

St James Software (Pty) Ltd

REAL TIME CONNECTION TO THE ELECTRONIC LOGBOOK

By David Moore



Features we need for an E-Logbook

→ Presentation

- ◆ Capture and Show Ad hoc and scheduled logs of important (often categorized) data

→ Distribution

- ◆ Get the information out to almost everyone from operators to managers and control what people see and can change

→ Data Management

- ◆ Secure the vital information and provide the ability to Find the data

→ Computations

- ◆ Provide intelligent business rules behind the information

→ Process Data

- ◆ Integrate real-time and historical information into the logs

→ Specific Logging Functions

- ◆ Manage Log-ins, Drill Downs, Paging of information, Attachments etc.

Which Tool to Use for an E-Logbook

Applications/Qualities	Presentation	Distribution	Data Management	Computations	Process Data	Specific Logbook Functions
Excel	■			■		
Database	■		■	■		
Web Scripts ASP/PHP	■	■				
VB	■		■	■		
Wiki	■	■				
SCADA					■	
Applications/Qualities	Presentation	Distribution	Data Management	Computations	Process Data	Specific Logbook Functions

Or Specifically...

EXCEL	DATABASE	Web Scripts ASP/PHP	VB	WIKI	SCADA
Tabular Canvas	Record Based Storage	Web Page Creation	Free Programming Environment	Simple Web Page Definition	Real-time data collection
Calculations	Filtering	Web Page Management	Events	Free Format Page Design	Historical Data
Cell Formatting	Queries	User Management	Scripts	Multi-User Page Creation	Trend Widgets
	Secure Data Storage	Web Page Navigation Support	Components		Tag Management
	Large Data Management	Web Server	Debugging & Error Management		Multiple Data Source Collation
	Form Creation	Content Driven Pages			Alarm/Event Management
	Multi-User Data Controls	Automated Emailing			
In-Situ Editing	Rollback		Formal API	Version Control	
	Complex Joins				

As an E-Logbook Manufacturer..

→ Our Objective is to...

- ◆ Provide an alternative to the “build your own” e-logbook
- ◆ Address all the areas of Presentation, Distribution, Computation, Process Control and Special Logbook Functions. I.e.

j5 E-Logbook						
Applications/Qualities	Presentation	Distribution	Data Management	Computations	Process Data	Specific Logbook Functions

→ And to achieve this with a product that will...

- ◆ Cost no more than the cost of a “build your own” e-logbook and
- ◆ Evolve continuously over the life of the accelerator and
- ◆ Be sufficiently flexible for the Accelerator personnel to develop.

Or specifically....

PRODUCT	J5 Specific	EXCEL	DATABASE	Web Scripts ASP/PHP	VB	WIKI	SCADA
	and j5	and j5	and j5	and j5	and j5	and j5	and j5
EXISTING	Paged Logbook Facility	Tabular Canvas	Record Based Storage	Web Page Creation	Free Programming Environment	Simple Web Page Definition	Real-time data collection
	Data Animation	Calculations	Filtering	Web Page Management	Events	Free Format Page Design	Historical Data
	Navigation System	Cell Formatting	Queries	User Management	Scripts	Multi-User Page Creation	Trend Widgets
	Industrial Specific Business Rules		Secure Data Storage	Web Page Navigation Support	Components		Tag Management
	Configuration Wizard		Large Data Management	Web Server	Debugging & Error Management		Multiple Data Source Collation
	Page to Page Notifications		Form Creation	Content Driven Pages			Alarm/Event Management
	Shift Specific Functions		Multi-User Data Controls	Automated Emailing			
	Record Based Auditing						
	Scheduling						
	Advanced Filtering						
	Drill Down Combos						
	Attachment Management						
	PLANNED	In-built Support Facilities	In-Situ Editing	Rollback		Formal API	Version Control
			Complex Joins				

As an example: Presentation

The screenshot shows a web-based logbook interface. At the top, there are navigation tabs: Home, Log Off, Tasks, Shift Handover, and General Logbook. An arrow points to the General Logbook tab with the text "Only tabs relevant to the user are shown". Below the tabs, a blue header bar displays "generallb Logged in as refinerydtlconsole (groups.refinerydtlconsole)". An arrow points to this bar with the text "The group for the plant and user is shown". Below the header, there is a "Page navigation: 1" section. A "Filter:" section contains buttons for "Edit Filter", "Clear Filter", "All", "DTL", "Handover", "HDT", "REC", and "Refinery". An arrow points to the "Refinery" button with the text "Filter Buttons can be customized per group". Below the filters, there are links for "Print View" and "Generate Excel Report". A table of log entries is displayed, with an arrow pointing to the "Plant" column header and the text "Only logs for the relevant plant are shown." The table has columns for Actions, Log time, Entry Type, Plant, Unit, Description, Status, User, and Dept. The first row shows a log entry for "Inert Gas System" with a status of "Overdue". An arrow points to the "Actions" column of the first row with the text "Each log can be expanded, modified or printed".

