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## **A Best Practice Approach to Priority Messaging**

Creating Effective Responses to Critical Situations

Using Response Scenarios to define business requirements and  
technology infrastructure for any event situation

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**Paper 2 in a series of 3**

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This paper is the second in a series of 3 white papers:

<b>Paper 1</b>	A framework for understanding priority messaging.
<b>Paper 2</b>	<b>A model for building response scenarios.</b>
<b>Paper 3</b>	A practical approach to implementing a priority messaging solutions.

The purpose of this series of White Papers is to:

- Assist organisations in clarifying the critical nature of priority messaging in their business
- Show how business needs can be matched with appropriate priority messaging solutions
- Provide guidance on implementation strategies.

Whereas the first white paper defines an overall framework for priority messaging, this second white paper looks in detail at how individual responses (response scenarios) can be created.

It is assumed the reader is familiar with the concepts outlined in Paper 1 of this 3 part series.

## Introduction

In the first white paper we described the importance of priority messaging to any organisation.

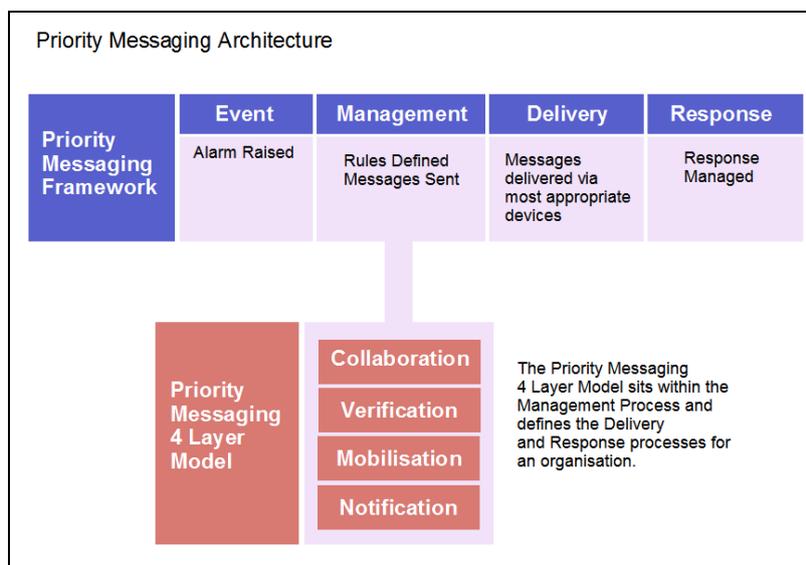
In this second white paper, we are going to begin with a couple of questions:

- How many priority messages does your organisation send and receive in any given business day?
- What are the consequences of not responding to any of those messages?

An organisation with a clear priority messaging strategy can answer these questions and a critical component of any priority messaging strategy is the implementation of response scenarios.

A response scenario defines how an organisation will take action in response to a specific event.

A response scenario is a structured, detailed, process driven description of a response to a critical event. All response scenarios are defined by the 4 layer priority messaging model (described on page 3).



Response scenarios are defined in the management process and are, in effect, the business rules by which a response is managed.

