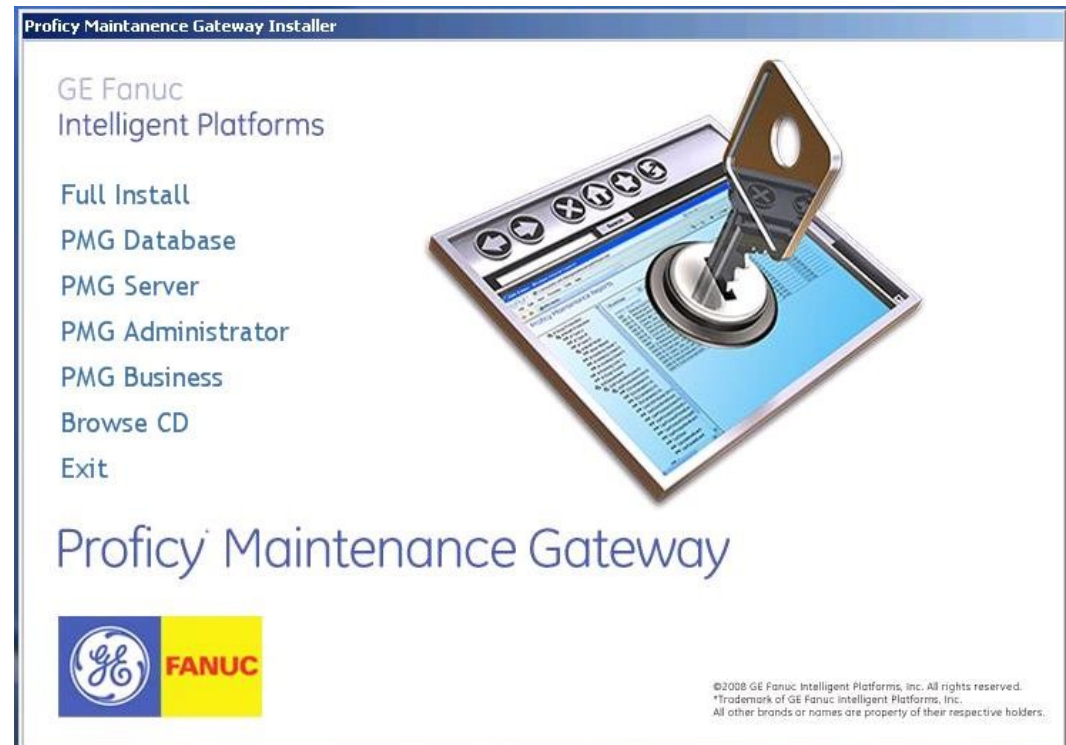


Proficy* Maintenance Gateway

Implementing an agile maintenance solution.

Barry Lynch
Global Product Manager
GE Fanuc Intelligent Platforms

Dr Ananth Seshan
CEO
Automatika LTD.



How do you... .. .?

Introduce agility in your maintenance activities to improve plant availability.

Decrease unplanned downtimes via proactive maintenance.

Achieve better return on your production assets.



Answer... ..

- The enterprise asset management capability of IBM MAXIMO partnered with the real time production management capability of GEF Proficy!