Home Log Off Tasks **Shift Handover** General Logbook ← Only tabs relevant to the user are shown

generallb Logged in as refinerydtlconsole (groups.refinerydtlconsole) ← The group for the plant and user is shown

Page navigation: 1

Filter: Edit Filter Clear Filter All DTL Handover HDT REC Refinery ← Filter Buttons can be customized per group

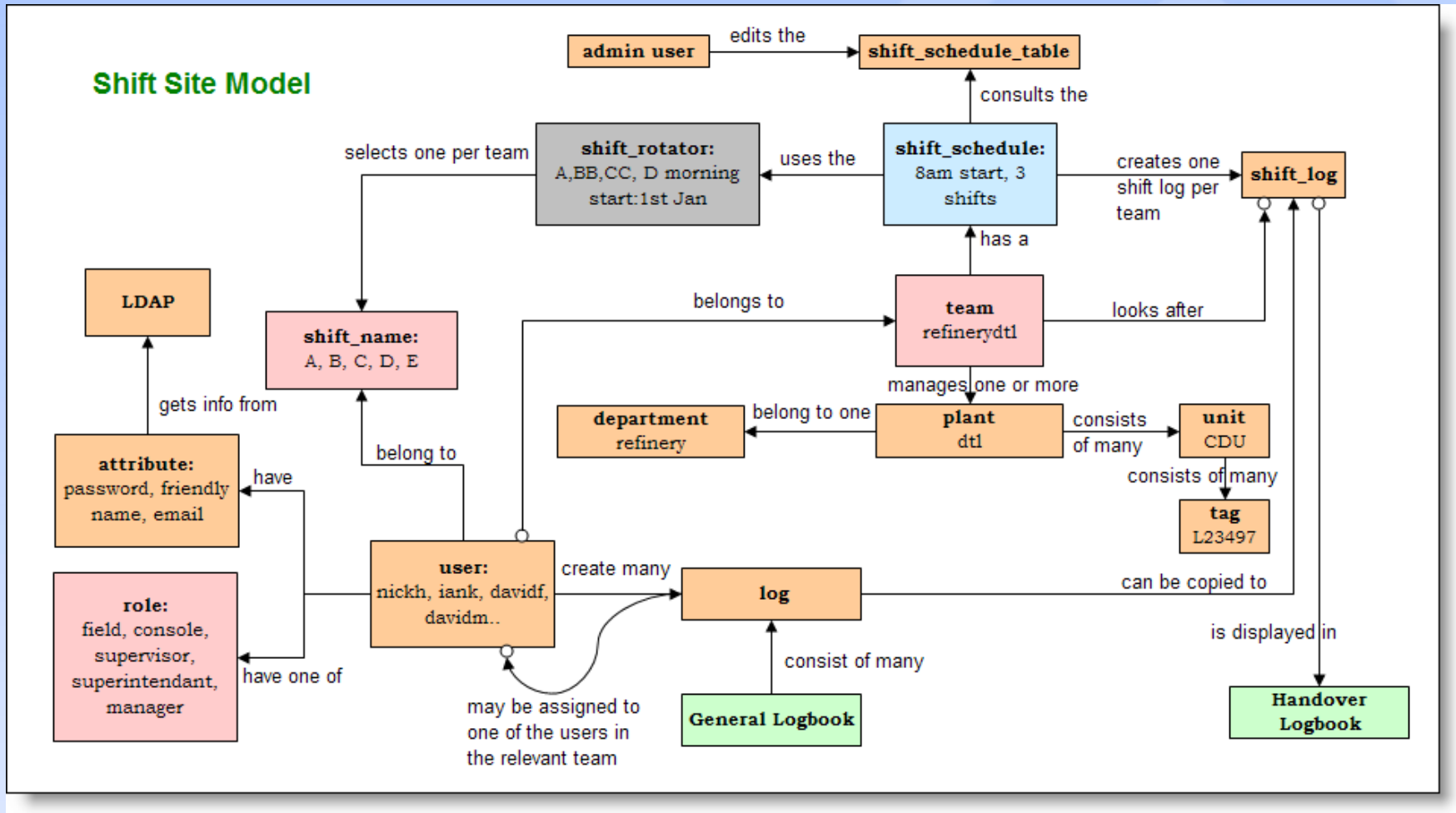
Print View Generate Excel Report

Add log entry Audit Log for Deleted Rows

Actions	Log time	Entry Type	Plant	Unit	Description	Status	User	Dept
	2008-08-08 20:12	General Entry	DTL	Inert Gas System	System working well at the moment. (No leaks detected.)	Overdue	refinerymanagement	Refiner
	2008-08-04 20:41	General Entry	DTL	Amine Regen Unit #1	Regen is running out of raw stock. Please expedite.	Closed	refinerymanagement	Refiner
	2008-08-03 13:38	General Entry	DTL	Kerosene Merox	Kerosene quality is moving out of spec	Cancelled	refinerymanagement	Refiner