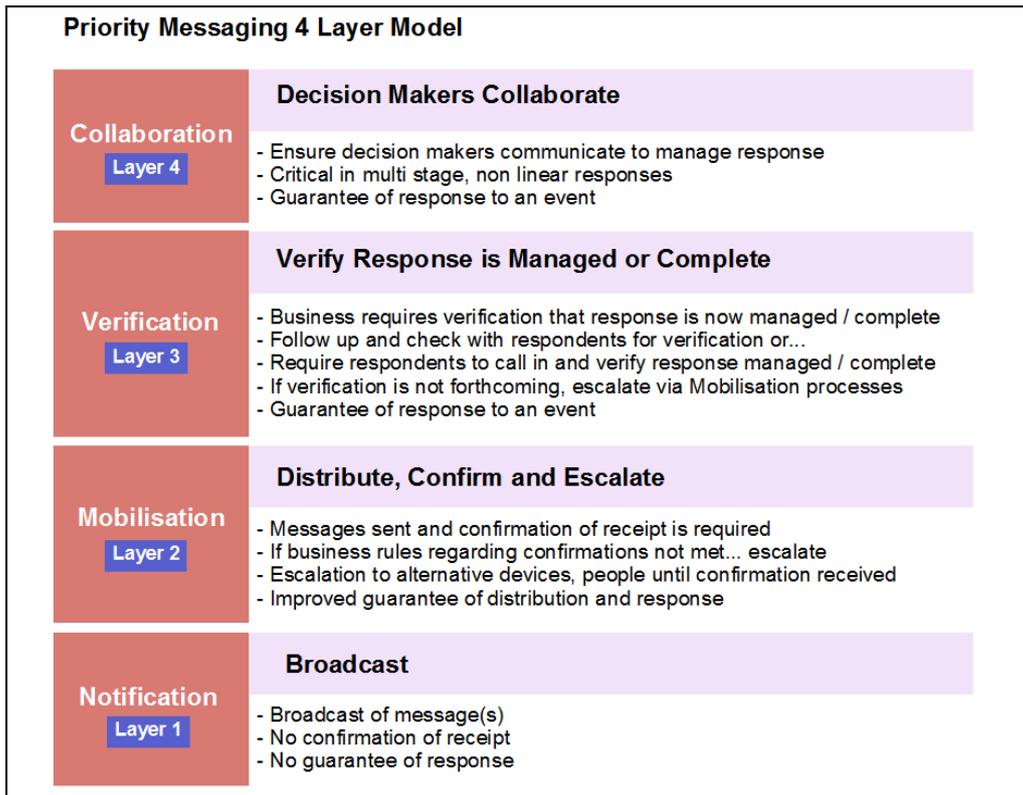
## The 4 Layer Model Priority Messaging Model

The 4 layer model is used to construct response scenarios in a consistent and repeatable manner.

Using a common model to describe responses scenario brings the following benefits:

- Both business and technical staff are using the same terminology
- Response scenarios are created that meet both business and technical requirements.
- Experience in defining one response scenario can be easily transferred to another response scenario, using the same approach and terminology.

The 4 layer model is shown below:



In any given response scenario each layer can be used:

- multiple times and repeated as required
- in any combination with the other layers

A response scenario can as easily begin with collaboration between decision makers as it can with a notification broadcast. See the example on page 9 for further information.

Automation of any messaging process will improve response times, improve message accuracy, free up staff and resources at critical times and provide far superior reporting and event tracking. The following sections will highlight where automation can assist organisations whilst accommodating the need for human control and intervention if required.

The 4 layer model is used in tandem with workflow diagrams an organisation may use to describe their business processes. The 4 layer model gives a common frame of reference for the communication options available; both in terms of business process and technical infrastructure.

In order for a response scenario to be constructed an organisation must first collect all the relevant information required to create the most effective response. The process of collecting and reviewing this information is outlined in the next section and covered in detail in the third white paper.

## The Priority Messaging Review

Every response scenario requires a base level of information with which to work:

- **Business Requirements:** What is the outcome the organisation is trying to achieve?
- **Technology Infrastructure:** How will the technology support the response processes?

A priority messaging review will collect the information required to answer these questions. Full involvement from the relevant business units as well as all technology departments is required.

### Business Requirements

Process	Description
<b>Overall Objective</b>	This is the critical and most important part of the entire process where the business defines the goals and outcomes for a specific response scenario. The response scenario is defined around the objectives. The overall objective is described in terms of the Alert, Management, Delivery and Response processes (See White Paper I)
<b>Personnel</b>	Who is involved in the response scenario, what is their role in achieving the business outcomes? Do they have the resources, knowledge and training to accomplish the goals?
<b>Tasks</b>	What are the exact tasks required of the personnel to achieve the desired response? What has to be confirmed, who needs to collaborate and how is an alert resolved?
<b>Timescale</b>	What are the acceptable response times to the alert? Define timescales for each step.
<b>Backup Plan</b>	What will the organisation do if the messaging infrastructure is unavailable?
<b>Message Priority</b>	Define the importance of the priority messages in a scenario relative to other priority messages in the organisation. This defines how technology can prioritise delivery of messages.
<b>Message Content</b>	Define the exact messages and the data format required to be communicated at each stage of a response scenario.
<b>Message Volume</b>	The number of messages to be sent at each stage and confirmations required / expected.

