



RtPM Integrated with Operational and Crisis Management Systems

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GEM (GEospatial Management System) ROUTINE OPERATIONAL MANAGEMENT & CRISIS CONTAINMENT SYSTEM



Events

Event Type Category: FIRE From: [] To: [] Search

Event Type: Forest fire New Event

No.	Category	Title	Date/Time	Created by	Status
35	FIRE	Forest fire	11/07/2005 10:15:20		4 Active
33	Daily shift	Morning Shift	11/06/2005 21:55:50		1 Active
27	Daily shift	Morning Shift	11/06/2005 19:43:28		4 Active

Reports for EventID: 35 New Report Delete Event

No.	Created by	Department	Date/Time	Title	Event	Status
812	Relk	EMER. OPS.	11/07/2005 10:58:26	Reinforcement	Forest fire	Acknowledged

Additional Details

Description: Need reinforcements to Engines + Medical support

Procedure Name:

811	Relk	FIRE DEPT.	11/07/2005 10:15:20	Forest Fire	Forest fire	Acknowledged
810	Relk	SUPERVISOR	11/07/2005 10:15:20	HAZMAT FIRE	Forest fire	Open
809	Relk	EMER. OPS.	11/07/2005 10:15:20	EOP-Forest fire procedure	Forest fire	Open

GEM 3D

File View

HazmatZone
 IntruderPath
 Sodean
 Ruta automatica
 Vista1
 Stadium View
 Factory View
 Factory 2 View
 Refinery View
 Airport View
 Hazmat
 HAZMAT
 STRM

Sugarcane Rambo
 Cementerio de San Dominguito
 Incident Command Center
 Barrage 2004

4DM TECHNOLOGIES

No.	Title	Resource	Control System	Date/Time	Importance	Status
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DEAD SEA WORKS CHEMICAL PLANT

Dead Sea Works

- is the world's fourth largest producer and supplier of potash products, as well as a broad range of chemical products, including magnesium chloride, anhydrous aluminum chloride, industrial salts, de-icers, bath salts, table salt and raw materials for the cosmetic industry



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PI/RtPM at the Dead Sea works plant (1)

- The system incorporates data from the different plants at Sodom site (each one having its own separate control system), the laboratory data and presents it to all the operators and managers at all levels on real time basis.



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PI/RtPM at the Dead Sea works plant (2)

- Special emphasis is on the flows and interactions between the different production plants
- Reports are obtained from the system, on real time basis, for production, services (steam, power consumption, etc),
- Alarms are sent thru a SMS system to cellular phone of managers for critical data values from the PI system .

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PI/RtPM at the Dead Sea works plant (3)

- The SQC module is used on the operating level and by the engineers of the company, based on sigma 6 methodology



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PI/RtPM at the Dead Sea works plant (4)

A number of applications were written based on the PI system for :

- energy management of the power station
- logistics of the materials in and out the plant and the harbors stores (located at different locations)
- Equipment diagnostics

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What is GEM?

GEM is a solution to operational management and crisis containment in enterprises

- GEM Consolidates data, decision and management tools in one integrated system
- GEM presents data to operators and all management levels in an intuitive and simple manner
- GEM allows optimal management in real time

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What is GEM?

- A Command & Control Software system allowing you to run your daily operations in a most effective way
- Real time Crisis Management application
- GEM reads data from sensors and services such as:
PI/RtPM Platform, Web services

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What problem does it tackle?

- Overload of information
- Overload of procedures
- Dispersed and disorganized data
- Disparate sensor and process data

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As a Manager, Operator

YOU FACE:

- Daily incidents requiring coordination and auditing
- Difficulty tracking down what happened yesterday
- Plans which are over complicated
- Things to do that get forgotten
- Procedures that get you bogged down
- Having to gather disparate data to make decisions
- When you want to execute – difficulties to share knowledge and directives?

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You want to understand in real time

- What's going on
- Where are my major problems and threatened assets
- How events affect my immediate decisions
- What has been done
- What's left to do
- The Who, Where, What questions

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Who is GEM for?

