Sustain.Ability.

Tyron Vardy

“A Guide to Effective Alarm Management”
Introductions

Tyron Vardy

- Alarm Management Specialist for over 15 years

- Matrikon
  - Engineering Manager
  - Developed Alarm Management Control Room Suite

- Implemented AM solutions Globally
  - (Upstream, Refining, Oil and Gas, Chemicals, Power, Nuclear)

- EEMUA 191 Industry Review Group Member

- Solutions Consultant for Advanced Solutions
Agenda

• What Problem Are We Trying to Solve?
  – Drivers, Benefits of Alarm Management, Segmentation

• Alarm Management Methodology
  – EEMUA 191, ISA 18.2, Practical Approaches to Application

• Alarm Management Solution
  – Underpinned by Honeywell Technology (AM, ACM, OMPro)
  – Focus Less on Technology, More on Solving the Problem
  – Case Study

• The Future of Honeywell Alarm Management
Effective Alarm Management
What Problem Are We Solving?

- So What’s Driving Alarm Management?
  - Regulatory Compliance
  - Safety Improvement
  - Human Factors
  - Insurance Premiums
  - Minimizing Production Losses
  - Maximizing Plant Uptime
What Problem Are We Solving?

• What Benefit will it Deliver?
  – Faster Recovery from Abnormal Situations
    • Reduction in Downtime
  – Help Prevent Unplanned Shutdowns
    • Reduce Demand Rate on Shutdown Systems
  – Improve Safety
    • Increased Awareness of Operations
  – Return on Investment
What Problem Are We Solving?

- 20% - 80% (50% average) reduction in Unplanned Downtime
- Complete program can reduce the number and cost of incidents by 50%
- Other benefits
  - 3% better capacity utilization
  - 5% better energy utilization
  - 5% better mechanical availability
What Problem Are We Solving?
What Problem Are We Solving?

• The Key to a Developing an Effective Alarm Management Strategy?
  – To understand WHY you are embarking on it.
  
  – My Boss, Corporate, Plant Manager say we need to handle our Alarm System better. WHY? WHY? WHY?

  – Because different requirements drive different solutions.
    • Our Operators are Overloaded in Alarm Floods
    • We have too many Standing Alarms
    • We’re breaking the plant – pushing it too hard
What Problem Are We Solving?

• Lots of Requirements, Lots of Benefits, Lots of Possibilities.
  – Best Practices, Standards, Tools, Services...

• So what’s the one thing that’s going to solve all this?
  – Other than letting Honeywell help 😊

• “Alarm Management – Wasn’t that problem already solved years ago?” (Luc De Wilde, Total, 29/06/12)
“No Silver Bullet...”
A solution based methodology
Alarm Management Methodology

• 6 Cans
  – 3 For Problems
  – 3 For Tools

• 3 Problems
  – Alarm Floods
  – Standing Alarms
  – Breaking the Plant

• 3 Best in Class Tools
  – Alarm Manager “Powered by Matrikon”
  – Alarm Configuration Manager
  – Operating Envelope Management
The Honeywell Approach
Alarm Management Methodology

- Safety
- Reliability
- Efficiency
- Sustainability

Tools
Techniques and Procedures
Standards and Guidelines

Alarm Manager
Alarm Configuration Manager

ISA
EEMUA
ASM
Alarm Management Methodology

Alarm management is a continual process

Achieve step-by-step benefits depending on timetable, resource capabilities and current state of alarm management maturity.

Phase 1: Infrastructure
Create a site specific Alarm Philosophy Document
Collect and centralize all Alarm/Event/Operator Actions from all sources (even Manual Operator Shift Logs)
Generate EEMUA 191, ISA 18.2 consistent KPI benchmarking reports
Foundation for solid Alarm Management Improvement Programme

Phase 2: Identify and Eliminate Bad Actors
Focus on areas of biggest risk and areas of greatest return
Generate EEMUA, ISA compliant KPI assessment reports with quantifiable deliverables
Fixing 3 alarms/week can equate to a 60% reduction in bad actors over a one month period

Phase 3: Alarm Flood Analysis
12 months archived data, target and eliminate worst alarms during floods
Identify common patterns or consistent areas of weakness
Identify chattering, redundant, symptomatic, and consequential alarms

Phase 4: Alarm Rationalization
Systematically analysis and review alarm system to reduce alarms further
Implement Master Alarm Database to track engineered changes and settings
Start with Top 10 Bad Actor Rationalization at time of Implementation to "Learn the Process and Take Ownership"

Phase 5: Abnormal Situation Management
Dynamic alarming, shelving, enforcement, system design, control room layout

*Human Factors
Alarm Management Methodology

• Client Maturity Level
  – Start at a phase that reflects the current state of your process

• Cost-Effective
  – Execute the phases you require – when you require them. The Big Bang Approach isn’t a necessity.

