INTERNATIONAL SCHOOL SAFETY CONFERENCE

Decorum 庄

Honesty 诚

Diligence 勤

Simplicity 朴

Safety and Health Management System for Schools

By the end of this presentation you will be able to:

1. Identify possible risk areas in school
2. Recognize requirements of a safety & health management system
3. Understand every clause in the OH&S management system

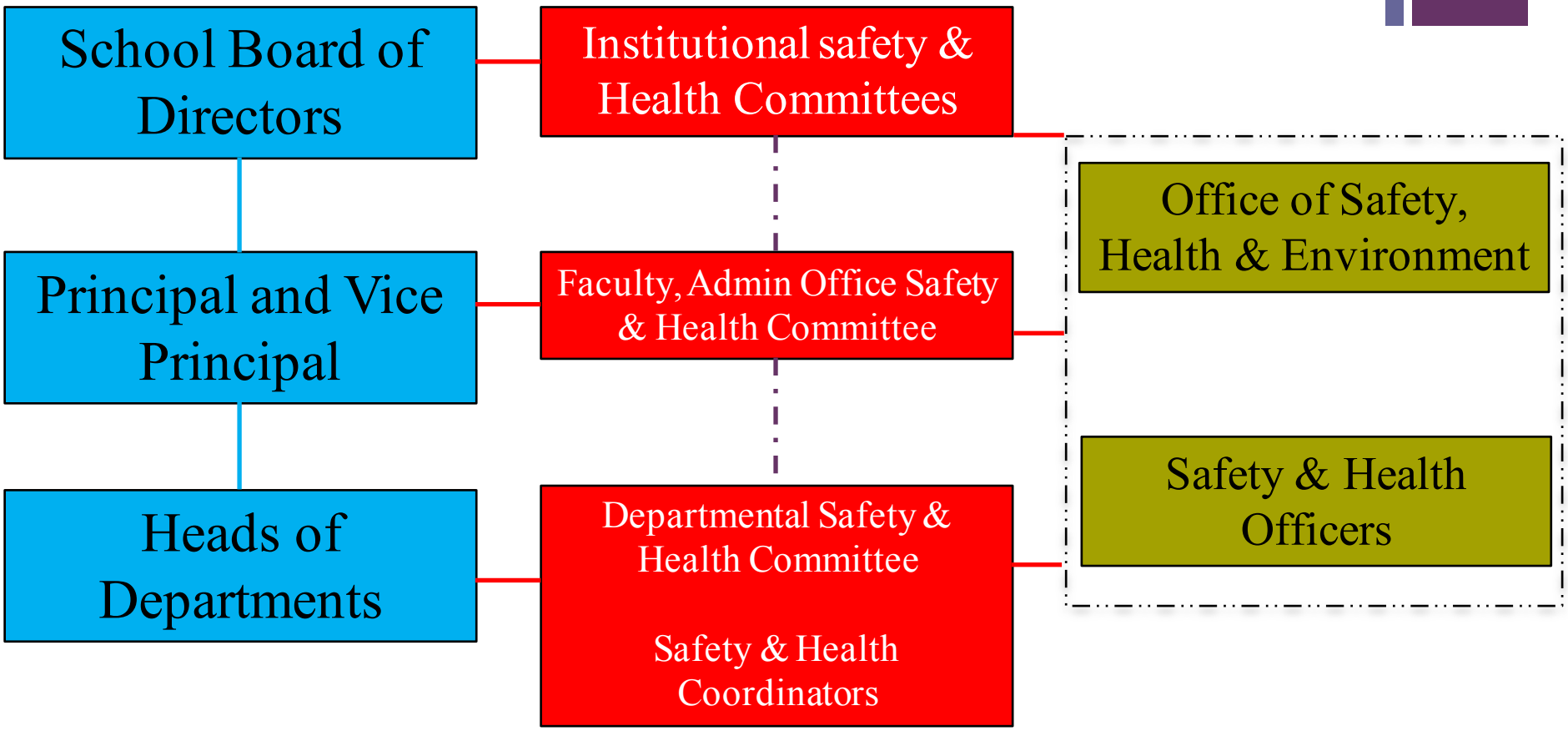
"If students do not see and experience good safety and health practices being implemented in the school grounds, they will enter the society ignorant of safety and health hazards. It is the establishment's responsibility to maintain high safety standards to cultivate a safety culture in the learning environment."

Prof Tan Chorh Chuan

President

National University of Singapore

Safety and health organization chart

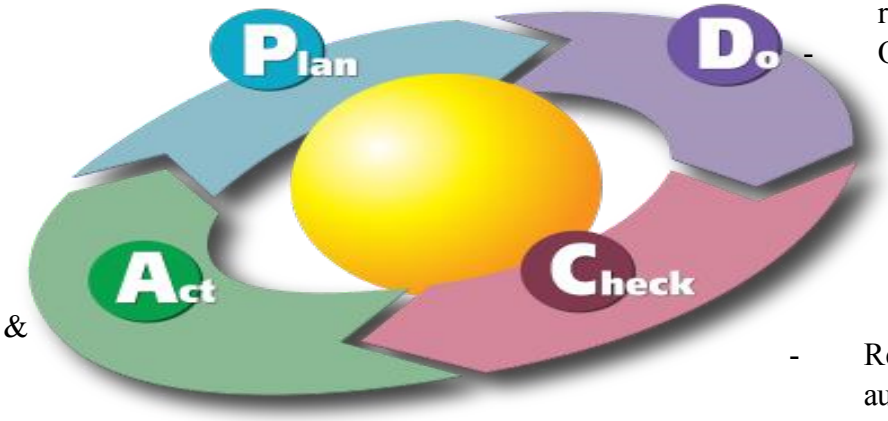


Requirements of a Safety & Health Management System

Policies
Procedures
Manuals

- Management review

Hazard identification, risk assessment and determining controls
- Legal and other requirements
- Objectives & Programmes