- Private enterprises and organizations dealing with:
 - Safety, security and processes
 - Incident command needs
 - First responders issues
 - Rules regulations, procedures, masses of information

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GEM target entities:

- Campuses and buildings (security installations)
- Ports, Airports
- Hospitals
- High risk industrial facilities
- Areas with mass public presence
- Governmental agencies

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GEM's Goal:

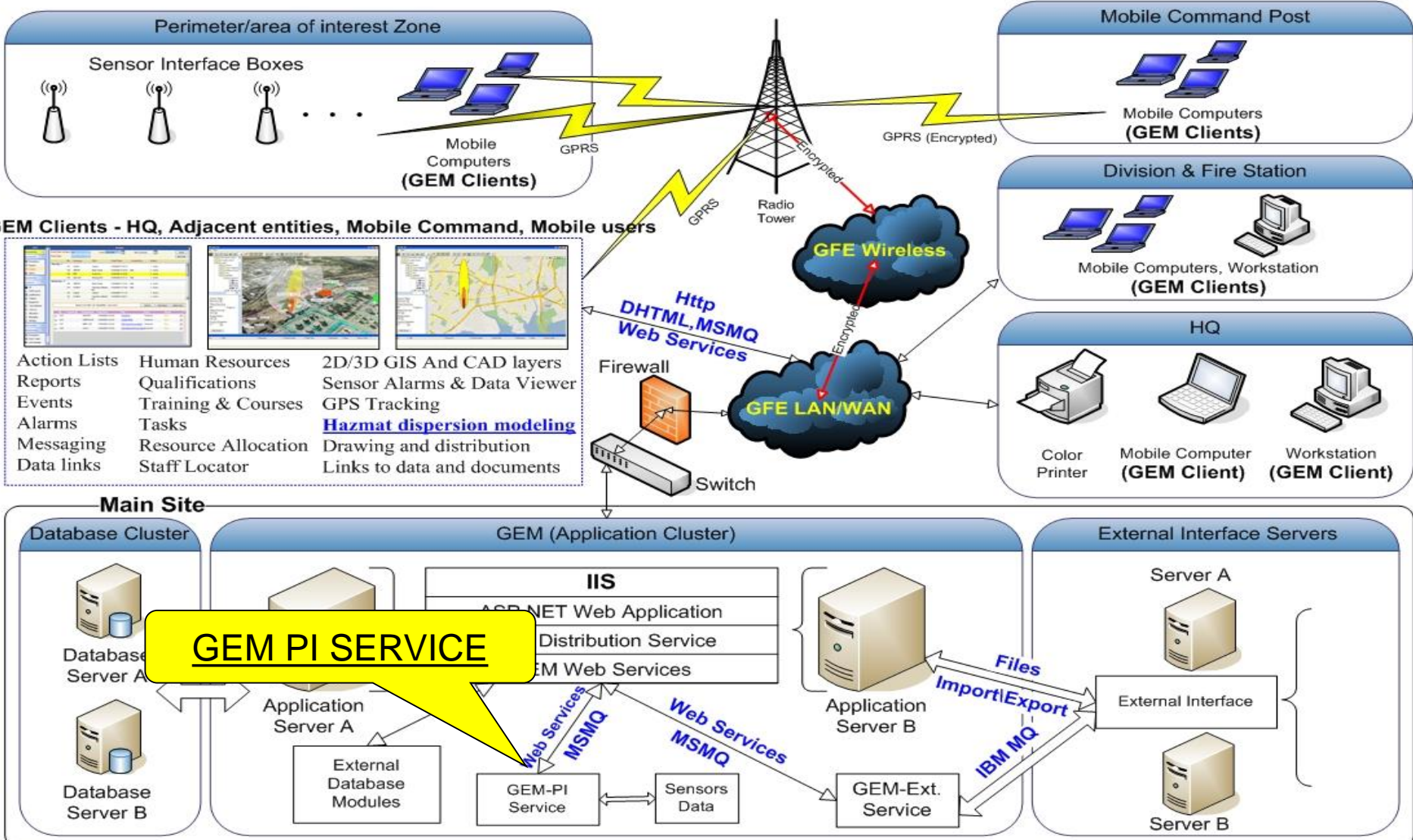
Stream line routine organizational operations