• Flexible Approach
  – Methodology tailored to specific requirements
    • e.g. Phases 3 and 4 can be interchanged depending on findings of initial benchmarking
Alarm Management Methodology

- **Services Portfolio**
  - Best Practice Workshops
    - Educate and Train
    - Take Ownership of Delivered Solution
  
  - Alarm Philosophy Design
    - Rulebook for defining how alarms are designed, their priorities, appropriate corrective action, etc.

  - Alarm Rationalisations
    - Is this an Alarm, Event or Action?
    - What is it’s priority and criticality?
    - What is the Response?

- **Master Alarm Database (MAD)**
  - Alarm Response Manuals (ARM)
Alarm Management Methodology

The process by which alarms are engineered, monitored, and managed to ensure safe, reliable operations.

Software Plus Services address 3,4,5

Software Only address Phases 1 and 2

ANSI/ISA-18.2-2009, Alarm Management Lifecycle
### Alarm Management Solution

<table>
<thead>
<tr>
<th></th>
<th>EEMUA 191</th>
<th>ANSI/ISA-18.2</th>
<th>Oil &amp; Gas</th>
<th>Chemicals</th>
<th>Power</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average alarms per day</td>
<td>&lt;144 (~up to 288 may be manageable)</td>
<td>~150 (~300 may be manageable)</td>
<td>1200</td>
<td>1500</td>
<td>2000</td>
<td>900</td>
</tr>
<tr>
<td>Average standing alarms</td>
<td>&lt;10</td>
<td>&lt;5 per day</td>
<td>50</td>
<td>100</td>
<td>65</td>
<td>35</td>
</tr>
<tr>
<td>Peak alarms per 10 minutes</td>
<td>&lt;10</td>
<td>≤10</td>
<td>220</td>
<td>180</td>
<td>350</td>
<td>180</td>
</tr>
<tr>
<td>Average alarms per 10-minute interval</td>
<td>1</td>
<td>~1 (~2 may be manageable)</td>
<td>6</td>
<td>9</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Distribution % (low/med/high)</td>
<td>80/15/5</td>
<td>80/15/5</td>
<td>25/40/35</td>
<td>25/40/35</td>
<td>25/40/35</td>
<td>25/40/35</td>
</tr>
</tbody>
</table>

- **EEMUA 191**
  - ANSI/ISA-18.2
  - Oil & Gas
  - Chemicals
  - Power
  - Other

- **Average alarms per day**
  - <144 (up to 288 may be manageable)
  - ~150 (~300 may be manageable)
  - 1200
  - 1500
  - 2000
  - 900

- **Average standing alarms**
  - <10
  - <5 per day
  - 50
  - 100
  - 65
  - 35

- **Peak alarms per 10 minutes**
  - <10
  - ≤10
  - 220
  - 180
  - 350
  - 180

- **Average alarms per 10-minute interval**
  - 1
  - ~1 (~2 may be manageable)
  - 6
  - 9
  - 8
  - 5

- **Distribution % (low/med/high)**
  - 80/15/5
  - 80/15/5
  - 25/40/35
  - 25/40/35
  - 25/40/35
  - 25/40/35
Alarm Management in Action

• **Plant Facts – In the Beginning**
  – 30,000 Configured Alarms (Split 25/40/35)
  – 8,000 Alarms Annunciated to Operators Each Week
    • (~50 every hour, 24 hours a day, 7 days a week)
  – 3 Operators per shift
  – 2 Unplanned Shutdowns per quarter
    • Missed Alarms, Delayed Responses, Equipment Failure

  – Other Notes:
    • Installed two new large compressor units (warm standby), as default each one capable of generating 17 high priority alarms.