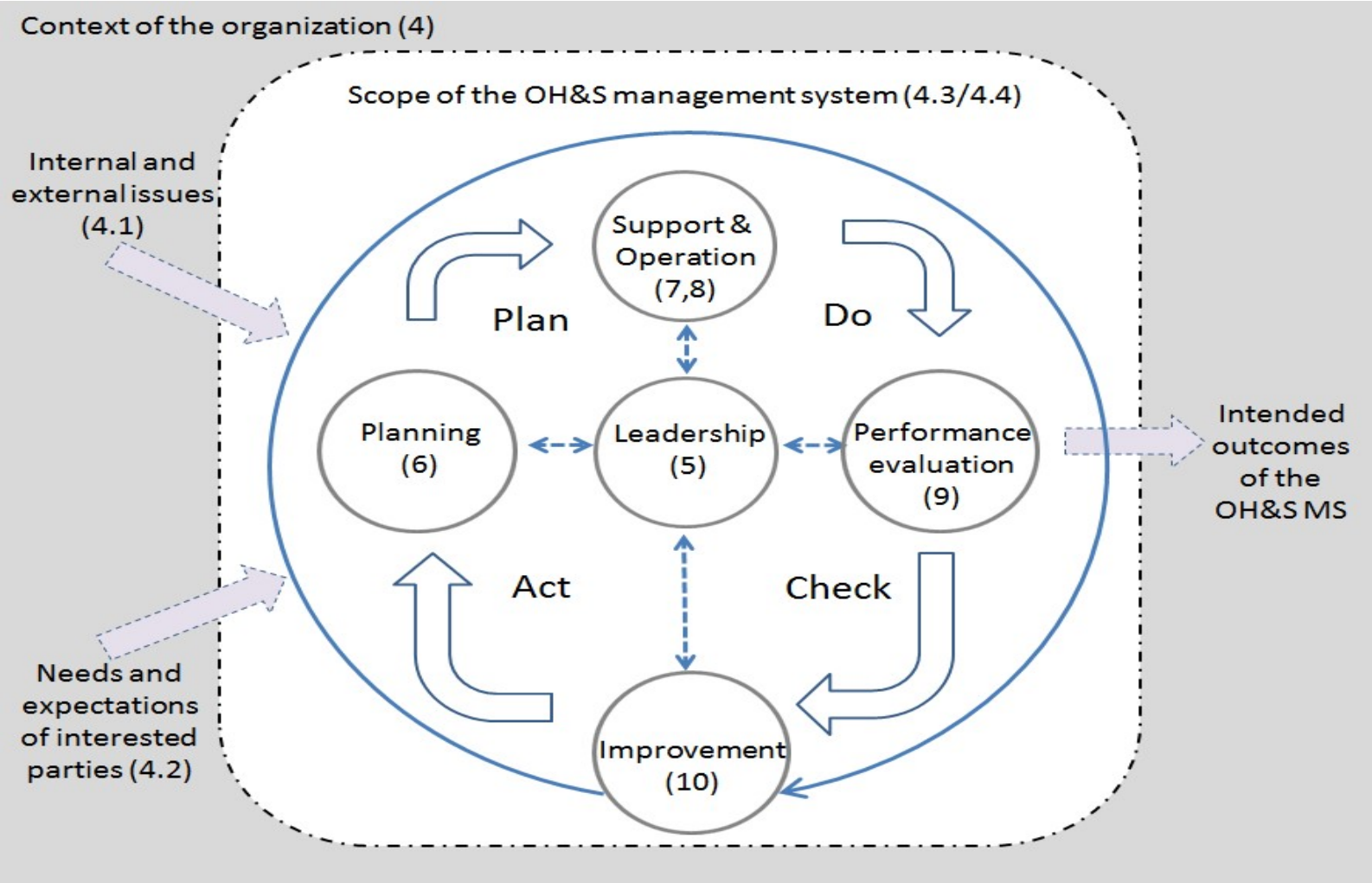


- Performance measurement & monitoring
- Evaluation of Compliance
- Incident Investigation
- Non-compliance, corrective action and preventative action
- Record control
- Internal audit

- Resources, roles, responsibility and authority
- Competence, training and awareness
- Communication, participation ad consultation
- Documentation and document control operational control
- Emergency preparedness and response

The PDCA (Plan, Do, Check, Act) cycle can be applied to any process.

ISO / DIS 45001 – SMS Framework



1. Objective

The OH&S management system standard provide the Office of Safety, Health & Environment (OSHE) with a framework for managing occupational health and safety within the school in order to minimize the risk of workplace ill-health and injury

2. Scope

- The OH&S management System standard is applicable to anyone who wishes to:
  - Establish an OH&S Management System to eliminate or minimize risk to teachers, students and other interested parties (parents, visitors, contractors, etc.) who may be exposed to risks related to school activities
  - Implement, maintain and continually improve an OH&S Management System. Factors such as the nature of the school activities, its risks and complexity must be taken into consideration

3. OH&S Management System elements

3.1 general requirements

The OSHE shall implement, maintain and continually improve his or her school-based OH&S Management System in a documented manner in accordance with the requirements detailed in this standard

3. OH&S Management System elements

3.2 Commitment to OH&S Management system

- The OSHE shall manage the occupational safety and health risks associated with his or her school activities by:
  - Implementing the policies established by the school
  - Defining roles and responsibilities for managing OH&S in the school
  - Allocating resources to support the OH&S Management System
  - Continually improving the OH&S management and performance
  - Complying with legal requirements and Chung Ling's OH&S policies
  - Providing the framework to set and review OH&S objectives
  - Communicating OH&S hazards that are beyond the OSHE's control

3.3 Planning

3.3.1 Hazard identification, risk assessment and determining controls

- OSHE will conduct hazard identification, risk assessments and determination of controls for all school activities periodically or on an ad-hoc basis
- Results to be documented and updated through periodical reviews
- Consider risks coming from activities of contractors and visitors and use of products and services supplied by vendors
- Establish procedures to reassess risks and review established risk controls whenever an occurrence of an incident or significant change to school activities, materials and hazards, personnel, equipment, etc.