- Use the same logic for incident/crisis management
- Provide the chain of management with:
 - Real time situational awareness
 - Decision making tools
 - Implementation tools

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GEM's PI Integration



GEM Clients - HQ, Adjacent entities, Mobile Command, Mobile users

<ul style="list-style-type: none"> Action Lists Reports Events Alarms Messaging Data links 	<ul style="list-style-type: none"> Human Resources Qualifications Training & Courses Tasks Resource Allocation Staff Locator 	<ul style="list-style-type: none"> 2D/3D GIS And CAD layers Sensor Alarms & Data Viewer GPS Tracking <u>Hazmat dispersion modeling</u> Drawing and distribution Links to data and documents
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GEM's PI Integration

The screenshot displays the 'Settings' window in the GEM software, specifically the 'Gem PI Services' configuration page. The interface is divided into several sections for configuring different services:

- Gem Web:** Includes fields for Language, Database Settings (Connection String), Server (4dm-demo-serve), Database (GEM_05_12_1), User (sa), and Password (sa).
- Gem Web Services:** Includes fields for SMS User (eyalfa), SMS Password (4dm), and Upload Path (\\Gem\GemFiles).
- Gem PI Services:** Includes fields for PI Settings, User (piadmin), Password, Host (localhost), TimerIntr (1000), WinDirTag (NTIP9523), AlarmMsgQueue (.\private\$\GEM), and GEMResources (http://localho).
- Gem Alarms Services:** Includes fields for Database Settings (Connection String), Server (4dm-demo-serve), Database (gem_05_12), User (sa), and Password (sa).

A yellow callout box with a pointer highlights the 'Gem PI Services' section. At the bottom of the window, there is a 'save' button and a summary table:

SQL Databases	Queues	Services
Gem/Web <input checked="" type="checkbox"/>	Gem Web Services <input checked="" type="checkbox"/>	Gem Web Services
Gem Alarm Services <input checked="" type="checkbox"/>	Gem Alarm Services	Gem Alarm Services

GEM PI service tag definitions interface

GEM's PI Integration

The screenshot displays the GEM 3D software interface. The main window shows a 3D model of a tank with several sensors labeled: Temperature, Fire Detector, and Gas Detector. An 'Alarm' window is visible in the top right corner, displaying a red alarm icon and the word 'Alarm'. A yellow callout box points to the 'Alarm' window with the text: 'GEM reads Data from PI Click on any object to get its data'. In the bottom right corner, there is a data graph showing a fluctuating signal over time, with a legend indicating 'AL_D1AT-100 6.105E-03 PPM'. The graph's x-axis shows dates from 12/09/2005 16:58:06 to 12/09/2005 17:58:06. At the bottom left, there is a table with columns 'No.', 'Title', and 'Resource'.

No.	Title	Resource
1	גליל רזיני	
1	חליפה נגד חומ"ס	
1	חליפה	
<input type="checkbox"/>	26747 התוראת כליור	AL_AI-503464dm
<input type="checkbox"/>	26746 התוראת כליור	AL_AI-503464dm

GEM's PI Integration

The screenshot displays the GEM Alarms interface. The left sidebar shows navigation options: Acknowledge (Open: 130, Acknowledged: 114, Pending: 8), Operational, Procedures, Reports, Events, Alarms, Departments, Resources (HR, Staff Locator, Qualifications, Training, Equipment, Task Definition, Task List, Allocations, Messaging), and Administration. The main window is titled 'Alarms' and includes filter controls for Importance, Status, Control System, From, and Till. A table lists various alarms, with a yellow callout box pointing to the 'Resource' column.