• “We need to rationalise our Alarms”
Alarm Management in Action

• Plant Facts – Today...
  – 30,000 Configured Alarms (Split 5/25/70)
    • 8,000 Alarms Reclassified as Alerts
    • No Operator Action – No Alarm

  – 1700 Alarms Annunciated to Operators Each Week
    ~10 every hour

  – 2 Operators per shift
  – 15% reduction in “run to fail” maintenance
  – 40% reduction in Standing Alarms

  – 1 Unplanned Shutdown in last 6 months

$$$$
Alarm Management in Action

• The Bits in the Middle that Make it All Work

  – Phase 1 (6 Weeks)
  • Assemble the Team, Document Plan, Define Milestones
  • Alarm Assessment Prior to Rationalisation Review
    – External validation of system on Day 1 based on real data
  • Best Practices Workshop Training
    – Ownership, Alarm Design, Advanced Techniques, APD
  • APD Creation
2 Recommendations

The table below provides a listing of recommendations that have been identified as a result of the business documentation review and site audit. The table is broken down by category (Alarm System, Alarm Philosophy etc.) and ordered by the estimated cost/benefit.

2.1 Alarm System

<table>
<thead>
<tr>
<th>Item</th>
<th>Recommendation</th>
<th>Benefit</th>
<th>Cost / Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Roles and Responsibilities within Alarm Management Strategy to be defined.</td>
<td>Alarm Management is critical to the safe operation of the site, and there are clear responsibilities at all levels within the organisation, which must be acted upon. An Alarm Philosophy will provide this information.</td>
<td>Low / High</td>
</tr>
<tr>
<td>2</td>
<td>A common alarm overview for the operator is required.</td>
<td>Provide a common interface for viewing alarms from all systems.</td>
<td>Low / High</td>
</tr>
<tr>
<td>3</td>
<td>Once software support tools are in place the top 10 most frequent alarms should be put through an alarm rationalisation program every week.</td>
<td>Rationalisation of the alarm system, with an immediate impact on the performance of the system.</td>
<td>Low / High</td>
</tr>
<tr>
<td>4</td>
<td>An Alarm rationalisation program needs to be implemented.</td>
<td>Rationalisation of the alarm system, including removal of duplicate, nuisance and stray alarms.</td>
<td>High / High</td>
</tr>
<tr>
<td>5</td>
<td>The control room desk layout should be re-designed. This includes centralising the control screens and telephone to creating a balanced batch of Alarms and Safety screens by increasing the amount of EAM screens available to the operator.</td>
<td>Improved operator effectiveness during both steady state and upset operating conditions</td>
<td>High / High</td>
</tr>
<tr>
<td>6</td>
<td>The function on both Alarms and Laboratory DCS systems that links the alarm to the process menu should be expanded to include all the alarms available in the systems.</td>
<td>Improved operation for the operators.</td>
<td>Med / High</td>
</tr>
<tr>
<td>7</td>
<td>The Alarms DCS alarm summary screen operation needs to be improved. It does not update automatically, so the operators use the last 2 alarms screen instead.</td>
<td>Improved operation for the operators.</td>
<td>Low / Med</td>
</tr>
<tr>
<td>8</td>
<td>The Alarms DCS workarea requires an embedded alarm banner and a direct button that links to the plant mimic overview page. This should be available from the tag banner.</td>
<td>Improved operation for the operators.</td>
<td>Low / Med</td>
</tr>
<tr>
<td>9</td>
<td>There are many duplicate alarms that could be removed. Consideration should also be given to grouping alarms.</td>
<td>Improved operation of the alarm system.</td>
<td>Med / Med</td>
</tr>
<tr>
<td>10</td>
<td>The use of state based alarming should be implemented.</td>
<td>Improved operation of the alarm system.</td>
<td>Med / Med</td>
</tr>
<tr>
<td>11</td>
<td>The tag descriptions in use are hard to understand and could be improved.</td>
<td>Improved operation for the operators.</td>
<td>High / Low</td>
</tr>
</tbody>
</table>