Risk areas in school

Workshop

Science Lab

Admin Office

Canteen

Sports Field

Multi-Purpose Hall

Identify the hazards

- Consult with people involving in the work
- Observe work practices
- Review incident and injury reports
- Read labels and literature
- Break down a work process down into specific tasks with distinct objectives or equipment usage to identify hazards associated with each task within

Assess the risks

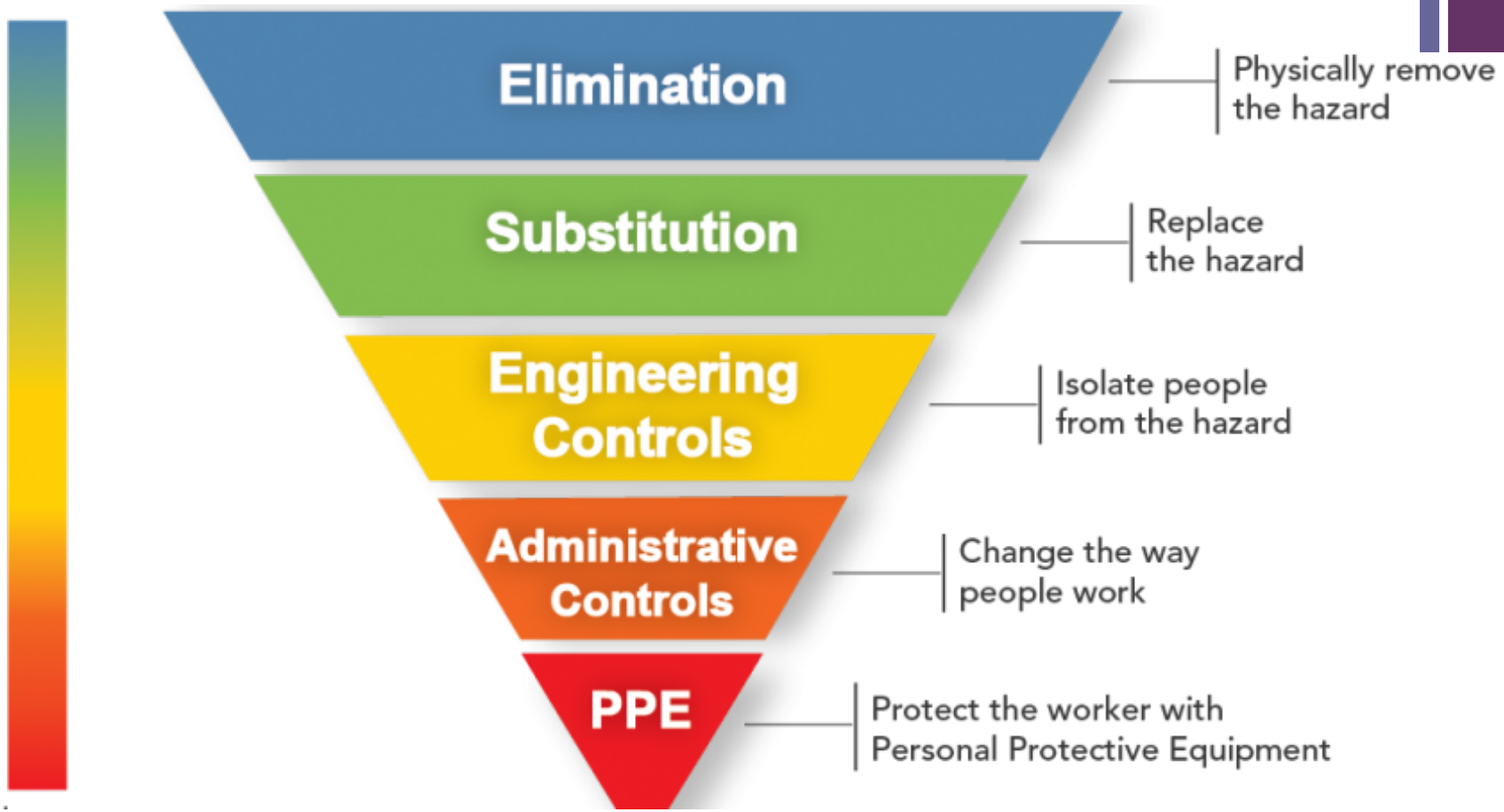
- Risk = Likelihood x Severity
- Used for process hazard analysis, safety audits, etc.
- Risk levels determine if process can be safely performed
- A scenario's risk level should move to a lower risk level after mitigation measures
- Evaluates effectiveness of risk control measures

Assess the risks

Level	Likelihood	Description
1	Rare	Not expected to occur but still possible.
2	Remote	Not likely to occur under normal circumstances.
3	Occasional	Possible or known to occur.
4	Frequent	Common occurrence.
5	Almost Certain	Continual or repeating experience.

Level	Severity	Description
5	Catastrophic	Death, fatal diseases or multiple major injuries.
4	Major	Serious injuries or life-threatening occupational diseases (includes amputations, major fractures, multiple injuries, occupational cancers, acute poisoning, disabilities and deafness).
3	Moderate	Injury or ill-health requiring medical treatment (includes lacerations, burns, sprains, minor fractures, dermatitis and work-related upper limb disorders).
2	Minor	Injury or ill-health requiring first-aid only (includes minor cuts and bruises, irritation, ill-health with temporary discomfort).
1	Negligible	Negligible injury.

