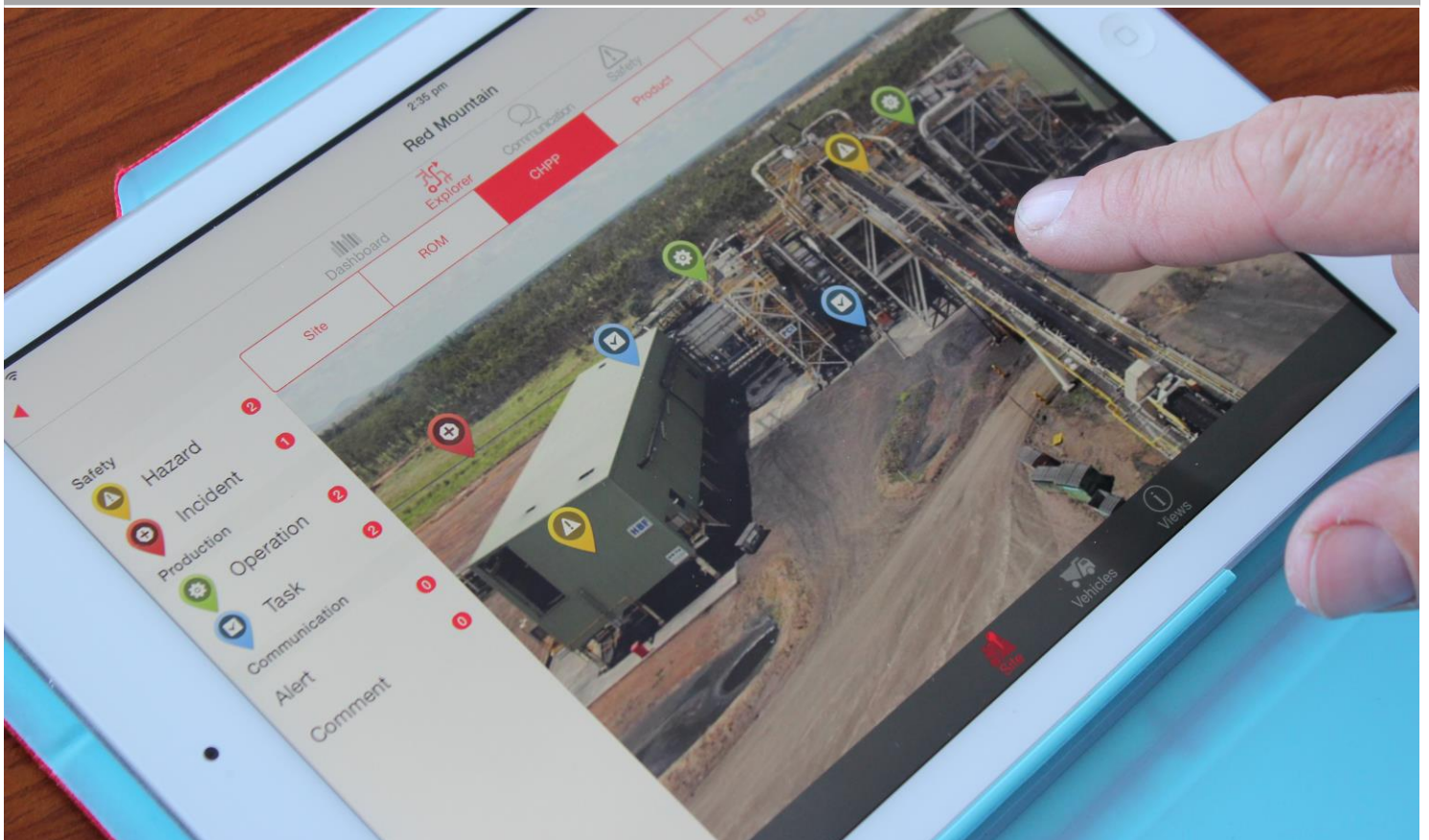


WHITEPAPER

Shift Handover Excellence – The overlooked key to safety and production performance

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ENGINEERS AUSTRALIA
"ENGINEERING EXCELLENCE AWARD"
WINNER 2012 INNOVATION





EXECUTIVE SUMMARY

SH2 was conceived, designed and developed within operational sites, not in a boardroom or the I.T. department.