+

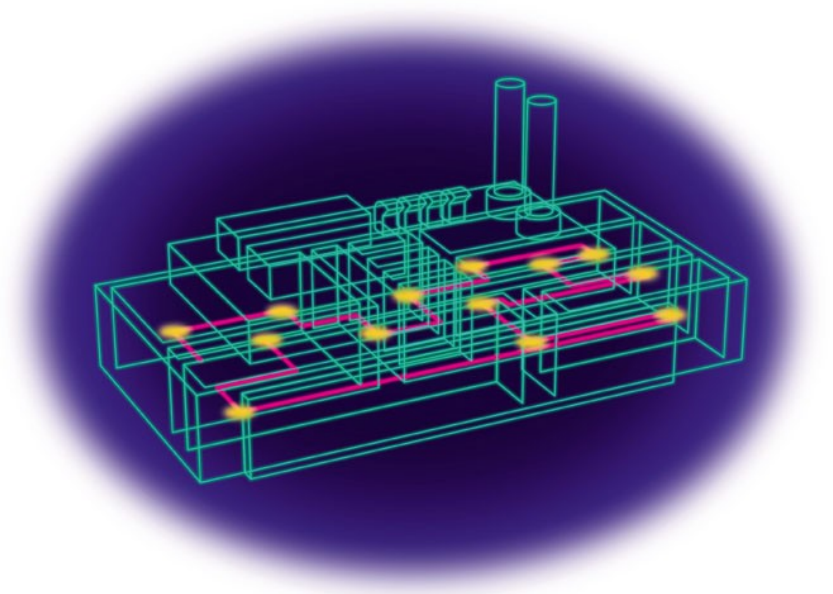


What are the challenges today when applying agile maintenance practices... .



Current Practices: REACTIVE and “AFTER THE FACT”

- Reactive Maintenance
(Run the assets to failure then fix them!)
 - Causes UNPLANNED downtime
 - On average, unplanned downtime exceeds 20% of the total downtime in a plant
- -OR-
- Calendar-based Preventive Maintenance
(Ex: “first Monday of every quarter”)
 - Will underestimate need - leading to unplanned downtime
 - Or, will overestimate need - leading to unnecessary costs



How to Increase Plant Reliability

Move Away from Being Only REACTIVE to Asset Failures!



- Strategy should include being PROACTIVE!
 - Critical maintenance actions should be focused on PREVENTING unplanned downtime
- Establish an “agile” infrastructure between the plant and the enterprise
 - prevent any delays in the implementation of the chosen strategy



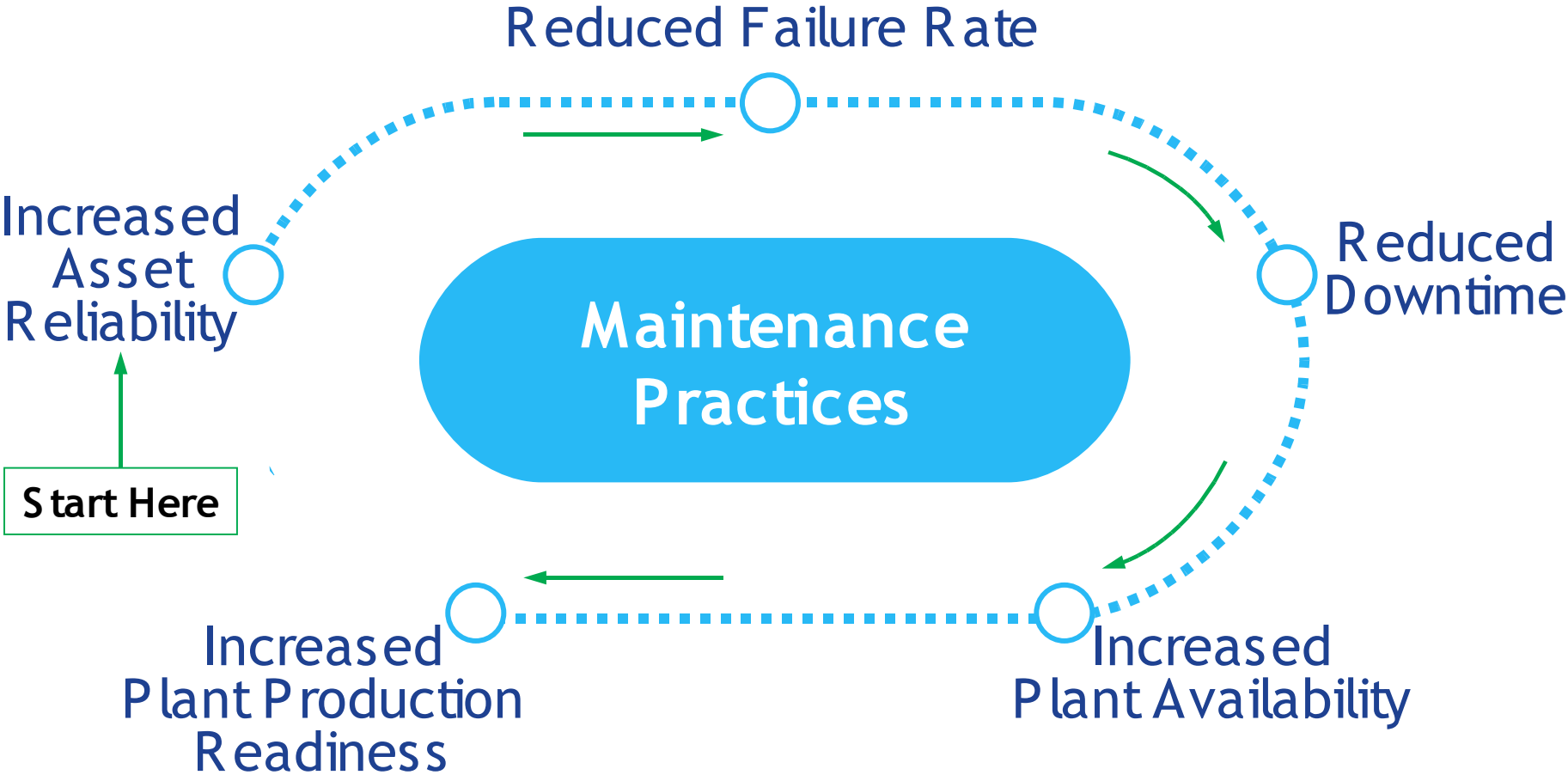
What is a Proactive S strategy?