Control the risks



Evaluate and review the risks

- Evaluate if risk controls are cost effective and efficient in controlling the risks
- Reassess the risk after applying revised controls to verify that risks have been reduced to a tolerable level
- Review the assessment after an incident or significant change to equipment, people, procedures which may affect the existing risks
- Even with no changes, risks should be reassessed every 3 years

3.3 Planning

3.3.2 Legal and other requirements

- OSHE shall consider legal requirements, Chung Ling's OH&S policies, SOPs, best practices and other school requirements when establishing the OH&S management system

- OSHE shall communicate relevant information on legal and other requirements to all school personnel

3.3 Planning

3.3.3 Objectives and programme (s)

- OSHE shall participate in university, faculty or departmental-level OH&S programmes

- OSHE should consider additional objectives and developing additional programmes where applicable

Setting objectives & targets

- Specific
- Measurable
- Achievable
- Realistic
- Timely

Examples of OS&H objectives

- Conduct scheduled review of all written SOPs twice a year
- Zero fire incidents
- Establish a channel for communicating between teachers on OH&S matters within 1 month
- Identify and address training needs of school personnel within 3 months
- Improve awareness of school safety by end of 2017 by 90%
- Reduce school injuries by 80% by 2018

3.4 Implementation and operation

3.4.1 Resources, roles, responsibility, accountability and authority

- OSHE shall manage the OH&S risks in the school by:
  - Ensuring the availability of resources necessary to establish, implement, maintain and improve the OH&S Management System
  - Defining roles, allocating responsibilities and accountabilities, and delegating authorities to facilitate effective OH&S management. These details must be documented and communicated

- OSHE shall ensure that staff and students in the school take responsibility for aspects of OH&S over which they have control, including adhering to Chung Ling's OH&S requirements

Matrix system of responsibilities

- Example: sports stadium

Areas of responsibilities	OSHE	PE teachers	Ground keeper	Students	Contractor/ visitor
Risk assessment inputs	✓	✓	✓	✓	
Maintenance of facility			✓		
Develop sports-related SOPs	✓	✓	✓		
Monitor safety training needs	✓	✓			
Report accidents/ incidents	✓	✓	✓	✓	✓
Review SOPs	✓	✓	✓		
Approve SOPs	✓				

3.4 Implementation and operation

3.4.2 Competence, training and awareness

- OSHE shall ensure that any staff or student performing the tasks within the school premise that may impact OH&S is competent on the basis of appropriate education, training or experience

- When defining the training needs of staff and students, consider the following:
  - Mandatory training courses under the school's training program
  - Induction training courses organized at the faculty and departmental level
  - Training courses to address school-specific needs

Training matrix system

- Example: sports stadium

Type of training	OSHE	PE teachers	Ground keeper	Students	Contractor/ visitor
Safety management system	✓	✓			
Risk assessment	✓	✓	✓		
School's training program	✓	✓	✓		
Sports-specific equipment	✓	✓	✓	✓	
Sports-specific protocols	✓	✓	✓	✓	
Sports facility safety orientation	✓	✓	✓	✓	✓

3.4 Implementation and operation

3.4.3 Communication, participation and consultation

- OSHE shall establish, implement and maintain a procedure for:
  - Internal communication of OH&S information, including hazards and risks and components of the OH&S Management System
  - Receiving, documenting and responding to relevant communications from external interested parties. All communications with government authorities should be coordinated through OSH department
  - Updating departmental safety committee, faculty safety officer and OSHE on school-specific safety matters

Examples of communication channels

- Weekly meeting to discuss safety related issues
- Websites or shared folders to share OH&S information
- Safety committee participation at departmental level to provide inputs and receive updates
- Audit/ inspection debrief sessions
- Informing other school occupants in the same work area or department of the specific hazards
- Communicating with vendors and suppliers
- Keep updated on new regulations and other school policies

3.4 Implementation and operation

3.4.4 Documentation and document control

- The OH&S Management System documentation shall include documents, records determined by the OSHE to be necessary to ensure the effective planning, operation and control of processes that relate to the management of its OH&S risks

Examples of documents and records

- List of OH&S objectives and implementation schedule
- Roles and responsibilities
- Legislation register
- Risk assessments and updates
- SOPs specifying risk control measures
- Training needs analysis matrix
- Equipment specifications and manuals
- Audit findings and reports
- Incident/ accident reports
- Safety committee minutes of meeting
- Records of periodical reviews

3.4 Implementation and operation

3.4.5 Operational control

- OSHE shall establish, implement and maintain:
- Operational controls as derived from the risk assessments of all school based activities
  - Stipulated operating criteria and conditions for equipment, for which their absence could lead to deviations which could result in OH&S incidents
  - Operational controls related to the identified OH&S risks from purchasing of equipment, materials and services
  - Operational controls related to the identified OH&S risks to and from contractors and other visitors to the school
- All control measures should be communicated to all relevant parties, including school personnel, suppliers, contractors and visitors as required

Examples of key operational control measures

- Use of engineering controls
- License application
- Storage control
- Security control
- Labeling
- Maintenance programme
- Occupational health programme
- Personal protective equipment (PPE)
- Waste disposal
- Contractor/ visitor management

3.4 Implementation and operation

3.4.6 Emergency preparedness and response

- OSHE shall identify possible emergency situations in the school and ensure appropriate high school-level emergency procedures to complement high school-level procedures

- OSHE shall ensure school staff and students participate in Chung Ling emergency response training and drills

Preparation for emergency response

- OSHE shall establish and document emergency plans and procedures:
  - Listing of emergency equipment including first aid box and their locations
  - Maintenance records of safety showers and eyewash for laboratories
  - Locations of fire extinguishers and fire hoses
  - Map showing all emergency exits
  - Emergency response flowcharts
  - List of contact numbers to call in case of emergency

3.5 Checking

3.5.1 Performance measurement and monitoring

- OSHE shall monitor and measure OH&S performance on a regular basis:
  - Monitoring of the extent to which the OH&S objectives are met
  - Monitoring of the effectiveness of controls by carrying out regular inspection
  - Recording of data and results of monitoring and measurement
  - Evaluating compliance with legal and other requirements when appropriate

Documents on performance measurement and monitoring

- Equipment inventory lists and maintenance schedules
- Facility inspection checklists
- Industrial hygiene monitoring records
- Medical surveillance records
- Accident/ incident reports

3.5 Checking

3.5.2 Incident investigation, corrective action and preventive action

- OSHE shall investigate and analyze incidents in order to identify the needs for corrective and preventive action
- Investigations shall be performed in a timely manner and findings documented