Beyond industry best practice: Using modern methods to connect business objectives to operations. Delivering improvements in operational costs, safety, production and professionalism

A business in a highly competitive environment was looking for ways to differentiate itself within their market and increase market share. They were looking at boosting their performance culture through improving safety, increasing production output, standardise work processes across different sites, better connect business strategy to operations and at the same time reduce operational costs. Through the journey, it was realised that more emphasis needed to be laid at the critical link between business and operations – the Shift Handover, sometimes called the Prestart. Research was undertaken into existing best practice in operations and other industries featuring twenty-four hour operations. This process found that even current best practice shift handovers were susceptible to human error, contributing factors ranging from a supervisor's communication skill level to inattentiveness or even non-attendance of shift team members. It was clear that a new level of performance needed to be set. The Project became known as SH2 – the next level of Shift handovers. The project not only identified weaknesses in current processes

but set up about designing the world's first Shift Handover technological solution along with a new best practice framework of delivering Shift Handovers. This solution is now called the SH2 solution. It has since won the Engineer's Australia award for Innovation in Queensland (2012) and has also delivered significant improvements in business productivity and performance.

TIME FREED UP FOR SUPERVISORS

↑ **60mins**

TOTAL RECORDABLE INJURY FREQUENCY

↓ **27%**

SAFETY INCIDENTS

↓ **48%**

HAZARD OBSERVATIONS

↑ **70%**

PRODUCTION

↑ **8%**

Introduction

Operational businesses across the world are drowning in priorities. Safety is presented among the priorities in many sectors from mining to oil and gas, from health care to infrastructure, from manufacturing to construction sites; but how successful have organizations been in delivering on their aspirations? Current statistics on fatalities and injury rates would suggest while improvement has been seen, not everyone goes home in the condition they arrived. In the climate of constant downward pressure on cost base for greater profitability, how can we capitalize on the lessons of the past to make significant and sustainable shifts in safety performance? While the call to do things differently is often heard, translation of this call to day-to-day operations seems elusive. One truth that is inescapable for the resource sector is that day-to-day performance, safety and production is fundamentally influenced by the quality of the performance of crew supervisors in translating strategic goals to actionable tasks and operational decisions. There is, almost as if a missing link, a gap between what happens at the boardroom and what is being done onsite. Shift handovers and pre-starts is the missing link. They are the singular conduit to deliver greater operational efficiencies, improved safety practices, improved work practices and above all, empower the front line leaders to translate safety and business priorities to operational behaviors, yet innovation in Shift Handovers has been limited. In this white paper, we discuss how a new technological platform solution helps operational businesses utilise the combined power of best practice and technological enablement to deliver operational goals.

The History

Sedgman is a leading provider of mineral processing and associated infrastructure solutions to the global resources industry. It undertakes operations for blue-chip coal and metals companies in Australia and internationally. Sedgman's core business is meeting coal and minerals companies' needs with advanced process engineering and materials handling solutions. Sedgman teamed with 5d Consulting (a management consulting firm) to investigate ways to provide greater value to client mining companies for whom it undertakes contract plant operations. Providing greater value is not a one-activity step or process. It involves, among other things, doing things efficiently, professionally and above all with consistent safe performance. This led the two organisations on a journey of research to find a solution to unlock greater value from operational businesses.

Arriving At A Solution

As part of this journey, Sedgman and 5d identified the Shift Handover process as the 'keystone' of operational processes – that is the key organizational system upon which performance is dependent. In an environment where teams can disperse across a site to perform the various operational tasks required across a shift, the Shift Handover is the only point at which frontline leaders have the ability set context, direction and targets for crews and make them aware of everything needed to maintain the highest levels of safety performance.

However, they also realised that the Shift Handover practices around the world require a dramatic improvement. Research was undertaken into existing best practice in mining operations and other industries featuring similar around-the-clock operations. The study identified that even current best practice shift handovers were susceptible to human error, contributing factors ranging from a supervisor's communication skill level to inattentiveness or even non-attendance of shift team members. A number of large-scale disasters, the root cause of which can be traced to poor handover practice, sparked extensive research into effective shift handover practice, yet actual practices seemed insulated from the power of technology. The Sellafield Beach Incident, The Piper Alpha Disaster and The Sutherland fatality are among the most publicized case studies demonstrating the need for more effective shift handover practice. This research identified 24-hour industries that operate in technically complex and geographically challenging environments as being most at risk.

Next Level Performance

A decision was then made to progress the SH2 project from a research to design phase.