### Technology Infrastructure

Technology	Description
<b>Systems</b>	Identify all systems involved from initial alert to confirming resolution of response
<b>Connectivity</b>	Which physical connections and communications protocols are in use between systems?
<b>Data Format</b>	Define the data format of each message: text, voice, image, video
<b>Delivery Devices</b>	Identify all devices to be used for receipt of messages and review for suitability to meet business needs identified in process definition
<b>Infrastructure</b>	Review capability of infrastructure to meet needs of response scenario in areas of capacity, security, reliability and resilience
<b>Ownership</b>	Within an organisation which departments / business units own which parts of the technical infrastructure?

Only with a clear understanding of all these factors can we apply the Priority Messaging 4 layer model to a response scenario. This information is covered in further detail in the third white paper in this series.

The following sections outline both the business process and technology aspects of each layer.

## Layer 1: Notification

This is the simplest messaging layer where a message is sent to one or many people and no confirmation or reply is required. This is a broadcast that requires no interaction from the recipients.

<b>Definition</b>	<ul style="list-style-type: none"> <li>• Sends information without control of response</li> <li>• No escalation within the notification process</li> <li>• No guarantee of response</li> </ul>
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A table of common devices capable of receiving notification messages:

									
DECT	PABX Extension	Mobile	PDA / WiFi	Pager	PC	PSTN Line	System	Visual	Audio
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

The above devices are capable of receiving notifications in one or more of the following formats:

- Receive text messages such as SMS, pager, Instant Messaging (PC)
- Receive pre-recorded voice messages – all voice devices
- Receive system instructions – for other systems to take action and to initiate visual and audio alarms

Notification messages do not require acknowledgement and so within the confines of priority messaging, there is no confirmation or verification a response is in progress and therefore no guarantee a response has taken place. Even without this confirmation of action / response, notification plays a very important role in priority messaging. The table below describes some of the scenarios in which notification is used:

Method	Description
<b>One on one</b>	Someone sends a text message or sends an image to another person without requiring them to confirm or verify.
<b>Mass communication through visual and audible alarms</b>	Example: Fire alarms – a well known form of notification. Other alarms such as flashing lights and use of a public address system throughout a building have the same effect to communicate without the need for reply.
<b>Mass communication to end user devices</b>	Example: Send an SMS evacuation alert to all students and staff on a college campus. Despite SMS delivery times not being guaranteed by carriers, the sheer number of people who will receive the message can communicate to those who have yet to receive the SMS. Since so many people receive the message, confirming receipt is impractical. Each message should convey enough information that recipients do not have to reply to ask for clarification or take action not in accordance with the message.
<b>System to system communication</b>	A message is sent from one system to another with no need for confirmation of receipt. This could be a manufacturing system sending a message to raise a trouble ticket on a help desk system.

While notification is the least complex of all the layers it can be quite sufficient when an organisation must generate a response quickly and effectively that requires no further confirmation or verification.

The notification layer is distinct from the 3 other layers in that it requires no interaction from message recipients. The remaining 3 layers in the model all require a degree of interaction from recipients.

## Layer 2: Mobilisation

Mobilisation processes are used when an organisation needs to have confirmation that messages are reaching recipients. Knowing that messages are received will provide an organisation with greater confidence that a response is under way.

<b>Definition</b>	<ul style="list-style-type: none"> <li>• Sends information to designated recipients</li> <li>• Confirmation required that message has been received</li> <li>• Escalation to other devices / people / system, as required</li> <li>• Improved likelihood of response</li> </ul>
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A table of common devices capable of confirming receipt of messages:

 <b>DECT</b>	 <b>PABX Extension</b>	 <b>Mobile</b>	 <b>PDA / WiFi</b>	 <b>Pager</b>	 <b>PC</b>	 <b>PSTN Line</b>	 <b>System</b>	 <b>Visual</b>	 <b>Audio</b>
✓	✓	✓	✓	✗	✓	✓	✓	✗	✗

Confirming receipt of a message can be as simple as pressing a button on a device after the message has been received. Any device with a keypad can typically provide confirmation capability.

The business rules for a response scenario define what constitutes an acceptable response:

- A confirmation must be received within a specific time frame e.g.; within 1 minute
- A certain number of people have to confirm receipt of the message
- A combination of both; a certain number of people must respond within a time frame.

