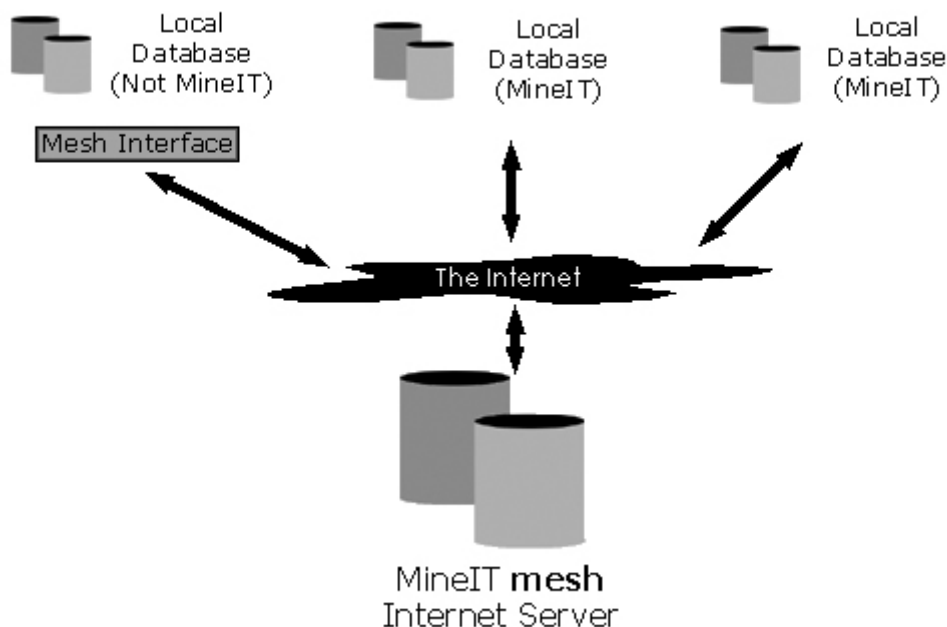
Potentially any information that needs to be collected from a wide range of locations in a common format can be managed using this framework.

### mesh

The MineIT mesh framework was originally developed as an internet service designed to add value to our existing range of products. It soon became apparent that with a bit of thought it could easily be designed to do a lot more than that and was an 'innovative solution' in its own right.

It is a range of services available to anyone over

*Figure 1 mesh overview*



the internet who is granted access by us or one of our clients. In a nutshell it is best described as a flexible method of collecting, storing and retrieving data securely across the internet. As soon as we began full scale testing it was apparent that a solution for the management of contractors industry wide had emerged.

### The internet

The internet has now been in mainstream business use for almost a decade. Despite the hype claiming that the internet would revolutionise the way we work I personally don't think that anything too 'revolutionary' has really happened.

The main problem with the internet is that people often don't see the bigger picture and are trapped by attempting to think of it like they would any other software tool in their office.

It is a tool, and a useful one, but if you try to use it to solve problems the same way you have in the past then you will end up with the same solution.

The only 'real world' analogy I will apply to the internet is that regardless of how you transmit information across the internet, via email, web pages or instant messaging; you are ultimately just sending a small packet of information from point A to point B.

When you then take into account there are an infinite number of ways to send the information, an infinite number of things that point B can do with the information before sending it back, storing it or sending it on and then an infinite number of point A and B's things get a little more interesting.

Now, if we take point B as our server ([www.mineit.com.au](http://www.mineit.com.au)) and point A as our mine site or contracting client a simple picture begins to develop.

The server is going to be the one in charge; it will define the structure of the data that the clients can fill with information (or retrieve from it). Clients are only allowed to 'play ball' if they comply with all of the requirements that the server puts in place – keeping in mind that the server can place

limitations not only on the structure of the data but the actual data itself. In no time at all you have a clear picture of a centrally managed electronic framework. You may understand exactly 'how' it works but you can see where each player fits in.

#### **Flexible data**

Anyone who has been involved in the development of a database to manage any kind of information will understand that the first step is in defining the information and its internal relationships. This can often be a long and complicated task – but absolutely vital to the end result and one that can prove very difficult to change down the track.