To counter the existing challenges faced by Shift Handover processes, it was decided that new levels of safety performance would be best assisted by:

- placing a high priority on handover conversations;
- developing the communication skills of workers and encourage two-way face-to-face conversations;
- providing procedures that specify how a handover conversation is to be conducted; AND
- introducing the power of a digital technology platform to support performance

The SH2 development team worked to 'engineer out' identified delivery weaknesses by developing a process to:

- improve and standardise shift handover communication across operational sites regardless of operator capability;
- improve safety practices through greater visualization, transparency, clear identification and two way communication of hazards and incidents; and
- provide a clear, accessible record of compliance with legislative requirements for shift handovers.

A New Benchmark In Shift Handovers

SH2 was aimed at developing a new benchmark for the practice of shift handovers not only for the mining industry but also for all industries engaged in 24-hour operations.

The SH2 solution is now a new best practice method of delivering Shift Handovers.

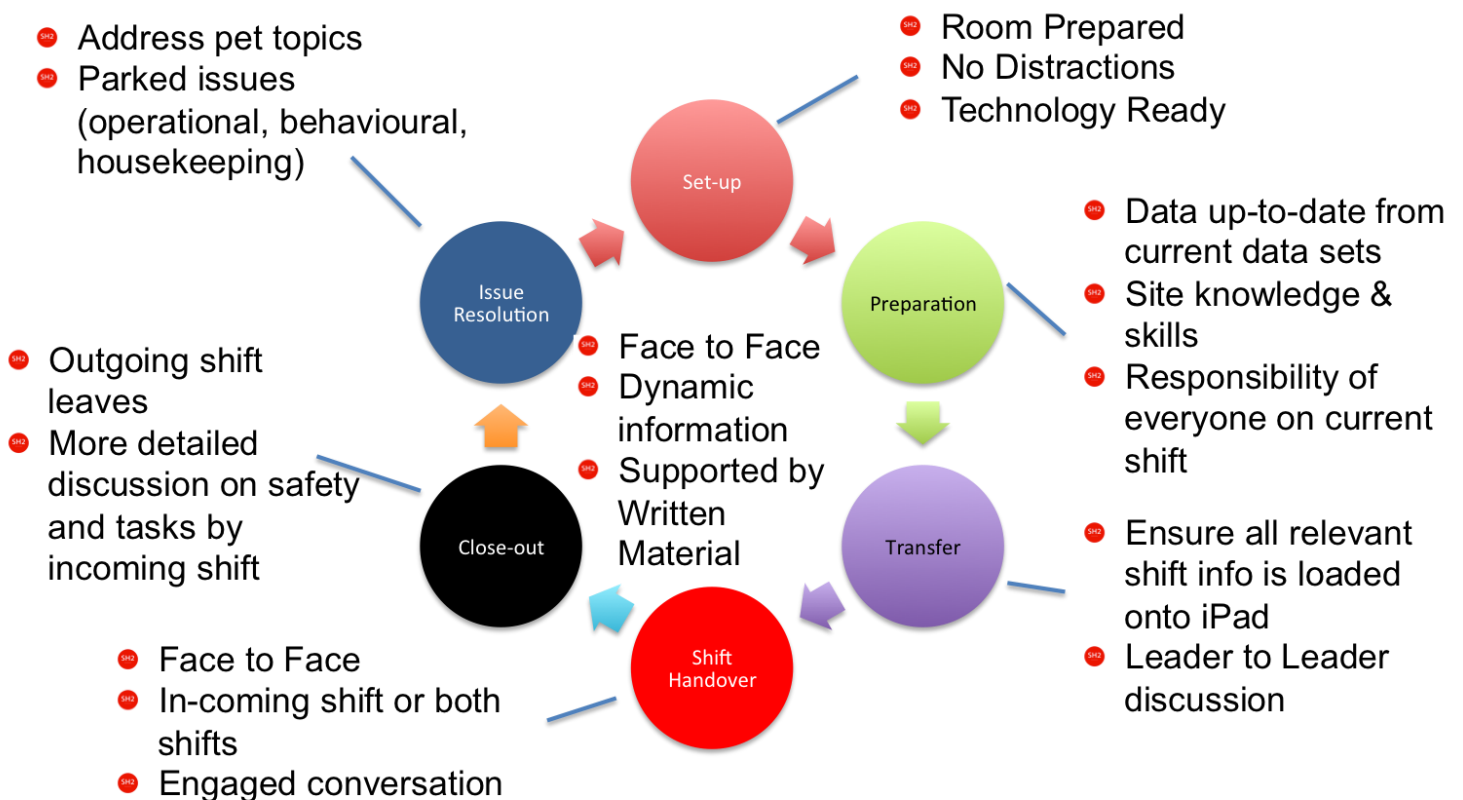
The Six Steps


Technology is only ever an enabler not the end in itself. SH2 is more than a technology platform, but a means of resetting the way leadership engages the operational workforce in the most important issues that are critical for performance for any given shift. SH2 aims to better engage the workforce through visualization and better preparation and to inform and educate across time ensuring a continuous and consistent level of intelligence to enable optimal performance.