Table 1: Alarm System Recommendations

2.2 Alarm Philosophy

<table>
<thead>
<tr>
<th>Item</th>
<th>Recommendation</th>
<th>Benefit</th>
<th>Cost / Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Create an Alarm Philosophy for the site which covers the sections detailed in section 7.1. This includes defining KPI targets for the site.</td>
<td>EEMUA requirement. Defines a strategy for the Alarm System</td>
<td>Low / High</td>
</tr>
<tr>
<td>2</td>
<td>Review and maintain the Alarm Philosophy annually once it is in place to ensure additional tools, procedures and systems are appropriately addressed.</td>
<td>EEMUA requirement and good practice</td>
<td>Low / Med</td>
</tr>
</tbody>
</table>

Table 2: Alarm Philosophy Recommendations

2.1 Sample Alarm System Analysis

2.1 Top 10 Most Frequent Alarms

It is not uncommon for relatively few tags to have a large impact on the overall alarm system performance. The top 10 most frequent alarms are analyzed showing their alarm count and percentage of the total alarm count.

<table>
<thead>
<tr>
<th>Tag</th>
<th>AlarmID</th>
<th>Alarms</th>
<th>% of Total</th>
<th>Description</th>
<th>Plant</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCCS1601</td>
<td>L</td>
<td>1567</td>
<td>4.66%</td>
<td>SLUGCATCHER SURGE DRUM</td>
<td>Sample</td>
<td>Inlet Area</td>
</tr>
<tr>
<td>ESV41101AP</td>
<td></td>
<td>1365</td>
<td>4.22%</td>
<td>OIL RECTIFIER VESSEL</td>
<td>Sample</td>
<td>Refrigeration Package</td>
</tr>
<tr>
<td>ESV41104BP</td>
<td></td>
<td>1345</td>
<td>3.85%</td>
<td>OIL RECTIFIER VESSEL</td>
<td>Sample</td>
<td>Refrigeration Package</td>
</tr>
<tr>
<td>FI047123</td>
<td>L</td>
<td>1217</td>
<td>3.76%</td>
<td>GLYCOL TO REGENERATOR</td>
<td>Sample</td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>THD110A</td>
<td>H</td>
<td>1121</td>
<td>3.47%</td>
<td>LAMINE FROM LUR EXCHANGER</td>
<td>Sample</td>
<td>Gas Sweetening Unit A</td>
</tr>
<tr>
<td>UA02123</td>
<td>H</td>
<td>1104</td>
<td>3.41%</td>
<td>OFFSHORE P L R LINK FAULT</td>
<td>Sample</td>
<td>Electrical and Controls</td>
</tr>
<tr>
<td>FID17100</td>
<td>H</td>
<td>769</td>
<td>2.45%</td>
<td>REC GAS TO WASTE HEAT BOILER</td>
<td>Sample</td>
<td>Sulphur Recovery Unit</td>
</tr>
<tr>
<td>LALL3157</td>
<td>H</td>
<td>777</td>
<td>2.40%</td>
<td>SLUGCATCHER SURGE DRUM</td>
<td>Sample</td>
<td>Inlet Area</td>
</tr>
<tr>
<td>TICR8100</td>
<td>H</td>
<td>772</td>
<td>2.36%</td>
<td>L GLYCOL COOLER TO SURGE DRUM</td>
<td>Sample</td>
<td>Steam / Boiler System</td>
</tr>
<tr>
<td>PID12303</td>
<td>L</td>
<td>743</td>
<td>2.31%</td>
<td>STEAM TO STEAM CONDENSER</td>
<td>Sample</td>
<td>Steam / Boiler System</td>
</tr>
</tbody>
</table>

Table 2: Sample Top 10 Most Frequent Alarms

2.2 Top 10 Most Frequent Alarms Contribution

![Graph showing alarm count over time with bad actor impact](image)

Figure 3 – Sample Alarm Count over time with Bad Actor Impact, Jun’11- Sep’11

The Top 10 Most Frequent Alarms are responsible for 33.1% of the overall alarm count.
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Standards and Legislation</td>
</tr>
<tr>
<td>3</td>
<td>Alarm Management Concepts and Tools</td>
</tr>
<tr>
<td>4</td>
<td>Improvement Strategies</td>
</tr>
<tr>
<td>5</td>
<td>Alarm Management Philosophy</td>
</tr>
<tr>
<td>6</td>
<td>Alarm Management Assessment</td>
</tr>
<tr>
<td>7</td>
<td>Alarm Analysis Exercise</td>
</tr>
<tr>
<td>8</td>
<td>Alarm Rationalisation</td>
</tr>
<tr>
<td>9</td>
<td>Safety Related Alarm Handling</td>
</tr>
<tr>
<td>10</td>
<td>Maintenance and Continuous Improvement</td>
</tr>
<tr>
<td>11</td>
<td>State Based Alarming</td>
</tr>
<tr>
<td>12</td>
<td>Model and Predictive Alarming</td>
</tr>
<tr>
<td>13</td>
<td>Inhibited Alarms</td>
</tr>
<tr>
<td>14</td>
<td>Summary and Review</td>
</tr>
</tbody>
</table>