A framework of this type stops dead in the water if you attempt to define the information in the traditional way. You have to take a step back and decide that rather than directly managing the information; you will manage information 'structures'. This means that your database ends up being a database of structures (both simple and complex) and the relationship between them. You can redefine a particular structure without redesigning the database. You can add new structures without redesigning the database. You can remove unwanted structures without redesigning the database. This is crucial.

With mesh in mind, we have chosen to name our information structure definition a metafrag and an information structure containing data a frag (this is short for fragment – as many of these are included in a single package sent between client and server).

Our server now contains metafrag definitions for contractors, training records, skills, locations, sites, classifications, swipes, swipe units and more.

These definitions are used by the client to create data from a local database or parse data from the server into a local database.

The *metafrag* definitions for our contractor management framework are defined by us, though our clients also have the ability to define their own custom *metafrag* definitions for their own use.

There are also a range of 'transforms' that can be used to turn data contained in a *frag* into a printer friendly PDF document.

#### **XML**

The actual format of our information is XML (eXtended Markup Language). This is now a very common method of transferring information across the internet – mainly due to the fact that it is 'clear' text and not specific to any particular operating system.

Tools to 'parse' XML (go through an XML document to retrieve data for use in a local database or use a local database to create an XML file) are now an integral part of every operating system and freely available.

This means that you do not need to be using MineIT software to make use of the framework.

You just need to understand how to create and read the XML data and create an interface between them and your existing systems.

You can connect to our server and retrieve data from within an Excel spreadsheet for example.

#### **An 'open' framework**

By ensuring that all of our data structures are clearly defined and easily available, it is very easy for other developers to create interfaces between existing systems and our framework.

It doesn't matter what you have behind the scenes, provided it can be transformed into a frag compliant with our metafrag definitions you will be able to send information to our server and retrieve information from it.

In this sense it is an 'open' framework as we are not requiring that you use MineIT software to connect to it. We will be making the knowledge of how to connect to the framework available to other developers.

#### **Has this been done before?**

The framework we have developed is completely original, and all of the technology used to develop it has not been used together in an application of this kind before.

Keep in mind that although the application is new, the technology is not - we have simply developed a new way of bringing it together.

A lot of the concepts are based on other emerging standards (such as SOAP) but have been modified by us to make it more useful to this particular application.

#### **A 'real world' example**

Coalroc Contractors is an underground coal mining contractor with offices in Mackay, QLD and Wyong, NSW. They have had long running contracts at Newlands Southern Underground (who is also a MineIT client) in central Queensland.

Coalroc has spent a substantial amount of time and money developing their internal competency based training system built around the ITAB CULPs.

This system is backed up by the latest version of the MineIT Competency & Training System that is used to manage the information.

Coalroc, like most contractors, wanted to be capable of managing and storing all of the documentation concerning training at their head office while doing the actual training on-site.

As contracting isn't typically a business with a large IT budget they had very little existing structure to work with, and needed to end up with a flexible solution with minimal ongoing cost.

Their key requirements were as follows:

- Allow for the electronic transfer of competency and employee information from head office to each project site. The medium selected to do this was the internet using mesh.
- Offer the potential to develop an electronic 'relationship' with each mine site worked at. All



information stored in the head office database would be made available to each mine site to audit at any time.

- Provide a means of communicating important information both to and from the employees themselves. This includes current training information, simple messages, important documentation (ie risk assessments and safe work procedures), work hours and also record activities were performed during each shift.

Coalroc was the first of our clients to become fully compliant with the electronic framework defined in mesh.

This means that all of the skills, classifications, sites and locations used in their local database were compliant with those listed in our central database located on our server.

This gave them the ability to transfer employee and competency information from their local database into their secure area on our server. This then made the information available to each of their projects who could access this information after logging into the Coalroc homepage.

Compliance also provided Coalroc with the ability to package a group of employees into a single file that could be sent to the training department at Newlands and opened using their copy of the MineIT Competency & Training system.

While the interface between Newlands and Coalroc's database is still under discussion there is now a means by which Coalroc can provide Newlands with information on training it has carried out on an employee, and Newlands can then electronically provide Coalroc with information on site specific training it has carried out on the same employee.

Coalroc then took the further step of asking us to build a touch-screen kiosk that would provide its employees with a means of accessing training information, messages from head office and important documents.