3.5 Checking

3.5.3 internal audit

- OSHE shall conduct internal audits to ensure that the OH&S management system is properly implemented and maintained

Audit evidence checklist

	Documents	Records	Interviewee	Observations
Management leadership - OHSMS	NA	- Emails or memos from Exec. Team regarding OHSMS	- Exes team selected personnel designated with tasks to implement/ maintain OHSMS	- Management tour of faculty
OHSMS policy	- policy	NA	- Selected managers/ supervisors - Hourly employees	- Policy postings
Responsibility and authority	- Safe operating Procedure (SOP) - OHSMS Manual	- Organization chart, budgets and job descriptions - Qualifications for OHS leader and OHS team members - OHS team meeting minutes	- Selected managers/ supervisors - Hourly employees	- Team meetings
Employee participation	- OHSMS procedures - Human Resource policies - Injury reporting procedure	- OHSMS Team roster and meeting minutes - Employee suggestions	- Selected managers/ supervisors - Hourly employees	- Team meetings, department meetings, job briefings, safety committee meetings
Initial and ongoing reviews	- SOP: OHSMS issues	- Total and significant list of OHSMS issues - Job hazard analyses - Organizational chart, budgets and job descriptions - Audit reports - Incident investigation reports - Monitoring data - Safety inspection reports	- Selected managers/ supervisors - Hourly employees	- Tour facility, compare to OHSMS issues list

EHS Management Today…

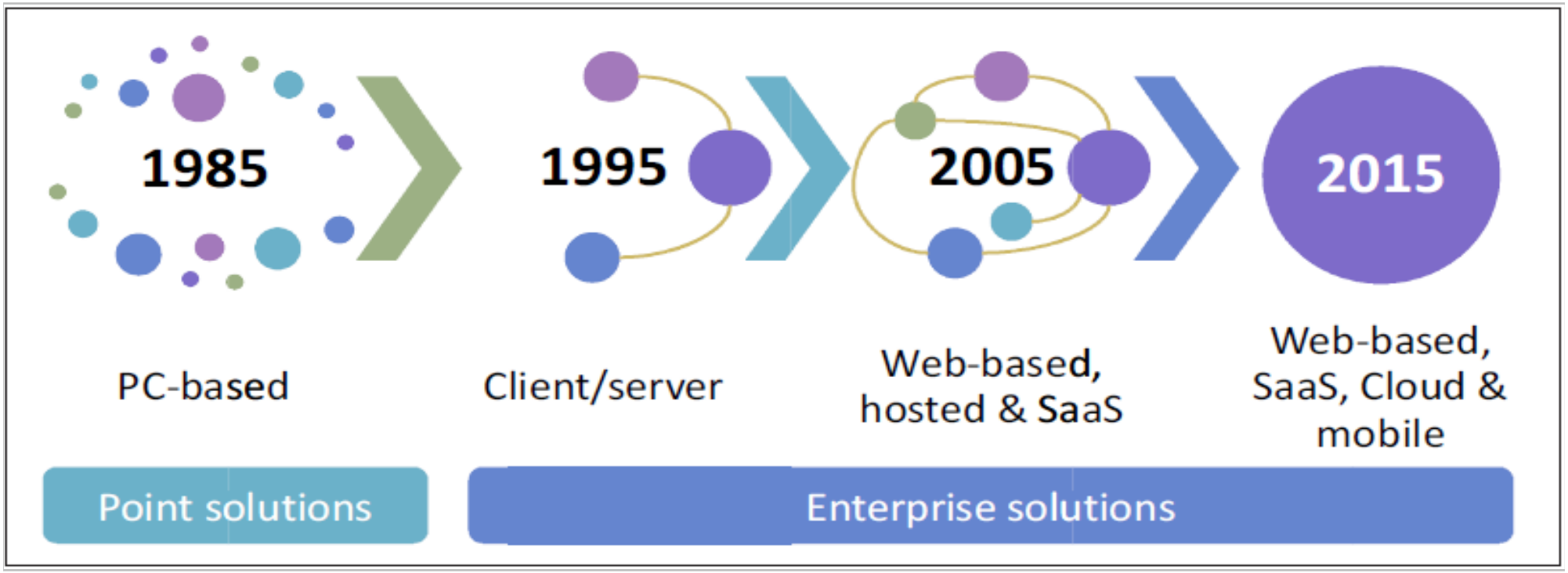
- Resource intensive function…single person at site, multi-tasking, on-site/shop floor, tough to get good talent
- Majority manage EHS data manually….. Excel tracking, files
- Few Corporates use internally developed IT tools
- Top Management involvement in EHS performance review….visible
- EHS Programs not standardized across the entire enterprise

EHS Performance Challenges…

- Varied Business Operations, Evolving Global Regulations
- Personnel Turnover
- Ineffective Enterprise-wide Communication Tools
- Inadequate Real-time Business Intelligence & Review

Is current EHS Management System Sustainable?

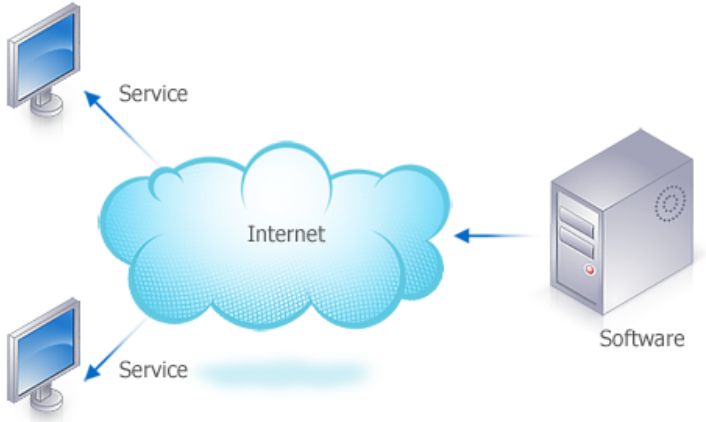
EHS Software…… Market Transformation



- Point Solutions started with regulations like US EPA and OSHA
- Client/Server applications served multiple sites across enterprise and installed *"**On Premises**"*
- Web based technologies focused on EHS as well as Sustainability applications started to appeal and changed the market dynamics
- Software-as-a-Service replaced hosted solutions and is most prevalent ***in todays time***