The six steps below the design logic that solution.

The 6 steps of Shift Handover

provide an overview of lies behind the complete





BEYOND BEST PRACTICE: It would have been easy to write up gigabytes worth of new best practice procedures, pass on to operational teams and leave it at that. But SH2 goes beyond traditional change processes.

The SH2 solution that was designed and implemented went beyond traditional methods of improvement and change. It would have been a fairly easy proposition for the Project team to leave new work processes, as is traditionally done, in the form of excel sheets, word documents or LEAN boards or other “artefacts”. However, they went above and beyond. Thus design started with the crews. The end design encompassed all feedback from operational crews and our own research by ensuring the user interface was simple and easy enough to be followed by operational crew and had intelligent design and delivery incorporated into it to make the process sustainable.

SH2 is specifically designed to support a structured conversation that is targeted to improve safety and production on site.

The visual element of the solution plays the dual role of engaging the attention of participants and allowing precise descriptions of the location and nature of on-site issues.

A further result of the SH2 solution is a standardised approach to shift handovers that is not dependent on the supervisor’s communication skills. The SH2 development team’s research found that shift handovers in all industries are generally inconsistent except where supervisors have excellent communication skills.

Using the visual aid and a systematic approach makes the process less dependent on the supervisor’s presentation skills and ensures a consistent quality in handover across sites regardless of time or location.

Sustainable solution

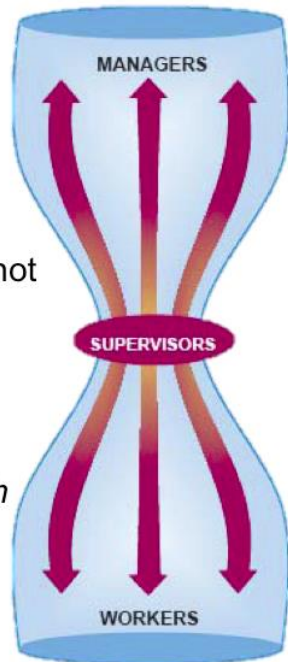
SH2 solution is built on best practice methods that ensure that technology helps guide repeatable human processes and provide mechanisms to adjust and improve to the human condition and processes

Enabling Supervisors

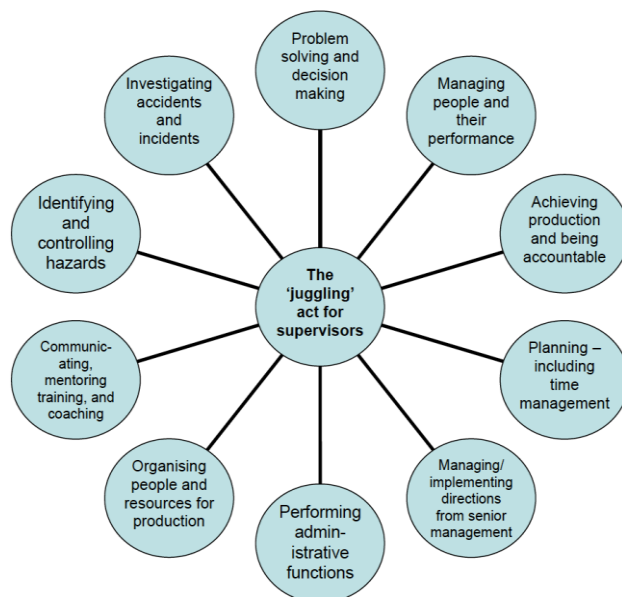
As suggested in the figure below, Supervisor capacity and capability has been identified as a crucial element in safety performance.

In most operations, **'everything' is channeled via the supervisor.** The supervisor must have the skills, **time and support** to ensure these channels are not becoming blocked.

Guidance Note – Effective Safety and Health Supervision, Mining and Quarrying Safety and Health Act 1999, November 2008



Supervisors needed more indisputable performance data to better task and plan crew performance, better skills in presenting the data and help in engaging the crews and focusing them on performance conversations. But they needed more time not less, away from administration to manage crew performance and supervise quality.