If the response does not meet the business rules, then an escalation process will begin. Options include:

- The same message(s) can be re-sent to the same device(s)
- The same message can be sent to alternative contact numbers of the same recipients
- The message can be escalated to new contact numbers or groups
- A combination of the above 3 options

Escalation rules can be written to escalate through multiple levels of an organisation until an acceptable level of confirmation is received. Confirmation and escalation processes give an organisation confidence that a response is in progress.

Automation of the confirmation and escalation processes is particularly beneficial. At critical moments one of the most time consuming duties can be ringing around to find someone to respond, leaving messages and ensuring messages are accurate. Automatic management of message confirmation and escalation releases staff to focus on the most productive tasks in a response scenario.

Automation also provides an organisation with an audit trail of send and delivery times, message content and responses either in real time or for review post response. For large scale responses, real time reporting on confirmations and escalation can be vital.

The next layer in the 4 Layer Model provides further processes to confirm that a response is either being managed or has been completed.

### Layer 3: Verification

Verification processes are used to provide assurance that a response is being managed or is complete.

<b>Definition</b>	<ul style="list-style-type: none"> <li>• Verify response is complete</li> <li>• Verify response is being managed</li> <li>• Timed response and call back / follow up</li> <li>• Resolution guaranteed</li> </ul>
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A table of common devices typically used in verification processes:

DECT	PABX Extension	Mobile	PDA / WiFi	Pager	PC	PSTN Line	System	Visual	Audio
✓	✓	✓	✓	✗	✓	✓	✓	✗	✗

Verification confirms a response is taking place or has taken place. This compares with the confirmation process which confirms receipt of the message but not the status of a response.

The verification process also utilises timed follow up calls to verify the status of a response.

Automated Follow Up	
<b>System Calling Out</b>	<p>A call is automatically generated by the system to a specific number(s) with the expectation that it will be acknowledged, verifying a response is being managed or is complete.</p> <p>This process can be set on a timer so that every 10 minutes a call from the system is received by a staff member and has to be acknowledged.</p> <p>Example: A nurse conducts a home visit and the priority messaging system calls the nurse's mobile every 10 minutes. A simple confirmation by pressing a number on the handset will advise the system the visit is going OK.</p>
<b>Staff Calling In</b>	<p>Staff call in to a specific number to verify a response is being managed or is complete. The system waits for the incoming call rather than initiates the call.</p> <p>This can also be done via systems where a card is swiped (security guard on their rounds) or by pressing a button on a system to confirm a response is being managed,</p> <p>This process can be also be set on a timer with a system expecting a message within a specific time frame.</p>

Automation has a clear benefit in the verification process as timed calls can be monitored by systems and any delay in verification responses can be escalated using processes from the mobilisation layer.

## Layer 4: Collaboration

The 3 previous layers are based to varying degrees on the sending and receiving of messages.

However, in some response scenarios it is essential that as part of the response, key personnel are able to collaborate on a resolution.

<b>Definition</b>	<ul style="list-style-type: none"> <li>More than 2 people need to communicate together simultaneously as part of a response scenario.</li> </ul>
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A table of common devices typically used in the collaboration processes:

									
DECT	PABX Extension	Mobile	PDA / WiFi	Pager	PC	PSTN Line	System	Visual	Audio
✓	✓	✓	✓*	✗	✓*	✓	✗	✗	✗

\* = receipt confirmation capability depends on device specifications

The quicker the decision makers can be brought together, the quicker a resolution can potentially be achieved. This also gives an organisation the opportunity to resolve any issues or unforeseen situations that may affect a standard response according to the pre-defined business rules in place.

The main collaboration options are described in the table below:

Collaboration Options	
<b>In Person</b>	The relevant staff have come together in the same physical location and can now work together and apply the business processes required.
<b>Voice</b>	Personnel communicate via DECT, land lines, PABX extensions, mobile phones, WiFi / VoIP devices as appropriate in different physical locations and are placed into a conference call to discuss the response.
<b>Video</b>	Personnel communicate via a video link.

With the technology options available, an organisation may be decide to collaborate via phone / voice whereas before it may have had to convene a meeting. The option to use technology in this way over a physical meeting can potentially save minutes if not hours in response to an alert.

