BGP *Performa*
Sustaining the benefits from Advanced Software Applications
Agenda

1. Why are After Market Services necessary?

2. The new shape of After Market Services

3. BGP Performa
   - How will it sustain, improve and extend the benefits from Advanced software Applications?
   - Service foundations
   - What does it look like?
   - Contacts / More information
1: Why are After Market Services necessary?
Customer Challenges

How can I reduce Total Ownership Costs?

How can I continuously improve operations and respond to changing conditions?

How to safeguard my investments?

How do I better manage my assets?

Successfully Answering these Questions Drives Value
Potential Benefits to Be Realized from Advanced Solutions

- Reduce incidents by up to 40%
- Increase operator competency
- Support continuous improvement
- Reduce off-spec material up to 50%
- Reduce transition material up to 30%
- Reduce catalyst consumption up to 1%
- Improve throughput 2-8%
- Reduce energy use 5-10%
- Improve forecast accuracy 4-20%
- Reduce inventory 15-30%
- Reduce demurrage by 10-15%
- Reduce green house gas emissions by 25%
- Ensure compliance standards
- Reduced total cost of ownership
- Reduce energy consumption through improved efficiency
- Improve plant availability 3-8%
- Preserve and extend asset life
- Reduce maintenance costs 3-5%
- Improve customer service 5-15%

>$5B US in measurable benefits has been added to our customers’ bottom-line
What Happened to the Application?

Without attention it is common for an initially successful application to underperform or to fall into a state of disrepair.

**Reasons are many but could include:**

**Resource Issues**
- Limited or undertrained staff
- Insufficient budgets for maintenance, training or new personnel
- In-house competition for resources
- High turnover of Ops personnel

**Hardware / Software**
- Obsolescence

**Frequent Plant Modifications**
- Disconnect from models or functionality

**Poor value recognition**
- Failure to link benefits to value
The High Cost of Deferred Maintenance

- Initial investment delivers good benefits and levels of performance
- Potential for rapid degradation of benefits without proper monitoring and maintenance

<table>
<thead>
<tr>
<th>Position after circa 12 months</th>
<th>Benefits (as % of original)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Maintenance</td>
<td>50% loss</td>
</tr>
<tr>
<td>Basic Maintenance</td>
<td>20% loss</td>
</tr>
<tr>
<td>Reactive maintenance</td>
<td>10% loss</td>
</tr>
<tr>
<td>Proactive Maintenance</td>
<td>5% loss</td>
</tr>
<tr>
<td>Opportunity Assessment</td>
<td>+5% gain</td>
</tr>
</tbody>
</table>

Related to sample data: Actual results will depend on many factors, so indicative only
Typical Benefits of Advanced Applications

The real challenge is sustaining these benefits over the long-term

Typical annual site benefits: $10M-$50M (actual benefits depend on industry & plant scale)
2: BGP Performa
What are key benefits of BGP *Performa*?

**Reduce Total Cost of Ownership**
- Faster *incident response* and Resolutions
- Reduced number of incidents and increased *uptime*
- Management of *change* and technology upgrades
- *Cyber Security* protection
- More *effective deployment* of in-house resources

**Improve Operational Effectiveness**
- Customers can focus on their *core competency*
- *Honeywell guide* the customer to manage outcome of results
- Performance management to *sustain benefits*
- Application and process loop *optimization*
- Improved *in-house skills* development
What does BGP *Performa* deliver?

*BGP Performa* is a multi-year service *that delivers value by...*

Providing diligent monitoring of performance metrics *with* Alerts and appropriate recommendations *from experts* To help customers deploy their skilled resources *more effectively*
Honeywell conduct reviews to assess health of systems, applications, performance and in-house skills.

An audit needs to be conducted as a pre-precursive step, to establish baselines and areas for remediation.

Honeywell performance specialists monitor outcomes, identify the root cause of issues and recommend intervention by customer to sustain performance and long-term benefits.

Remediation needs to be completed as a pre-precursive step, to address gaps and issues.

A sustainable remediation action list is created to address areas of vulnerability and to focus attention of in-house skilled resources.

Methodology for BGP Performa

1. Assess Performance
2. Define Proactive Support Plan
3. Expert Implementation

- An audit needs to be conducted as a pre-precursive step, to establish baselines and areas for remediation.
- Remediation needs to be completed as a pre-precursive step, to address gaps and issues.
- A sustainable remediation action list is created to address areas of vulnerability and to focus attention of in-house skilled resources.
How does BGP *Performa* deliver?

Proactive Service Management

Performance Monitoring & remote connectivity

Reporting

Contract Performance Metrics

Change Management
How does BGP *Performa* deliver?

Honeywell deliver the confidence that the customer’s system is performing better and more effectively than ever before.

The Balanced scorecard is effectively a **status update** on the collaborative performance of both Honeywell and customer.

**Contract Performance Metrics**

- **Support**
  - Response time
  - Resolution time

- **Maintain**
  - Incident & Uptime reporting
  - S/W Patches and Updates
  - Security & AV updates

- **Optimize**
  - Sustain *Performance* of the application/s
  - Training recommendations

- **Change**
  - Assessments / Audits
  - Proactive Change Management

**Top level metrics (compatible with Assurance 360)**

- **Track, Measure and Improve**
How does BGP *Performa* deliver?

**Proactive Service Management**

Honeywell will minimize incidents by proactively identifying issues and guiding on appropriate interventions.

- Service request response time and resolution tracking will improve resolution times and reduce incidents.
- Focused attention to vulnerabilities will help prioritize the actions needed to remain aligned to customers’ goals.

**Identification, Guidance and Competency Management**
How does BGP *Performa* deliver?

Honeywell experts will remotely monitor performance and provide proactive service management.