Software-as-a-Service (*SaaS*) Model

- Applications and data hosted on ***Private cloud***…….accessed through ***secure*** Company Intranet or Internet; world-wide, at any time
- A ***web-based*** system……eliminates need for any hardware & software installations at customer side
- Software is updated automatically eliminating need for patch updates
- Information/data is always up-to-date, ensures consistency of approach and ***real-time reporting***
- Provides high levels of security, back-up, resilience and service
- Minimal upfront costs…….***pay-as-you-use*** model



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Modules Available

AUDIT AND COMPLIANCE ASSURANCE

- Audit Tool
- Audit Planner
- Inspection Tool
- Action Tracking System
- Audit Assistant
- Compliance Calendar
- Permit Manager
- Reg Tracker

INCIDENT MANAGEMENT

- Incidents & Measurements
- Initial Injury Reports
- Concern Reporting

SUSTAINABILITY AND ENERGY

- Eco Inventory
- Eco Prospector
- Eco Framework
- Eco Project Deck

HEALTH AND SAFETY

- Safety Risk Assessment
- Industrial Hygiene
- Safety Observations
- Maintenance Manager
- Contractor Safety
- Equipment Tracker
- Safety Matrix
- Ergo Facilitator
- Lockout Tagout
- Safe Work Permit
- Supervisor Metrics
- Safety Dialogue

ENVIRONMENTAL COMPLIANCE

- AirLog
- ODS Sentinel
- Permit Manager
- Waste Tracker
- Water Watch

MANAGEMENT SYSTEMS

- Framework Scorecard
- Profiler
- Process Director
- MOC Manager
- Doc Manager
- Best Practices

CHEMICAL MANAGEMENT

- SDS System
- Dangerous Goods Shipper
- U.S. TSCA
- U.S. TRI
- PRTR Reporting

TRAINING COMPLIANCE

- Training Tracker
- My Training Tracker
- Training Calendar
- Action Plan Manager

DATA ANALYTICS & VISUALIZATION

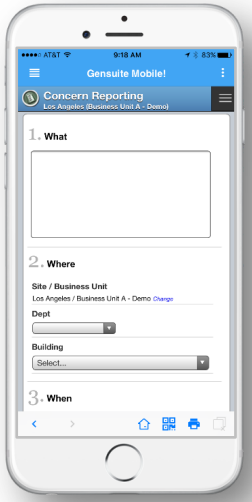
- Digital Cockpit
- Insights & Analytics
- Mapper
- Custom Reporter

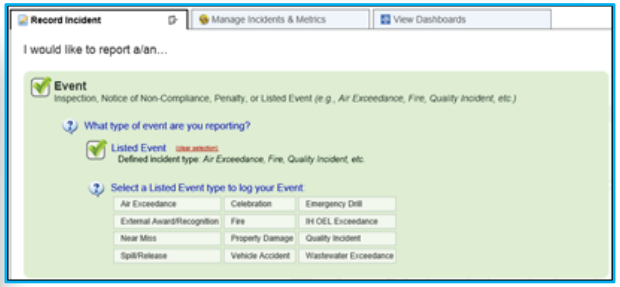
Incident Management

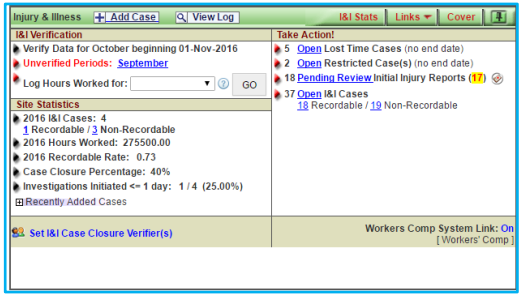
Reduce workplace incidents and accidents. Report and track incidents from occurrence to resolution, with integrated investigation, corrective and preventative action tracking tools, and immediate notification to key business leaders.

Capabilities

- Flexible tools for incident reporting: root cause analysis, corrective and preventive action tracking, restricted and return-to-work programs
- Share incident monitoring and learning enterprise-wide
- Track injury/illness rates based on country/region standards with integrated verification; integrate with HR system for employee hours worked
- Integrate with occupational health, medical and workers comp systems for case tracking and program visibility
- Robust reporting, charting and insights; integrated regulatory reports (e.g., U.S. OHSA Logs, UK RIDDOR, etc.)







Key Features

- Mobile interfaces for fast recording of incidents, near misses and concerns
- Helpful incident type selection wizard and customizable incident forms
- Ready to use dashboards of site & business performance metrics and pending actions

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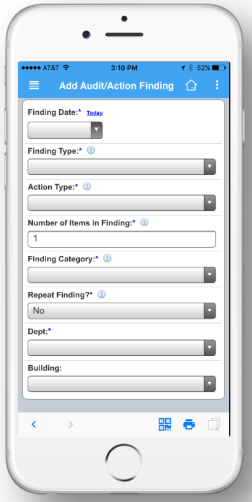
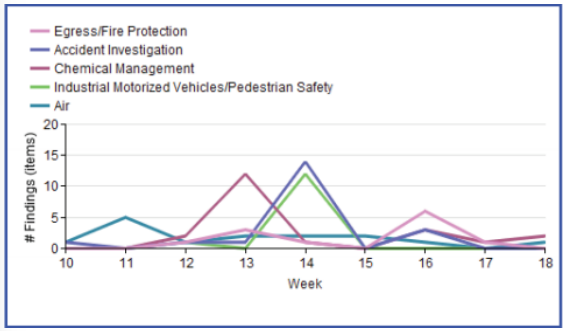
Auditing & Compliance Assurance

Simplify regulatory compliance assessment and follow-up programs. Meet regulatory, certification and program requirements through a suite of auditing, inspection and corrective action tracking tools with integrated trend charting and analytics.