The collaboration layer can be used as a decision gate where decision makers work together to decide the next steps which may involve any of the other layers (notification, mobilisation, verification) in further priority messaging activities.

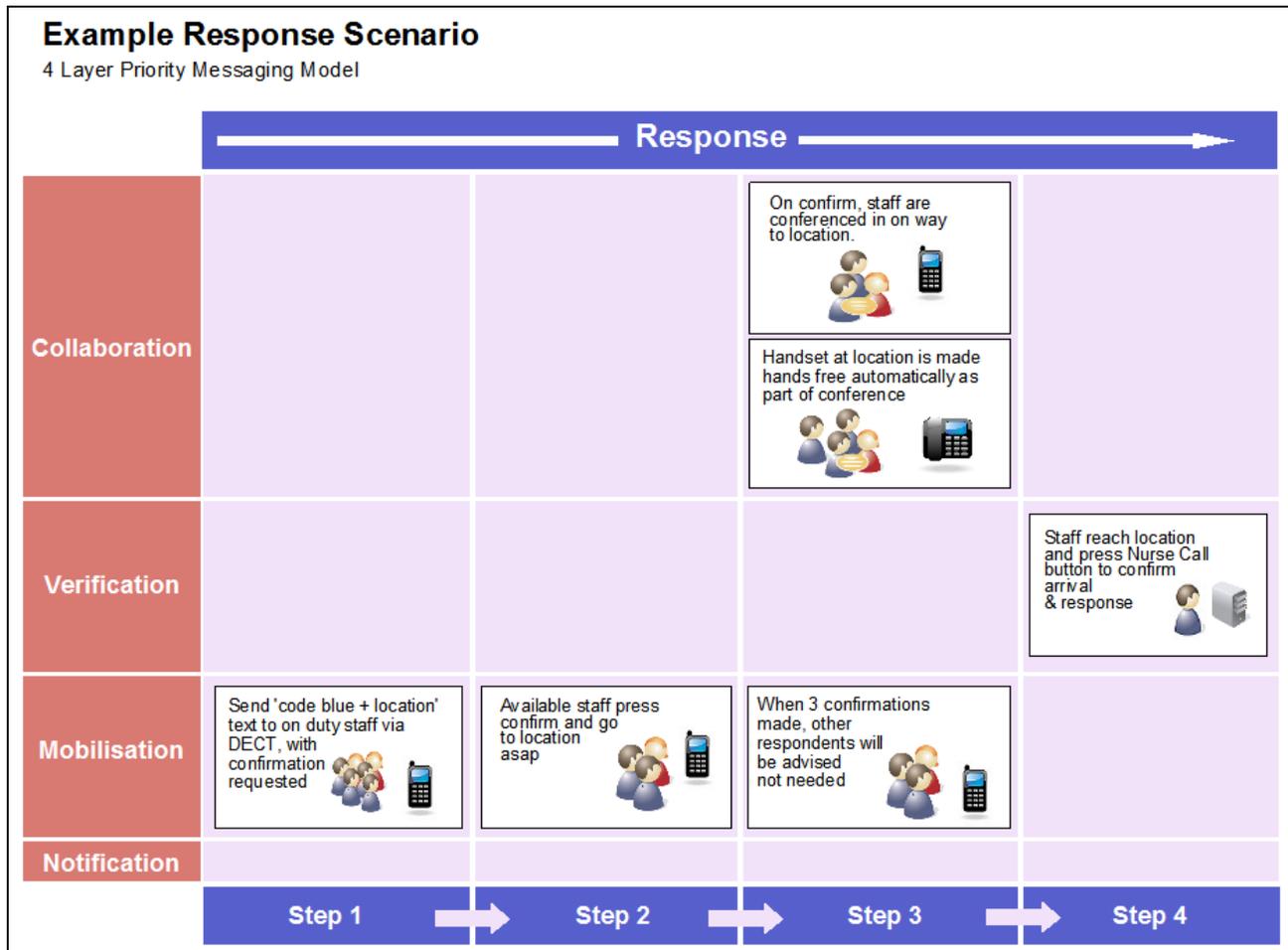
Automation within the collaboration layer will also bring benefits.

For example; if a staff member receives an automated voice message explaining the concise details of a response situation, the message server can conference them into a phone call immediately after the message has finished. All respondents hear the same message and are then immediately talking to each other. No human interaction is necessary to ring around and attempt to have people dial into a conference call.