This kiosk interfaces directly with the MineIT internet server through a dial up connection to maintain up to date records from head office and also sends information on employee hours and activities.

Coalroc are now looking at using the information collected on employee activities to determine the currency of particular employee competencies.

All of this was only made possible once Coalroc had developed a standards based training system to back up the electronic one and then agreed to comply with MineIT standards for defining competencies and employees.

Clearly, in order for two different sites to share information they must be talking the same language, or calling a spade a spade if you like.

Our other underground contracting clients, Mastermyne and Ground Consolidation are following a similar path and are fully compliant with the MineIT standards.

#### **How would a framework like this be implemented?**

The MineIT mesh framework has been developed and is fully functional. This paper is not proposing the development of such a framework, rather explaining how this existing framework can be

utilised to solve a problem. With this in mind many of the issues inhibiting the implementation of such a framework industry wide are primarily administrative, political and financial – not technical.

Administrative problems exist in the respect that each individual site and contractor must decide if they wish to comply with the central list of competencies defined by us and our existing clients.

This list is flexible and any site (MineIT client or not) has the ability to request new competencies be added.

The list is by no means complete and is a work in progress. This applies to our list of classifications, locations, sites and contracting companies.

If a site does decide that they do wish to comply they then need to move any existing information over to the new codes and definitions and choose a method of connecting to the framework.

Political and financial problems exist due to the administrative problems defined above. Many companies and contractors have a considerable amount of money invested in existing systems and these are often very inflexible.

The cost of having their developers add in the ability to export or import *frags* compliant with our definitions would be prohibitive in most cases. The key to overcoming this issue is to ensure that the advantages gained by connecting to the framework outweigh these costs or alternatively provide low cost solutions to replace existing systems.

The other key concept is that a site does not necessarily have to have their local database compliant to implement a solution to track contractor work hours and competency.

MineIT has a range of products that can be placed on site that can be used to manage contractors' separate from existing internal systems.

#### **Where to from here?**

MineIT will continue to offer secure mesh web services to our existing clients regardless of whether it is adopted as a possible solution industry wide.

We will continue to work with our clients to develop a centralised list of competencies that will then enable them to communicate information amongst themselves.

By centrally managing these commonly used lists we can save our clients a considerable amount of general 'administrative' time and also allow new clients as quickly as possible.

# BEYOND THE WORKPLACE ACCIDENT

Shae McCartney  
Solicitor Employee Relations - Freehills

## Why undertake an internal investigation?

- To isolate cause
- To review systems
- To improve systems
- To prepare for external investigation

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# Case Example

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22

## Who can investigate?

- Internal
- External

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# Internal Investigation

- Operator
- DDE
- Other officeholders

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23

# External Investigators

- Union
- Chief Inspector
- Board of Enquiry
- Coroner
- WorkCover
- Police

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# Legal ramifications of an accident

- Coroners Court
- Board of Enquiry
- DNR prosecution
- Chief Inspector directives
- WorkCover claim and worker rehabilitation
- Common law claim
- Criminal Code

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24

# So there has been an incident...

- Safety
- Notification
- Investigation
- Damage Minimisation (including Rehabilitation)
- Future Risk Minimisation

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# Safety

- Employees, Contractors and other people on site
- Investigators
- The Community
- Other related persons

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25

# Notification

- Who should I call first?
- What do I have to tell who?
- What are the Company's rights and obligations?
- What are my rights and obligations?

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# Internal Investigation

- Practical steps
- Reasonable Direction
- Scope of investigation
- Confidentiality
- Privilege
- What do we do with the report?

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26

# Police Investigation

- Obligation to give a statement
- Legal representation
- Police powers and responsibilities

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# Investigation by statutory position holders

- Obligation to provide information
- Rights and obligations generally
- Legal representation

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27

# Investigation by Workcover

- Obligation to provide information
  - Self incrimination
- Rights and obligations generally
- Legal representation

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# Protection of information

- What if investigation shows changes are required?
- What are the Company's obligations if it finds fault?
- Does subsequent change prove prior liability?

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28

# Rehabilitation

- Obligations
- Company's Rights
- Ongoing Issues
- Stress Claims

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# Risk Assessment

- Systems Review
- Training
- Ongoing management of risk areas

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