Capabilities

- Engage site, business and corporate teams in **tiered regulatory compliance audits** and program assessments
- Audit regulatory compliance using internally developed or **licensed auditing protocols**
- Enable audit scheduling, auditor management and execution
- Develop custom **inspection checklists** to meet inspection program requirements; assign responsibility, frequency and track task completion
- Manage and track **action finding responsibility** from identification to closure





Key Features

- Mobile forms for logging Action Findings while in the field
- Consolidated desktop/tablet interfaces for streamlined data management
- Ready to use compliance assurance charts and analytics

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Auditing & Compliance Assurance
Integrated Suite of Apps

Audit Tool
Conduct audits using internally authored protocols or turnkey global content providers; export findings to the Gensuite Action Tracking System

Action Tracking System (ATS)
Manage corrective action plans, responsibility assignment, notifications and escalations with real-time status/closure tracking, trending and data mining

Audit Planner
Schedule, staff and manage audits occurring at/or within site entities and integrate with Auditor Pro's repository of qualified/experienced auditors

Reg Tracker
Monitor and track new and updated regulations by country/jurisdiction with customizable, subscription-based user notification emails & dashboards.

Inspection Tool
Formalize inspection program management: author checklists, assign auditors and export findings from such inspections to the Gensuite Action Tracking System

Audit Assistant
Enter, manage and review audit observations across audit teams within a collaborative Audit Room and export finalized findings into the Gensuite Action Tracking System for corrective action follow-up

Compliance Calendar
Schedule periodic/recurring tasks and obligations; assign responsibility with email notifications & intelligent escalations; track & report status

Permit Manager
Digitize key permit details, follow-up on actionable permit conditions & monitoring requirements and centralize all permit/regulatory documentation

Seamless User Experience From Desktop To Mobile!

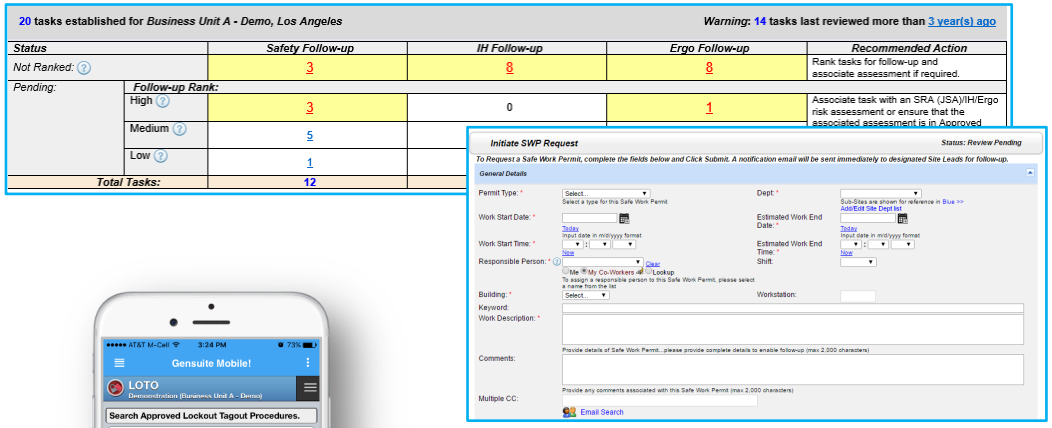
Gensuite Mobile App · Apple · Android · Windows · Amazon

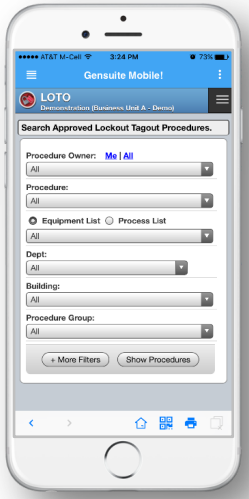
Safety Programs & Procedures

Safety Programs & Procedures software offers an integrated approach to safety management processes, industrial hygiene and ergonomic risks, Lockout Tagout for hazardous energy isolation and work permitting and approval

Capabilities

- **Inventory** all routine/non-routine tasks
- **Author risk assessments** using standard and custom scoring models and approval workflow; publish assessments to open-access repository available to all employees
- **Communicate** risk assessments to employees and ensure safety training with Gensuite Training Compliance suite
- Develop and publish **Lockout Tagout (LOTO) procedures** by equipment/process lines, maintain authorized LOTO personnel and track execution status
- **Centralize the location** of procedures and permit documentation for easy access by all employees





Key Features

- Easy to search and Mobile accessible safety procedures, e.g., SRA/JSA
- Customizable forms for site-specific safety program needs, e.g., Safe Work Permitting
- Task-based risk prioritization module, integrating Safety, Industrial Hygiene, Ergonomics risks

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Safety Programs & Procedures
Integrated Suite of Apps

Safety Matrix/Risk Register
Prioritize the development of assessments for job activities relating to Safety risks, Industrial Hygiene & Ergonomics based on a matrix ranking system.

Safety Risk Analysis/Job Safety Analysis
Develop & maintain a searchable repository of job-based risk assessments available for easy search & access by all employees.

Safe Work Permit
Request, track & complete on-line work permits for high risk/safety-critical work activities (i.e. confined space entry, hot work, permit required activities).

Industrial Hygiene
Track & analyze IH exposure assessments and monitoring summaries; leverage automated Occupational/Personal Exposure Limit

Lockout Tagout
Create & maintain a repository of Lockout Tagout (LOTO) procedures that is accessible for employees to search and view; track LOTO execution Lockout Tagout.

Ergo Facilitator
Standardize ergonomic assessments and projects for office and industrial settings with corrective action tracking

Contractor Safety
Manage firm qualifications, contractor training/records & project/firm-specific safety performance and corrective action tracking

Seamless User Experience From Desktop To Mobile!