**Appendices**

| A1                  | Alarm Management Philosophy for Screen-Based Control Systems          |
| A2                  | Better Alarm Handling (UK HSE)                                        |
| A3                  | Override Management Published Article                                  |

**Additional Exercises**

| E1                  | Introduction                                                          |
| E2                  | Alarm Assessment                                                      |
| E3                  | Alarm Rationalisation                                                 |
The philosophy must be general enough to provide long-term viability and at the same time lead to clear determinations.

- Purpose of the Alarm System
- Roles and Responsibilities
- Alarm Design Principles
- Alarm Management Techniques
- Priority Assignment
- Rationalization Methodology
- How Alarms are Presented
- How Operators Respond
- Key Performance Indicators
- Escalation Policy
- Management of Change
- How People are Trained
Alarm Management in Action

• The Bits in the Middle that Make it All Work

  – Phase 2  (6 Weeks)
    • Installation of Alarm Manager “Powered by Matrikon”
      – Alarm and Event Analysis

• Weekly Bad Actor Alarm Assessment
  – 2 Weeks onsite facilitation with Operations Team
    » Quick reduction in Alarm Rates
      (bad set points, faulty instrumentation, dead bands, off-delays)
    » Simulate Long Term Effect on Alarm System

  – Each ‘Bad Actor’ Reviewed and Rationalised
    » Causes, Consequences, Corrective Actions, Priority
    » Addition of ACM Master Alarm Database, Alarm Response Manual
Alarm Management in Action

• The Bits in the Middle that Make it All Work

  – Phase 3 (4 Weeks)
    • Data Mining and Flood Analysis (12 Months Historical Data)

  – Phase 4 (6 Weeks High Level Rationalisation. Individual Tag Reviews @75-150 per day ~12 Weeks)
    • Alarm Rationalisation
      – Review and Action Phase 2 and 3
      – Grouping, Cloning, Tag by Tag Review
      – Address Standing Alarms, Operating Modes

    • End of Assessment Review, Summary and Training

  – Digestible Phases (Approx. 9 Months)
    • Better ROI, Better Ownership, Better Value
Alarm Management in Action

• The Bits in the Middle that Make it All Work

  – Phase 5 (In Progress)
    • Optimizing Performance through Better Operations Management
      – Boundary Management/Operating Envelopes
      – Shift Handovers
        » Alarms, Overrides, Production Targets/Actuals

• Action Workflows
  – Data · Information · Knowledge (Action)

• All comes from the data captured by the Alarm Management System
Alarm Management in Action

- Define Setpoints, Boundaries and Constraints (ACM)
- Seamless Integration to Limit Repository (OMPro)
- Real Time Boundary Management