Alarms Table:

No.	Title	Date/Time	Resource	Control System	Importance	Sensor	Status	Report	Event
1207	Hazmat Alarm	03/09/2006 10:27:55	Demo - Gas Detector (port)	PI	Notification	On	Open		
1206	Radar Alarm	03/09/2006 10:27:55	Demo - Radar	PI	Notification	On	Open		
1205	Gas Alarm	03/09/2006 10:27:55	Demo - Gas Detector	PI	Notification	On	Open		
1204	Hazmat Alarm	03/09/2006 10:33:57	Demo - Gas Detector	PI	Notification	On	Open		
1203					Notification	On	Closed		
1202					Notification	On	Closed		
1199					Notification	On	Closed		
1198					Notification	On	Closed		
1197					Notification	On	Closed		
1196					Notification	Off	Closed		
1195					Notification	Off	Closed		
1194					Notification	Off	Closed		
1193					Notification	Off	Closed		
1192					Notification	Off	Closed		
1191					Notification	Off	Closed		
1190					Notification	Off	Closed		
1189					Notification	Off	Closed		
1188					Notification	Off	Closed		
1187					Notification	Off	Closed		
1186					Notification	Off	Closed		

Callout Box:

GEM reads alarms from PI:

- RADAR
- FIRE
- GAS
- CHLORINE...

GEM's PI Integration

View

- גלאים
- שכבות מידע
- שכבות מידע חירום
- שכבות תכנון
- שכבות מידע חירום - אש
- GPS TRACK
- HazmatZone
- מודל מפעל
- איזור כיסוי חומ"ס
- חטיבה כימית - כוון צפון

Source Type:
 Bromine

Wind Direction:
 Degrees

Wind Velocity:
 m/s

Temperature:
 C

Source Diameter:
 m

Add Zone



Alarm

Alarm

**GEM reads Bromide alarm from PI
 Activates layers, HAZMAT module
 dispersion zone**

ID	Title	Resource	Control System	Date\Time	Importance	Status
1249	Chlorine Alarm	AL_AIT - R 3025	PI	09/03/2006 15:28:55	Alarm	Acknowledged
1248	Chlorine Alarm	ALMAT32077	PI	09/03/2006 15:28:04	Alarm	Acknowledged

INSIDE GEM

GEM MODULES

SITUATIONAL AWARENESS

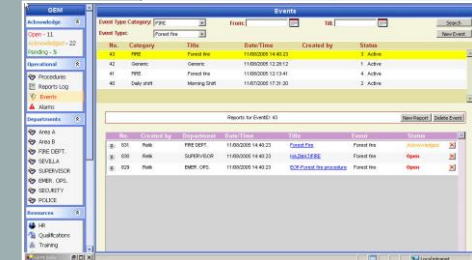
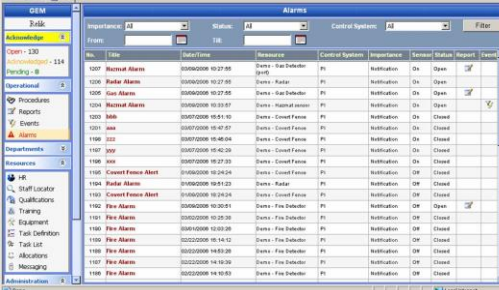
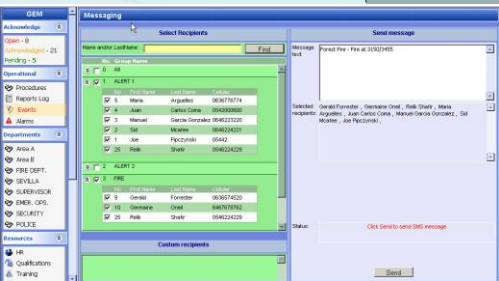
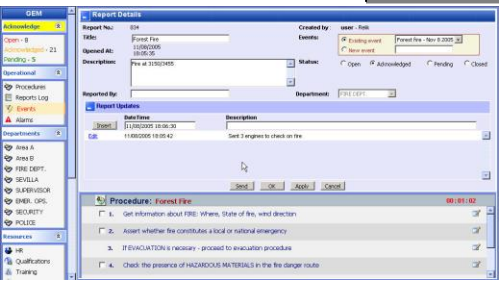
RESOURCE ALLOCATIONS