- PREVENTING failures by scheduling maintenance at appropriate intervals
 - based on asset criticality and failure histories of components (MTTF, MTTR, etc.)
- -AND/OR-
- PREDICTING imminent failures based on “symptoms” and attending to them BEFORE they occur
 - especially, to eliminate downtime of critical, capacity-constraining assets!



How to increase Plant Production Readiness



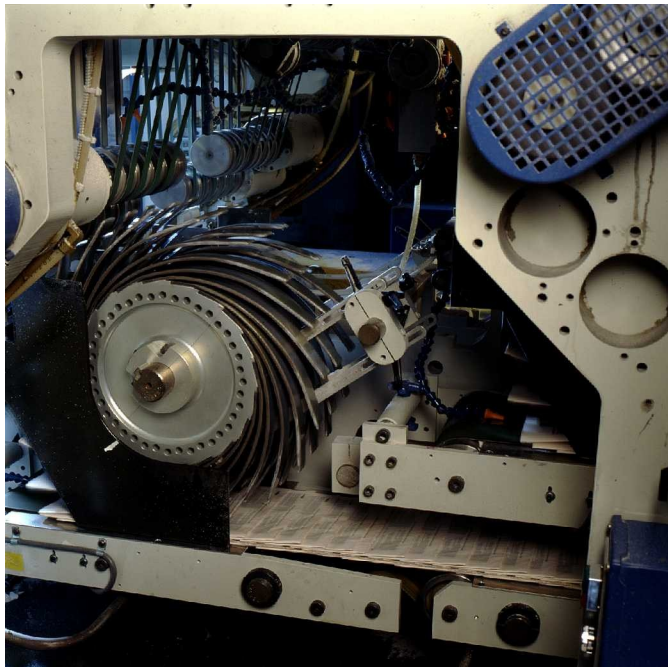
Polling Question 1

- Do you believe that a real time integration of the plant to an Enterprise Asset Management system such as Maximo is needed in the industry today?



“Appropriate” Preventive Maintenance

Schedule Maintenance Based on the USAGE of the Assets to Avoid “Under” or “Over” Maintenance



- **Step 1:** Set a threshold for USAGE to drive Preventive Maintenance based on prior failure histories
- **Step 2:** Collect data from the machines regularly to compute USAGE
- **Step 3:** Order Preventive Maintenance when the actual USAGE exceeds the threshold



Predicting Failures

Understand the “Health” of Critical Machines by Continuously Monitoring the Trend of Key Process Variables and Derivatives

- If the trend is undesirable (“emerging failure symptoms”), there is a potential for a failure
- Prevent such failures by ordering maintenance and executing the maintenance activity with agility
 - even while the machines are still producing!