<table>
<thead>
<tr>
<th>Target</th>
<th>Hours</th>
<th>Type</th>
<th>As:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDU NAPHTHA 90% POINT</td>
<td>✔</td>
<td>OPERATIONS</td>
<td>10CC053</td>
</tr>
<tr>
<td>CDU NAPHTHA PRODUCTION</td>
<td>✔</td>
<td>PLANNING</td>
<td>10RI007</td>
</tr>
<tr>
<td>CDU NAPHTHA RVP</td>
<td>✔</td>
<td>PLANNING</td>
<td>10CC057</td>
</tr>
<tr>
<td>CDU SAT GAS PRODUCTION</td>
<td>✗</td>
<td>11.1</td>
<td>PLANNING</td>
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<tr>
<td>CDU T001 PRES RELIEF CRI</td>
<td>✔</td>
<td>CRITICAL</td>
<td>10PIC049</td>
</tr>
<tr>
<td>CDU UPLIFT (GAS-AGO)</td>
<td>✔</td>
<td>6</td>
<td>PLANNING</td>
</tr>
<tr>
<td>CDU UTILIZATION ACT/CAP</td>
<td>✗</td>
<td>9</td>
<td>PLANNING</td>
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<tr>
<td>DESALTER EFFLUENT TEMP</td>
<td>✔</td>
<td>OPERATIONS</td>
<td>10T1047</td>
</tr>
<tr>
<td>DESALTER INLET TEMP</td>
<td>✔</td>
<td>OPERATIONS</td>
<td>10TC046</td>
</tr>
<tr>
<td>DESALTER TOTAL WATER INJ</td>
<td>✔</td>
<td>OPERATIONS</td>
<td>10RC045</td>
</tr>
<tr>
<td>F001A %OXYGEN</td>
<td>✗</td>
<td>11</td>
<td>OPERATIONS</td>
</tr>
<tr>
<td>F001A DRAFT</td>
<td>✔</td>
<td>OPERATIONS</td>
<td>10PC037</td>
</tr>
<tr>
<td>F001A F/G HEADER PRES</td>
<td>✗</td>
<td>2</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>F001A HIGH SKIN TEMP</td>
<td>✔</td>
<td>CRITICAL</td>
<td>10T1036</td>
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<tr>
<td>F001A TRANSFER TEMP</td>
<td>✗</td>
<td>1</td>
<td>CRITICAL</td>
</tr>
<tr>
<td>F001B %OXYGEN</td>
<td>✔</td>
<td>OPERATIONS</td>
<td>10AC040</td>
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<td>F001B F/G HEADER PRES</td>
<td>✔</td>
<td>CRITICAL</td>
<td>10PI043</td>
</tr>
</tbody>
</table>
Other Success Stories

Irving Oil Refinery, North America

• Too many configured alarms within the alarm system.

• Operator overwhelmed with alarms during plant upsets

• Key Benefits
  • 35% reduction in the number of configured alarms
  • Average daily alarm rate decreased by 45%
  • Improved operator effectiveness, operators can concentrate on prioritized alarms
Other Success Stories

Shell Shearwater, North Sea, EMEA

- High standing alarm quantities, alarm floods during start-up
- Over 20,000 alarms configured with some having no priority

Key Benefits
- Reduced alarm rate from 1,200 per hour to just 288 per day
- Reduced number of trips per year
- Improved operator effectiveness, operators can concentrate on high priority alarms
Other Success Stories

Kestrel Coal, Bowen Basin, APAC

- Maximum number of alarms exceeded EEMUA guidelines
- Existing alarm management system essentially useless

Key Benefits
- 97% reduction in average daily alarm count
- Increased safety as high priority alarms clearly defined
- The root cause of alarms identified, providing the ability to focus maintenance and reducing plant downtime
The Bigger Picture

The Complete Alarm Management Picture

*Incident Review and Abnormal Situation Management*

*Alarm Improvement Programme/$$$ Benefits*
  *(Regulatory Reporting/Change Management/Set-Point Enforcements)*

*Operations Management*
  *(Boundary Management/Shift Handovers/Awareness)*

*The right tools for the right environment*
  *Give Operations what they need – Give the Business what it needs*
Where do we go from here?
Honeywell Alarm Manager

Intuition Studio Environment Workflows

Alarm Management · CPM · Asset Management

(plus much more)
Alarm Management Roadmap

**Suites**

<table>
<thead>
<tr>
<th>(Honeywell) Advanced Alarm Management</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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- **Maintenance Release**
- **Minor enhancements**
- **Common user interface**
- **Base functionality**
- **Standards compliance**
- **Extend features**
- **Complete integration**
- **Market driven enhancements**
- **Web report enhancements**
- **New KPIs**
- **Web report enhancements**
- **New KPIs**
- **Maintenance Release**
- **Minor enhancements**
- **IO 360**

*Patch releases not shown*
Summary

• Alarm Management is more than just about Reducing Alarms

• Think of it as an Alarm Improvement Project

• A Structured Methodology is Key to Success

• The ‘Big Bang’ Approach isn’t a Necessity

• Use the Technology/Tools to aide the Process
  – Don’t build the process around the tools
HONEYWELL ALARM MANAGEMENT

Voted No 1 for Alarm Management Solutions
Best in Control Readers Choice Awards
(Control Magazine)
QUESTIONS?

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Thank You