SH2 is a first of its kind performance solution that dramatically changes how shift handovers are conducted. The SH2 system, along with a proven coaching methodology, allows organisations to create a high performance culture that reduces safety risks, streamlines maintenance and focuses on the achievement of production targets. Through clever use of visual and spatial information, SH2 enables operators, managers and executives to interact with the information that matters for business results. SH2 complements existing systems by intelligently gathering and presenting critical data for review.

Moving from the old ways of doing business to newer innovative methods



SH2 BENEFITS: This solution has the capability to make a significant contribution to a number of industries across the economy. The interactive, engaging nature of SH2 supports conversations that are designed to reduce lost time from safety and maintenance issues.

Benefits Recorded Post-Implementation

Reduced Safety Incidents

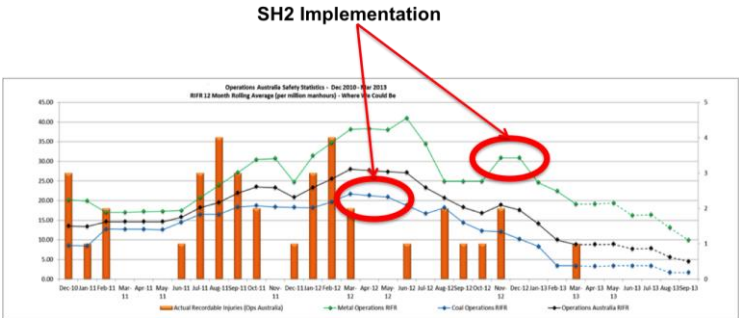
One of the first benefits that were noted was the reduction in Reportable Safety incidents within Sedgman. Sedgman noticed a 30% reduction in Reportable Injury Frequency Rate within 3 months of solution implementation. **BGC Contracting** are one of the first organisations to adopt SH2 into their way of operations. Similar Safety improvements were noted in the BGC within the first 3 months of deploying the solution. BGC noted a 70% increase in Hazard observations and a 48% reduction in Safety incidents. Additionally BGC also noted a 27% decrease in Total Recordable Injury Frequency.

Improved Operational Performance

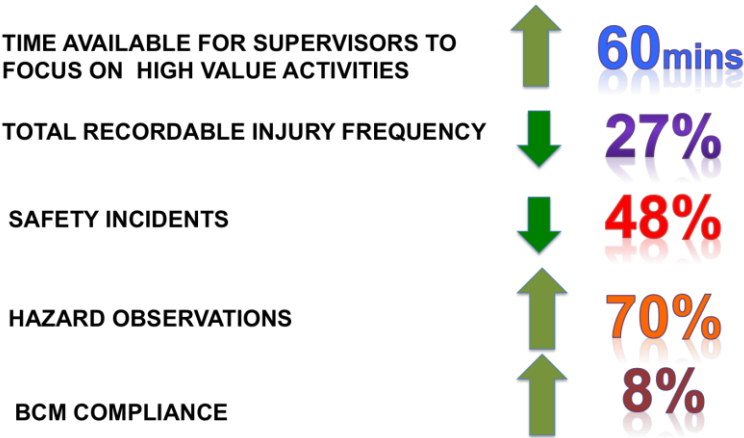
Sedgman plant managers started noticing a significant improvement in maintenance efficiency. As part of operational maintenance, Sedgman would shut down plants every 3 weeks or so. They started realizing that the shutdown durations were now starting to reduce, as they were more on top of all the maintenance issues that needed to be conducted and not just pushing all jobs to shutdown days. This has resulted in significant improvements in plant performance – both for Sedgman and their clients. Additionally, on account of having visual, structured handovers without any paper trails, operators were being more and more productive as they were not chasing information throughout the shift anymore.

BGC Contracting also noticed significant improvements in their operational performance. BGC estimated that they had freed up approximately 60 minutes of supervisors’ times to be able to focus on more productive tasks. Additionally, they also noticed

production throughput increase by 8% - which is a significant improvement for mining industries.



* Customer results before and after SH2 Implementation
- SH2 reduced the frequency of Safety Incidents and Increased the quality of Operator Meetings



A HIGHLY PROFESSIONAL WORKFORCE

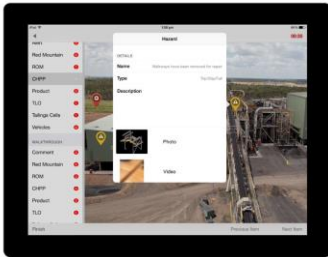
Both Sedgman and BGC operators and operational staff have commented on SH2’s ability to bring about a subtle change in their operational practices and make them more professional.