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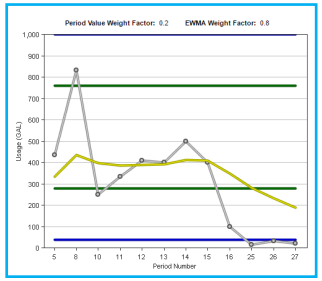
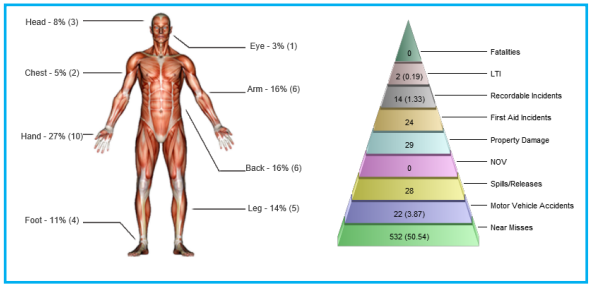
Insights & Analytics

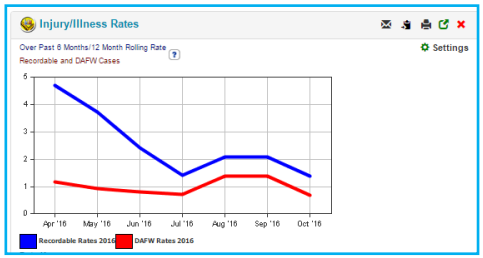
Insights & Analytics software provides out-of-the box customized reporting for data science, analytics, visualization solutions and more for all levels of an organization. e

Capabilities

- App specific data-mining, reporting and charting tools
- Integrated dashboards across applications personalized by user and by scope; custom layout options, automated email subscriptions to target distribution/frequency
- Dashboards, cockpits and custom reports – custom developed reporting solutions based on subscriber specific metrics and displays
  - Data warehouse (DHW) options – customized data feeds for consolidation into external DWH platforms; Gensuite-hosted DWH solutions
  - Data Visualization - flexible reporting and visualization; powerful authoring and user-driven custom filtering options







Key Features

- Ready to use "Instant Insights" on data and program trends
- Packaged analytics reports and performance metrics
- Customized reports with drill-down and visualizations

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Insights & Analytics
Integrated Suite of Apps

My Dashboard
View key performance indicators in real-time; establish a set schedule to automatically receive updates via email.

Analyzers
Drive proactive improvements by conducting multi-dimensional Pareto and trend analysis across Gensuite Safety and Waste applications

Custom Reporter
Create customized reports based on business logic, including calculated metrics, color coding, and performance/goal comparisons

Application Manager
Review open actions by responsible person or for a selected business scope.

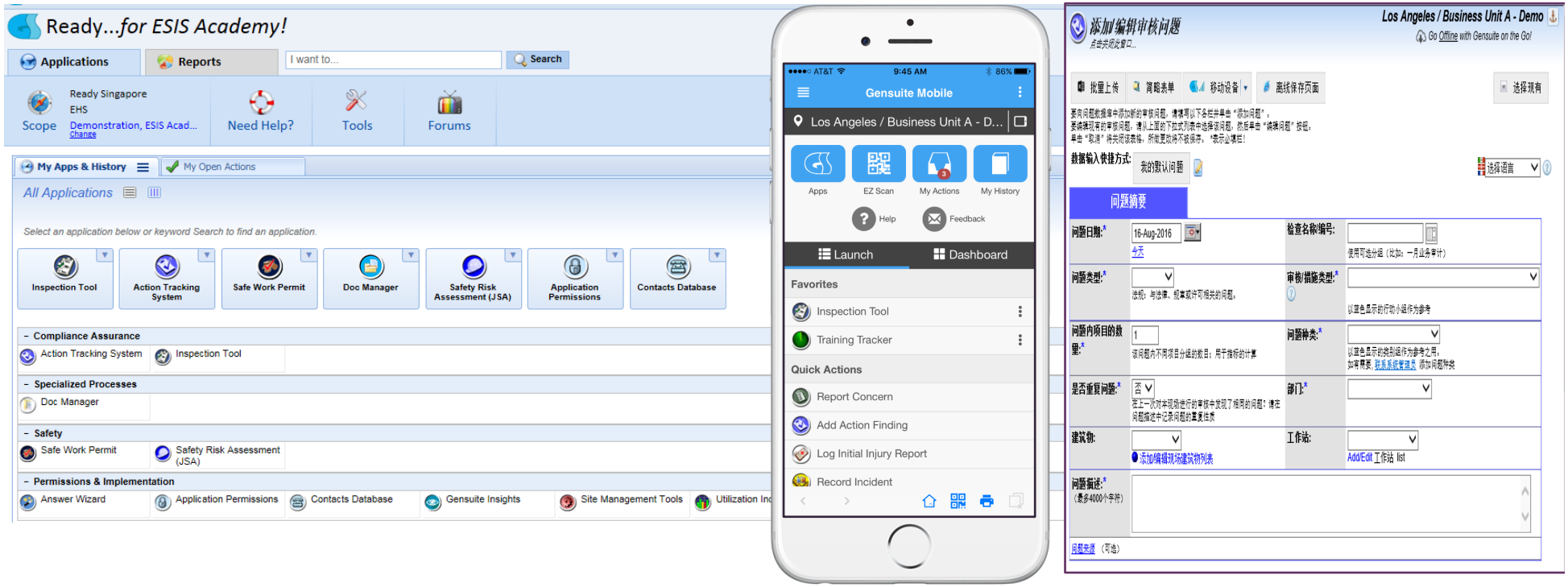
Instant Insights
Analyze key metric trends provided to you automatically on each Gensuite application homepage

Digital Cockpit and Mapper
Communicate business and site performance via business-specific outputs. Use Mapper for data visualization beyond traditional reporting models, including geographic site mapping, metrics, & more!

Seamless User Experience From Desktop To Mobile!

Gensuite Mobile App · Apple · Android · Windows · Amazon

Online safety management E-system



At the end of this presentation you should be able to:

1. Identify possible risk areas in school
2. Recognize requirements of a safety & health management system
3. Understand every clause in the OH&S management system

THE END….