## An Example Response Scenario

On page 10 of the first white paper in this series we showcased in detail an example of how hospital staff could respond to an emergency at a patient's bedside and explained the exact steps taken.

In this white paper we look at the same example using the 4 layer model to show how the response scenario is constructed in a building block fashion. The example does not use the notification layer but does use the mobilisation in steps 1, 2 and 3. In fact, in step 3, three different layers are in use simultaneously. This flexibility is at the heart of the 4 layer model.



Notes and Commentary:

Step	Layer	Description
1	Mobilisation	Message sent, confirmation required
2	Mobilisation	First 3 staff who can respond, press confirm on DECT handset
3	Mobilisation	Message server relays stand down message to further respondents
	Collaboration	Staff who respond are immediately placed in a conference call
	Collaboration	Handset at bedside is made hands free and conferenced to responders
4	Verification	Respondents arrive at bedside, press button to verify response is under control

A more elaborate scenario could easily include escalation procedures where either confirmation or verification tasks can be escalated to other staff members if speed of response was insufficient.

## Summary

Response scenarios assist organisations in clarifying exactly how to implement and use technology to respond effectively to critical events. At the heart of each response scenario is the 4 layer model:

Layer	Description
<b>Collaboration</b>	More than 2 people need to communicate simultaneously
<b>Verification</b>	Verification of task complete or in progress
<b>Mobilisation</b>	Confirm receipt of message and escalate as required
<b>Notification</b>	Broadcast message with no confirmation or verification required

Using this model for each and every response scenario, an organisation will develop a consistent and structured method of delivering priority messages. This in turns creates trust in both the process and technology to support the most effective and efficient responses.

**The third white paper in this series outlines how organisations can implement a priority messaging strategy.**

Nexon Asia Pacific is a leading telecommunications integration consultancy with offices in Sydney, Brisbane and Melbourne.

Nexon have developed both the Priority Messaging Framework and the Priority Messaging 4 Layer Model as a means of assisting organisations to more effectively review their priority messaging strategy. Nexon offer priority messaging integration consultancy and services to medium sized enterprises, the corporate community and government agencies.

If you require assistance with your priority messaging strategy and implementation, call Mike Sultan, Priority Messaging Programme Manager at Nexon Asia Pacific.

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## Glossary

<b>Priority Messaging</b>	Priority messages are concise electronic messages delivered in the shortest possible time to generate an appropriate response to an event.
<b>Priority Messaging Framework</b>	A framework of processes describing how an organisation responds to an event.
<b>Core Process</b>	There are 4 core processes within the priority messaging framework. The processes are: event, management, delivery and response.
<b>Event</b>	A concise message from a validated source that requires an organisation to respond.
<b>Management</b>	A set of pre-defined business rules are applied to an incoming alarm. The rules define the process of how an event will be resolved through the sending of specific priority messages to people / systems via the most appropriate technology.
<b>Delivery</b>	Delivery of message(s) via the most appropriate device(s) / system(s).
<b>Response</b>	Action to be taken by an organisation to resolve an event. The business rules in the management process underpin the actions in the response process.
<b>Full Event Traceability (FET)</b>	The ability of an organisation to track and report on actions starting with the generation of an alert to the resolution of a response.
<b>Priority Messaging 4 Layer Model</b>	A model for interpreting business rules to create priority messages and define how the messages are transmitted and who they are received by in order to respond and resolve an alert. The 4 layer model sits within the management process of the priority messaging framework.
<b>Response Scenario</b>	A specific event and response situation within an organisation.
<b>Notification</b>	Send message(s) to generate a response. No confirmation of receipt of message or guarantee response has taken place.
<b>Mobilisation</b>	Send message(s) and confirm receipt. Automated escalation if no confirmation. Improved probability of resolution.
<b>Verification</b>	Verification required that business response is complete. Guaranteed resolution of situation.
<b>Collaboration</b>	Voice / video conference decision makers to agree and action a response. Guaranteed resolution of situation.
<b>Message Server</b>	A message server will decode the signal from an alarm, apply business rules and send a message(s) via the chosen delivery mechanism(s). A message server sits within the management process in the priority messaging framework and provides the means to automate many priority messaging tasks.