COMPLIANCE WITH LEGISLATIVE REQUIREMENTS

SH2 automates and fulfills a significant portion of Legislative requirements from a Workplace Health and Safety Requirements. It is true Technology enablement to achieve WHS objectives.

SH2 is allowing plant managers and operators to highlight maintenance opportunities in a clear and timely manner, leading to a reduction in running costs and equipment attrition.

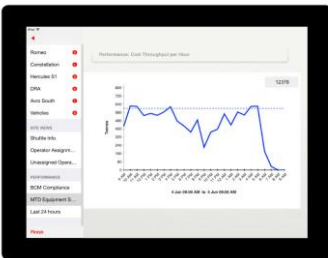
DESIGN FEATURES - SH2 does not replace but complements existing operational systems by presenting information in a clear, concise and operationally relevant manner.



SAFETY

SH2's ability to visually represent the precise location and nature of hazards results in efficient Hazard Management and an enhanced Safety Culture.

SH2 creates an informed and empowered workforce that minimises hazards and facilitates safety related conversations.



PRODUCTION

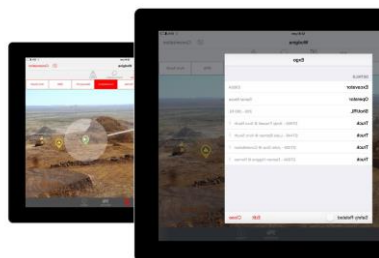
SH2 promotes a high performance culture that fuels operational consistency.

With a clear and simple display of key performance data, SH2 adds a business focus to handover conversations.



SIGN-IN

Users login securely allowing individual identification relating to all changes captured in the system.



DROP PINS

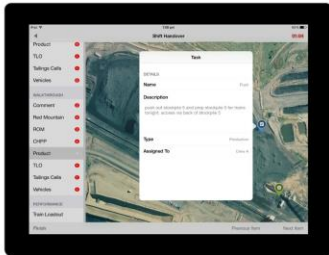
Interactive pins are placed at the location where it applies; allowing users to immediately contextualise what it is they need to know.



QUICK SUMMARY

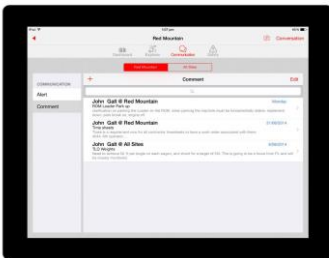
By tapping on a pin you are presented with the summary details. If connected to the TV display, this will highlight the pin you are viewing for the Shift Handover participants.

Organisations operate in all sorts of conditions and so should their tools. SH2 is fully usable in the absence of wireless or network connectivity. As soon as the device is back in range, data is synced to a central server: on-premise or in the Cloud.



Create New: Hazard, Incident, Operation and Task Pins OR you could create a custom pin relevant to your operations

When you drop a pin, a screen is presented to input the information required for that pin. Wherever possible, list selection is provided to simplify the creation process. You can also add pictures, videos or documents to your pin to support your information.



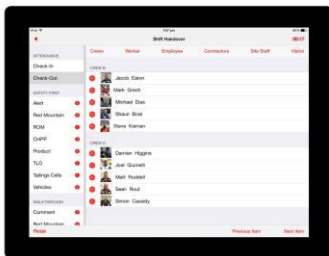
Communications

SH2 provides a communications section that can be populated by manual entry from the tablet device or web-based interface. This allows people both on and off site to ensure their message is communicated at the Shift Handover. Images captured by the tablet or uploaded externally can also be attached to these communications.



Systems Integration

SH2 can pull in data from external systems to present information in clear and simple visuals. SH2 data can also be used to feed information to external systems.



Attendance

Keeping track of who was present for the Shift Handover or Pre-start meeting is crucial to ensuring a safe and effective shift.



Conversation View

SH2 offers a number of approaches for the facilitator to cover all of the information in the Shift Handover. This list view allows the facilitator to quickly identify all of the pins in an area so that they can move through them in a logical order.

Conclusion

Our journey towards greater safety performance led us to focus on an ordinary artifact of safety practice and routine, so ordinary in fact it has been overlooked by the industry as a lever of fundamental and significant performance improvement.

Through the development and implementation of a smart technological platform with operators significant safety and production improvements were achieved across every operational site the solution was deployed.

More importantly, the systematization of the Shift Handover process enables a more mature and sustainable approach to safety and production performance enabling an ongoing and consistent transfer of intelligence that improves all performance measures monitored.