EVENTS & PROCEDURES

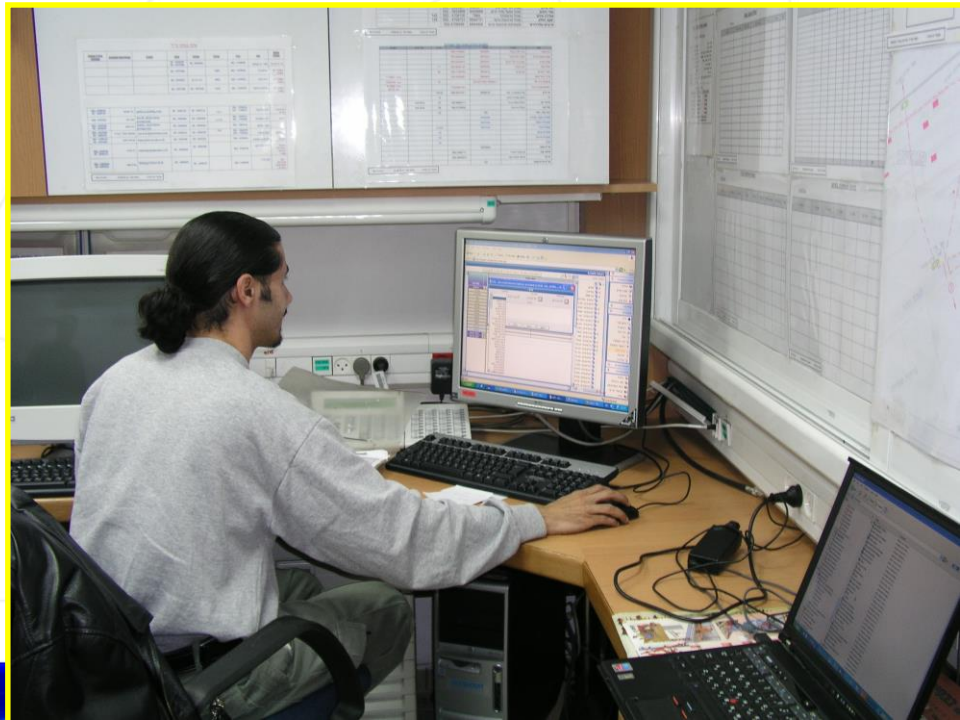
REPORTS AND DIRECTIVES

MESSAGING

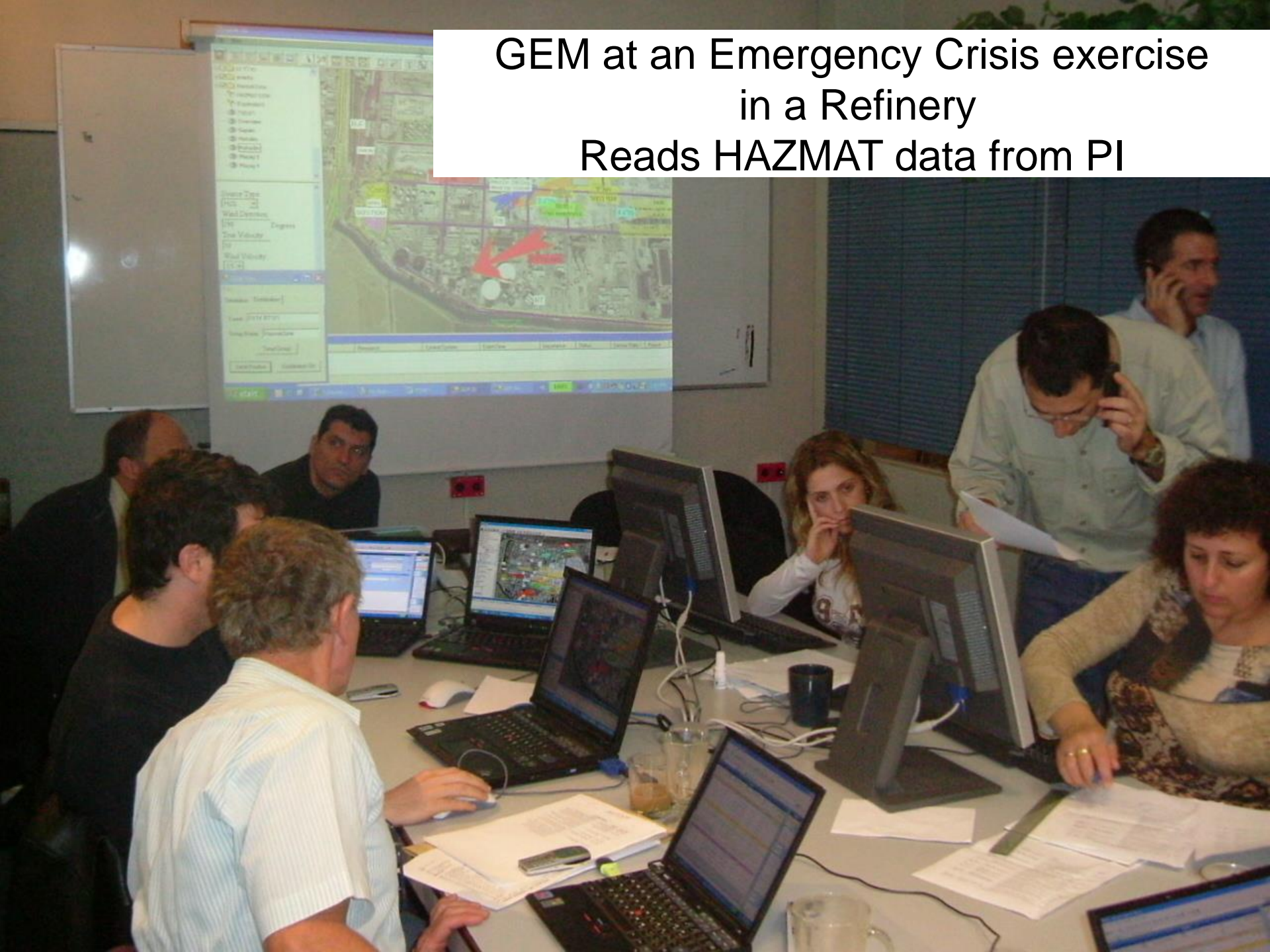
ALARMS MANAGEMENT



GEM at work in the Dead Sea Works plant



GEM at an Emergency Crisis exercise in a Refinery Reads HAZMAT data from PI



GEM at an Emergency Crisis exercise in a Refinery



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The GEM approach-1

Concept philosophy	GEM	Traditional
Total approach	System predestined to cover all aspects of operational management	Linked disparate systems
Automated approach	Sensors invoke a chain of actions and situational awareness mechanisms	Personnel need to activate each system
Real time	All systems react and distribute in real time	Reaction time slow
Audit trail	All actions, sensors, audited	Non-existent
Training	Imbedded – easy to invoke	Requires medium and large scale exercises
Versioning	Imbedded	Requires tedious tracking

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The GEM approach-2

GIS	GEM (3D)	Traditional (2D)
GIS-data layers creation	Real Time	ESRI type -slow reaction, not "online"
Zoom/Pan	Real time	Pan and wait
GPS Tracking	Web service/direct integration	Difficult integration
Data integration: cameras, sensors, documents	Intuitive linking, Full sensor integration	Not designed into system
Algorithmic modeling imports	Full GIS integration including DTM	Time consuming
Video projection on terrain	Requires telemetry	Does not exist
Training and simulation	Imbedded – client can write own simulation	Non existent
Data distribution to clients	All sensor and drawn data disseminated Via MSMQ	Not relevant

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The GEM approach-3

Incident management	GEM	Traditional
Procedures/SOPs	Web based, dynamic check lists, audit trail, comments	“Word”\Html-static, paper
SOPs update	“On the fly” as needed – Admin. authorization: changes at server – all clients updated immediately-easy update to single item	Html-tedious updates of all page-requires a whole page rewrite
Event bundling	SOPs bundled to events at will or predesigned	Non existent
Operational Log	Part of the procedure – time track	Client or windows based-not attached to Activated SOP
Tasking	Part of the event	Separate application
Messaging	One click from procedure – logical connection	Separate application

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GEM

- When you need to: think clear, act fast, plan right deploy and manage:

You want GEM to be with you – where ever you are

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