

Managing Complex Multiple Simulation Exercises

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Abstract. Australian Defence is an example of an enterprise that is managing complex simulation requirements. Typically these are grouped as a named exercise, such as *Talisman Indigo 2015*. The synthetic environments must be planned, designed, developed, tested and supported during the production period of the exercise execution. With multiple exercises being run each year, over the planning horizon of two to three years, this can become a significantly complex management area. How to manage complex multiple simulation exercises is the simulation industry issue that this paper addresses. This paper presents a high level design for a management system to control the progressive development and execution of simulation exercises.

MANAGER'S DASHBOARD

The starting point for the management view is the manager's dashboard showing the exercises in date order down the left and the stages across the top, with colour coding as to their current status. Each cell is a drill down link into more detail about the status of that component.

	Planning	Design	Development	Testing	Production Support
Exercise 1					
Exercise 2					
Exercise 3					

Figure 1: Manager's Dashboard

Each coloured cell can drill down into a component list and individual status. For example, Production Support may have the elements:

- Area of Operations defined
- Participating simulators configured
- Networking configured
- AoO Data loaded

This drill down report is illustrated below:

	Start	In Progress	Completed	Comments
Area of Operations Defined				
Participating Simulators Configured	✓	✗		
Networking Configured				
AoO Data Loaded				Data is required in format x and conversions are being undertaken, estimated completion in 2 weeks

Figure 2: Elements of Progress Tracking

The data to support these visualisations is drawn from the underlying project management system which defines and structures the dimensions of the reporting tree structure. Setting target dates within that system enables the visualisation to build a coherent view across the simulation exercise space.

Status updates can be sourced from a variety of systems, including the real time operational support of the network to give a manager's view of network and system overall up or down status.

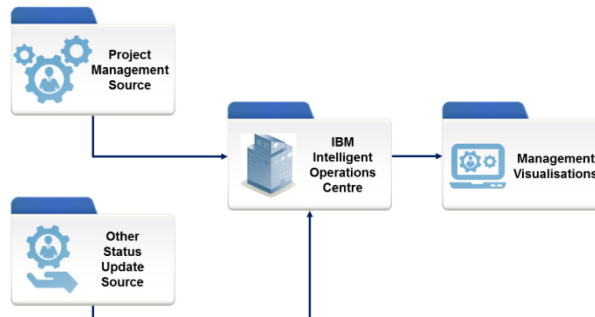


Figure 3: Sources for Management Visualisations

The benefits for the management of multiple simulation exercises include:

- A rigorous definition process of the steps required to execute a simulation exercise, which ensures that all steps are captured and reported.
- Early management focus on those components of the exercise preparation that have not been completed on time, through the use of the Green-Yellow-Red traffic light visualisation of the exercise components.
- Provide a geospatial view into the Area of Operations for different exercises. Data loading is one of the complexities of exercise management and the system can provide progressive detail on the conversions required and how they are being accomplished to ensure that all simulators in a simulation will receive their base data in the format that they need.
- For an exercise in progress, the IOC portal can be configured to redisplay the various operational screens to provide oversight into current operations.
- IBM Intelligent Operations Center provides a system for storing appropriate procedures and activities that are associated with events involved in the preparation and setup of simulation scenarios. For example users can track the progress of procedures, and monitor or update the status of activities that are assigned to them.

IBM INTELLIGENT OPERATIONS CENTRE

Features

IBM® Intelligent Operations Center provides measuring, monitoring and modelling facilities that can integrate underlying systems into one solution. This improves the operational efficiency, scenario planning, and coordination of multiple simulators.

IBM Intelligent Operations Center is a GUI-based product that provides role-based access to data for an organisation and underlying domains. It has event management and integrated mapping capabilities. The solution can supply and track the appropriate procedures and activities in preparation for and response to events. It also has key performance indicator reporting (KPIs) and collaboration capabilities for improved effectiveness. These features provide users with the ability to integrate domains for improved cooperation and decision-making.

Event and data management

IBM Intelligent Operations Center provides an event reporting and data tracking mechanism to enable identification and understanding across underlying domains. It can manage predicted events, planned events, and current events as they evolve.

An integrated geographic information system (GIS) or location plan maps events visually. For example, managers can gauge the impact of events through interactive mapping and scenario analysis. Users can filter information about events that are based on date and time, location, and other categories that you define. Filtered information can be either highlighted on a map, or listed in a table. The information is easy to access when and where needed.

Response and activity management

IBM Intelligent Operations Center provides a system for storing appropriate procedures and activities that are associated with events involved in the preparation and setup of simulation scenarios. For example users can track the progress of procedures, and monitor or update the status of activities that are assigned to them.

Status monitoring

IBM Intelligent Operations Center provides a tool for creating and displaying KPIs. The KPIs can be updated as underlying data changes. This means the following tasks can be accomplished with minimal effort to monitor the progress of exercises in various stages of development:

- Summarise executive-level status for a single domain or across domains
- Highlight issues and identify problems
- Investigate further by drilling down into the KPI details

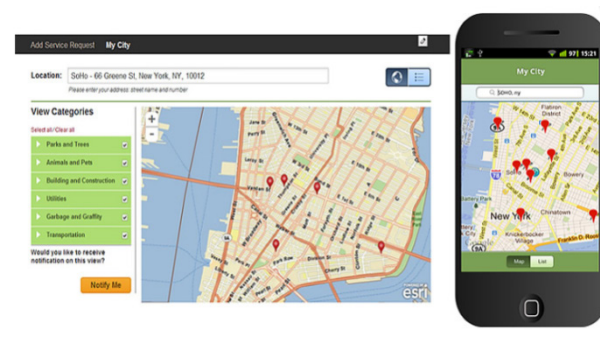


Figure 4: Dashboard Example

Instant notification and messaging

IBM Intelligent Operations Center provides a workspace that can maintain notifications for matters that need attention. This workspace can be used to monitor KPIs.

Viewing reports

The IBM® Intelligent Operations Center is designed for personnel who are involved with operational control in organisations and the management of simulation exercises: executives, supervisors, and operators.

Having access to meaningful data is only of use if the information can be presented in a meaningful and timely fashion. IBM Intelligent Operations Center gives all the advantages of tailored summaries and graphical presentation where reports can be viewed graphs, tables, or pie charts. Users can filter the information that is displayed in the reports that are based on date and time, location, and other categories that can be used to collect and present the information that is most useful on an up-to-date and regular basis.

CONCLUSION

In summary, the IBM Intelligent Operations Centre solution provides a foundation for the coordination of multiple concurrent exercises in various stages of development, with visualisation of management status.