- **Diligent remote monitoring** of performance metrics and the lead indicators likely to impact key KPIs
  - **Reactive** alarming on imminent events and on trended metrics
  - **Proactive** expert data analysis to identify performance issues, longer-term trends and to assist in planning

**Connect, Monitor, Predict and Support**
How does BGP *Performa* deliver?

- Assist with **planning** of Software Migrations and process changes
- Evaluate and **recommend** planned changes to achieve business goals
- Participate in application **reviews**

Honeywell will ensure system changes work well and continue to deliver against expected objectives

**Change Management**

► Plan, Test and Advise
How does BGP *Performa* deliver?

- Honeywell provide regular **status updates**, recommendations and prioritised tasks.
- Established monthly, quarterly and annual **reporting schedule**
- Deliver appropriate information to different **stakeholders** and users
- Periodic site **review meetings** to evaluate metrics and address gaps
BGP Performa: Concept

The Balanced scorecard shows the status of performance from the collaboration between Honeywell and customer.

### BGP Performa Metric Responsibilities

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<thead>
<tr>
<th>Category</th>
<th>Responsibilities</th>
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<tr>
<td>Support</td>
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The Balanced scorecard shows the status of performance from the collaboration between

Honeywell and customer.

### People

- BGP Performa Program Leader
- Site Support engineer
- Product support engineers
- Service Support lead
- Monitoring & measuring
- Identifying & predicting
- Trending & Alerting
- Guiding & recommending
- Training & competencies
- Testing & planning
- Improving & advising

### Customer

- Application engineer
- Control engineer
- Technical Management
- Operations Management
- Information Technology
- Senior Management

### Responsibilities

- Remote connectivity
- In-house resource skilling & availability
- Timely intervention
- Committing to metrics and performance targets
Foundations to deliver BGP *Performa*

Monitoring of System and Application health provides a solid foundation to allow primary focus on meeting Performance objectives

**System Health**
To ensure the system is capable of running the Advanced Application with no impediments

**Application Health**
To ensure the Application is working correctly and is capable of delivering its performance objectives

**Performance**
To ensure the Application is performing as designed and continues to deliver sustained benefits
BGP *Performa*: Monitoring System Health

**Level 0: SYSTEM**  
Overview of health Status

**Level 1: SERVER**  
Aggregate score / indication

**Level 2: LEAD INDICATORS**  
Top individual metrics

**Level 3: SUB-INDICATORS**  
Sub-metrics

**Level 4: DATA & INFORMATION**  
Sub-metrics trend and event plots

Typical examples of indicators and hierarchy

- **Server A**
  - Disk: Low disk space, System Read time, System Write time, Disk queue length
  - Disk Cache

- **Server B**
  - Network: Input bytes / second, Output queue length

- **Server C**
  - CPU: Processor load, Processor interrupts, Processor queue length
  - Memory: Virtual memory, Available memory, Page files, Free page tables, Page/ non page bytes, Page per second

*Cache Bytes: 120 Day Trend*
BGP *Performa*: Monitoring Application Health

**Level 0:**
**SYSTEM**
Overview of health Status

**Level 1:**
**Advanced Software Application**
Aggregate score / indication

**Level 2:**
**LEAD INDICATORS**
Top individual metrics

**Level 3:**
**SUB-INDICATORS**
Sub-metrics

**Level 4:**
**DATA & INFORMATION**
Sub-metrics trend and event plots

- **Typical examples of indicators and hierarchy**
  - **PHD**
    - PHD handle count
    - RDI handle count
    - API handle count
    - UDB handle count
    - Security handle count
    - PHD start handle
    - RAPI handle count
  - **RDI state**
    - Interface state
    - Point age
    - Point confidence
  - **Server status**
    - Ping time
    - Lost connection
    - Con store failed
    - User count
  - **Comms**
    - OPC fail time / frequency
    - TPN load read / write
    - TPN interface queue
    - TPN HCI client connection
    - EPKS load read / write
    - EPKS HCI client connection

- **Level 3:**
  - **Process leaks**
  - **RDI status**
  - **Server status**

- **Level 2:**
  - **Application health**
    - Application network:
      - URT platform
      - Controller handle count
      - Scheduling overlaps
**BGP Performa: Monitoring Performance**

**Level 0: PLANT**
Overview of Plant Performance

**Level 1: UNIT**
Aggregate score of unit

**Level 2: LEAD INDICATORS**
Unit metrics

**Level 3: SUB-INDICATORS**
Unit Sub-metrics

**Example Message:**
“The controller has been switched OFF for 2 months due to instrumentation issues”
BGP *Performa*: Monitoring Performance

- **Level 0:** Plant
  Overview of Plant Performance

- **Level 1:** Unit
  Aggregate score of unit

- **Level 2:** Lead Indicators
  Unit metrics

- **Level 3:** Sub-Indicators
  Unit Sub-metrics

- **Level 4:** Data & Information
  Sub-metrics trend and event plots

- **Crude Unit Area:**
  51CDU, 51STAB, 51SPLT

- **Uptime**
  Usefulness

- **Heatmap:** Value Contribution

- **Typical example for APC application**
BGP *Performa* delivers value

- **D** EDICATED *PERFORMA* SERVICE LEAD
- **O** VERSION OF KEY KPIs AND OUTCOMES
- **L** ONG-TERM GUARDIANSHIP
- **L** EVERAGING HONEYWELL’s EXPERTISE
- **A** LERTING AND TRENDING
- **R** EMOTE PERFORMANCE MONITORING
- **S** USTAINING $ BENEFITS
Learn more about how Honeywell’s BGP Performa and other services can help you maximize the return on your software investment visit our website www.honeywellprocess.com or contact your Honeywell account manager.