“Real-Time” is of the Essence!

Your “Right Mix” of Strategies Must be Implemented with Minimal Latency for Maximum Agility

↑ *Forward-Loop Latency* – the loop starting from data collection in the plant to generation of a maintenance Work Order in the Enterprise Asset Management System

↓ *Reverse-Loop Latency* – the loop starting from the generation of a maintenance Work Order in the Enterprise Asset Management System to the closure of that order

Agile Infrastructure: Minimize Forward-Loop Latency through real-time plant integration to Enterprise Asset Management Systems and Reverse-Loop Latency through real-time tracking of MTTR



Polling Question 2

- Do you have, or plan to have in the future, a real time integration between your plant and an EAM system such as MAXIMO ?

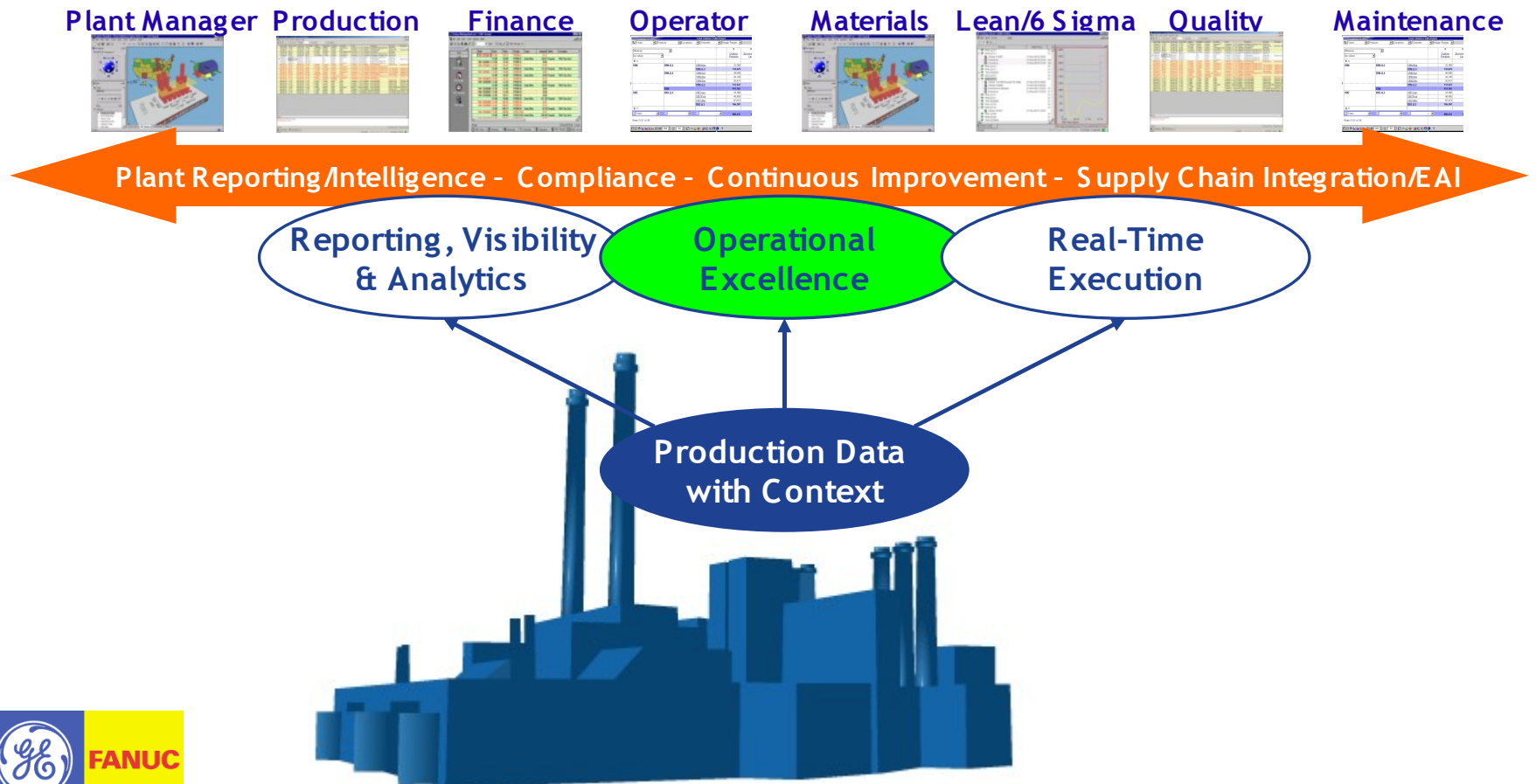


How IBM and GE Fanuc can partner to help you achieve this agility... ..



Real Improvements Demand Real Time Visibility!

Access to accurate, timely production intelligence is no longer optional. It's ESSENTIAL!



Proficy Plant Applications is...

Focused on improving:

Utilization of plant assets

Quality of products produced

Agility of production processes

Integration between production and business systems

Manufacturing costs and productivity



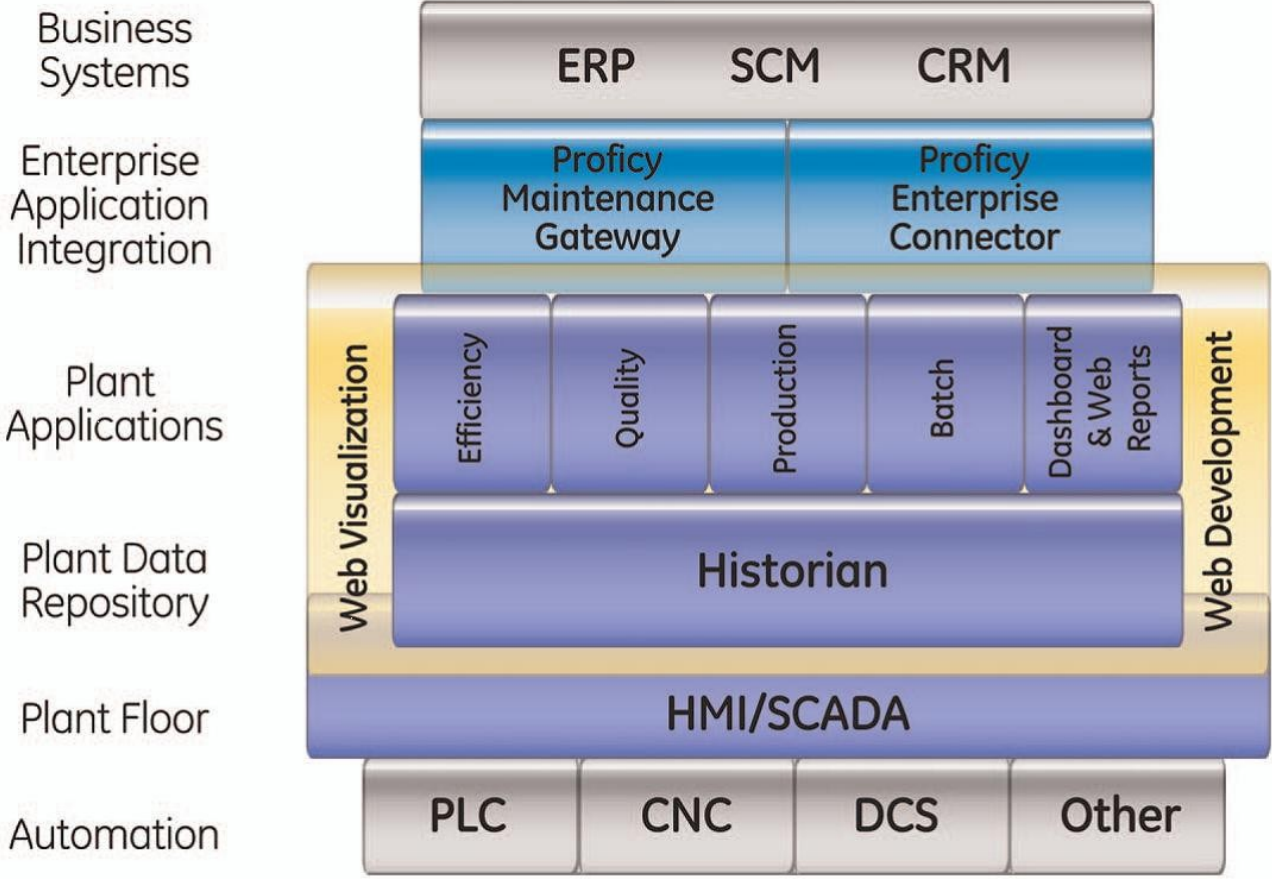
Plant Applications Today



- Over 600 sites installed globally
- 70% are multi-site rollouts
- 15 different industries , same install. (Hybrid manufacturing support)
- Best of class recognized by the industry
- Deployed in over 35 countries.



Plant Applications Modules



Polling Question 3

- Do you have, or plan to have in the immediate future, a Proficy MES in your plant?



Proficiency Maintenance Gateway

Monitors the Health of All Your Assets - All the Time



**Raw Process Data
Stored and
Contextualized by
Equipment & Events**



Data Flow

Data Flow

**Maintenance Work Orders
Created, Viewed and
Closed**



Proficiency Maintenance Gateway

Allows You - in the Plant - to Configure Your Maintenance Rules



System maps GE Fanuc Software to your MAXIMO System

Configuration wizards walk you through building your maintenance rules

- Rules can be time or event-based (for example, emerging conditions of failure) and can be edited at any time

Rules configured and maintained by maintenance or production personnel in the plant



Proficy Maintenance Gateway

Your Window to All Asset Maintenance and Production Performance Information

Leverage the Plant Model in GE Fanuc software to navigate up to date Maintenance Information in MAXIMO.

Access all the information you need for each asset

- Operating locations of equipment
- Stores, repair shops and vendors for equipment
- Equipment-related costs, histories, failures, etc...
- Unstocked spare parts
- WO-related information



Polling Question 4

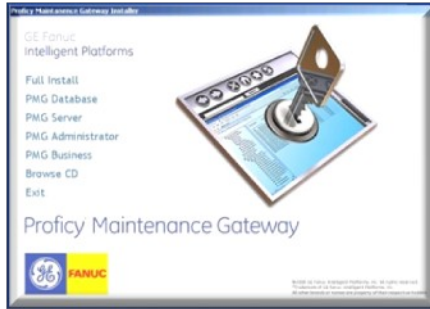
- Do you consider maintenance as a key, strategic activity, if planned and executed properly, can have a direct impact on reducing manufacturing costs and increasing the return on assets?



