



Figure 1 – ESAM data flow layout

The ABB External Status Asset Monitor (ESAM) is a patented development tool used to easily integrate external Condition Monitoring (CM) systems into System 800xA Asset Optimization. The ESAM will then identify to the user any performance changes, or other monitored conditions. Simple installation and configuration permit the ESAM to begin continuously monitoring external conditions very rapidly. Resulting notifications can alert operations and maintenance staff to situations which could be making external operation costly and inefficient.

#### Functional Description

The purpose of the ESAM is to provide a rapid development mechanism for creating application specific asset monitors which are compatible with the ABB Asset Optimization (AO) system. The ESAM itself is very generic in design, but copies of it may be rapidly configured for specific applications using the AO Software Development Kit's Excel-based configuration tool. The CM system must be able

to publish its condition data via OPC-DA. The condition data published by the CM includes Severity, Sub Condition, Description, Possible Cause, Suggested Action and a URL to access additional information about the asset. No condition logic is included in the ESAM. It is used as a conduit into an Asset Monitor. Once in an Asset Monitor, the data will be processed for asset alarm conditions.

#### Workflow and Operations

After installation and configuration, Asset Monitoring startup causes the ESAM to subscribe to OPC-DA data items containing all of the information required to create an AO alert. Reported conditions can generate an alarm in the 800xA Alarm and Event system and trigger the generation and transmittal of a pager message, an e-mail, data automatically entered into Excel Reports and text messaging. Additionally, if a CMMS such as Maximo or SAP Plant Maintenance is configured, it is possible to quickly generate a Work Order for a maintenance request.

## Software Dependencies

The following ABB software is required for installation, configuration and operation of the ESAM:

- 800xA Core System
- Asset Optimization
- Asset Optimization Software Development Kit
- Optional System Extensions:
  - CMMS connectivity for Maximo, SAP Plant Maintenance, IFS and many other CMMS providers
  - SMS & Email Messenger (Sending messages based on alarm and event information to user devices such as mobile telephones, e-mail accounts and pagers)

## Required inputs

The ESAM expects only a Severity number from the CM. The Severity number ranges from 0 to 1000. Optionally, the CM can send the following information:

- Sub Conditions such as Normal, High, Failed, etc.
- Description of the Alarm
- Possible Cause
- Suggested Action
- URL Link for further thin client access from within the AO system

Information must be in an OPC string consisting of a simple XML format. For example:

```
<ESAMCondition Severity="1000"  
SubCondition="Failed"  
Description="inboard bearing"  
PossibleCause="extreme vibration"  
SuggestedAction="motor overhaul suggested"  
URL="http://pump_supervisor/service/data.htm" />
```

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