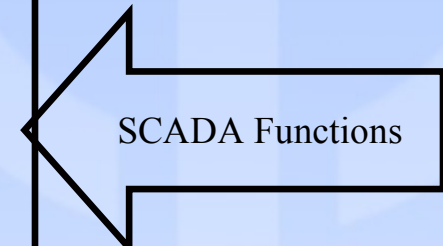
Each log can be expanded, modified or printed

Another Example: Shift Management



But lets look specifically at ...

PRODUCT	J5 Specific	EXCEL	DATABASE	Web Scripts ASP/PHP	VB	WIKI	SCADA
	and j5	and j5	and j5	and j5	and j5	and j5	and j5
EXISTING	Paged Logbook Facility	Tabular Canvas	Record Based Storage	Web Page Creation	Free Programming Environment	Simple Web Page Definition	Real-time data collection
	Data Animation	Calculations	Filtering	Web Page Management	Events	Free Format Page Design	Historical Data
	Navigation System	Cell Formatting	Queries	User Management	Scripts	Multi-User Page Creation	Trend Widgets
	Industrial Specific Business Rules		Secure Data Storage	Web Page Navigation Support	Components		Tag Management
	Configuration Wizard		Large Data Management	Web Server	Debugging & Error Management		Multiple Data Source Collation
	Page to Page Notifications		Form Creation	Content Driven Pages			Alarm/Event Management
	Shift Specific Functions		Multi-User Data Controls	Automated Emailing			
	Record Based Auditing						
	Scheduling						
	Advanced Filtering						
	Drill Down Combos						
	Attachment Management						
	PLANNED	In-built Support Facilities	In-Situ Editing	Rollback		Formal API	Version Control
			Complex Joins				



Why Process Data in Logbooks

- The Manually entered information is only half the picture!
 - ◆ We can't make good decisions with only half the picture
 - ◆ We can't capture the true state of an event with only half the picture
- Often, a log requires process data such as the value of tags or even trends
- Sometimes, an event should actually create the log and the operator must add information about the log
- Shift, Daily, Weekly, Monthly reports all require a combination of Manual and Process Data
 - ◆ The E-Logbook is the ideal vehicle to create the reports

Features we have Incorporated

- Scheduled collection of data for handover logs
- Programmed collection of critical data on an event
- Real time data that triggers a log
- Trends and tabular information
- Selective retrieval of data
- Tag Pickers
- Calculation of Averages etc.
- Distribution of reports
- Connection to multiple SCADA systems:
 - ◆ Tango
 - ◆ Epics
 - ◆ OPC
 - ◆ Others

What does it look like

The image displays two overlapping screenshots of a web-based logbook interface. The left screenshot shows a message entry form with the following details:

- Message ID:** 1055792864
- Event Time:** 05/12/2009 15:07
- Log Time:** 05/12/2009 15:07
- Area:** qdca00
- Mode:** MDI
- Event Type:** INFORMATION
- From:** gaud@est.fr
- To:** gaud@est.fr

The right screenshot shows a heatmap visualization of the logbook data. The x-axis ranges from 0 to 600 and the y-axis from 0 to 400. A prominent red and yellow oval-shaped cluster is centered around x=300 and y=250, indicating a high density of events in that region.

How does it work

```
class EPICSAlarms(EventStream.EventSink):
    def __init__(self, logtable):
        super(EPICSAlarms, self).__init__()
        self.logtable = logtable

    def receive_events(self, events):
        for event in events:
            self.logtable.addRow({'logdatetime': event.timestamp, \
                'tagname': event.tagname, 'alarm_value': event.value, \
                'alarm_type': event.alarm_type, 'status': 'Open', \
                'current_status': 'Current_Condition'})

class LogModel(LogbookPage.LogModel):
    def __init__(self, *args, **kwargs):
        super(LogModel, self).__init__(*args, **kwargs)
        EPICS_Plugin = EPICS.EPICSSource()
        self.alarms_sink = EPICSAlarms(self.dbtable)
        EPICS_Plugin.set_standard_alarms("davidm", "currentTempM", \
            self.alarms_sink)
```

Summarizing

- An effective E-Logbook must address Presentation, Distribution, Data Management, Computations, Process Data and Logbook Specific Items
- We looked at various off the shelf starting options
- We compared the home-built idea with an off the shelf E-Logbook
- We examined in more detail the SCADA connection
 - ◆ Why we need it
 - ◆ What are the features we want
 - ◆ What it looks like and
 - ◆ How it works