How do these two products play
together... ..



Existing MAXIMO Users



PMG is THE solution that transforms MAXIMO into such a dynamic, agile asset management system. The powerful combination of PMG and MAXIMO delivers to a customer higher predictability and reliability of production assets, and therefore more Availability, reduction in maintenance costs and increase in the return on production assets by uncovering hidden capacity!



MAXIMO

Customers in the manufacturing vertical today find great value in investing in MAXIMO - since it allows for efficient management of their production assets. But customers can leverage MAXIMO more by making it automatically actionable based on real-time maintenance intelligence that is extracted from real time production data. This additional component can transform MAXIMO into a dynamic, agile asset management solution that is not only abreast of the current status of the plant, but is always one step ahead of the emerging problems leading to equipment failures.

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Summarizing Your Steps to Transformation

Move away from a “Reactive-Only” Maintenance Strategy

- Formulate the “Right Mix” of Reliability-Centered strategies that is appropriate for YOUR plant
 - Will include, Preventive, Predictive and Reactive Maintenance
 - Focus to minimize unplanned downtime
- Implement the “Right Mix” by **MAXIMIZING AGILITY** in the forward and reverse loops
 - Use real-time integration from the Plant to the Maintenance System and real-time tracking of MTTR
- Continuously monitor and improve the “Right Mix” to optimize the Cost of Reliability, maximize Plant Availability and increase Plant Production Readiness!



Questions ??



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Proficy Production
Management

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