

Reporting System

PCC Wyman Gordon

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System Overview

The system described here is a reporting system for PCC Wyman-Gordon and its ring forging process.

Users include staff at all 38 plants in the following departments:

- Accounting/Finance
- Sales
- Engineering
- Planning
- Quality
- Forging
- Heat Treat
- Machining
- Outside Processing
- Inspection
- Certification
- Shipping

Currently, there is no reporting system in place for the ring forging process. If a customer asks how long until their ring(s) will be ready, a series of phone calls takes place, going through many different employees to track down that company's ring. It can take upwards of an hour, which is incredibly inefficient. The system we are proposing will allow customer service to have instant access to the information necessary to help the customer via a report with the live status of the forging. This info will be recorded by employees at each stage in the process and be available to all departments that need it.

As the ring goes through each step in the forging process, it's status and location within the plant will be updated, including the time of each change. This will make it easy to find the ring if a customer requests a time estimate. The workers involved at each step will also be recorded. This is so that as a history is built, if there are any problems or questions, PCC will be able to go back and ask the employee who would be able to help.

Not anyone can create/edit a report. For example, someone in finance will not be able to say whether the ring passed a certain inspection. Every involved employee will have access granted based on their role within the corporation. Only the inspector will be able to sign off on tests.

Accessibility is one of the key features that PCC is looking for. All reports will be available (read only) to anyone in the company. Obviously, employees can search for a specific ring based on ID or the customer it is being forged for. Rings will also be able to be queried by date. For example, if a risk is identified in the plant (such as a faulty piece of forging equipment), all rings that were at that stage in a given time period could be reported for reevaluation.

A report for the customer side of each ring will also be generated. Things such as date and quantity ordered, as well as payment status will be tracked. This will allow sales to know when to request a payment and contact the customer with any questions/updates.

This system needed will merge data from Oracle and other systems into one, unified reporting system.

Solutions

Insight Software

Financial Reporting

BizNet

Automated reports

Connects 130+ ERP solutions

Made for Oracle and SAP - since it is literally designed for Oracle, it should be easy to merge

From [Insight-Oracle page](#):

Manually exporting data from your Oracle E-Business Suite (EBS) ERP into Microsoft Excel to create reports and analyze data is inefficient and time-consuming, not to mention prone to errors. Chances are your ERP doesn't talk to your other databases, which makes it hard to coordinate reporting across multiple systems. So you're relegated to manually stitching data dumps together in Excel. This is time-consuming and frustrating, and means critical reporting tasks are then fraught with issues

This is exactly the problem that PCC is having

Hubble

financial or operational reporting

Operations teams can track production volumes

Single click for updates

Customers have reduced time for this process by 60%

Spreadsheet Server

financial or operational reporting

Import from multiple platforms into one spreadsheet

Pulls data into excel straight from ERP, no data warehousing

Very deep and detailed drill-down

Easy to learn for anyone familiar with excel

Regional training workshops, and on-site training

Very good for the networking/integration aspect, but focused more on finance than the operations of PCC

MicroStrategy Analytics

Import from excel and oracle as well as many other sources

Data wrangling

Choose from visualization templates

Drag and drop data

Very ease to examine data - lots of BI

More analytical than necessary, doesn't hurt unless it is expensive

Fast operational reports

Heavily emphasizes data prep

Good for teams to work together in reports

Compatible with all devices (mobile)

Machine learning

Jump-Start: 5 day training program

Long term courses for how to think about and get the most out of data, not just using products

[Zoho](#)

Analyzes data from many sources: files, cloud drives, databases, business apps

Drag and drop interface to build visuals

Chart & dashboard templates

Investigative analysis

Zia intelligent assistant - holy crap - produces reports based on the user typing in a question

Collaborate across departments and apps

Very uniform system with updates

#	Evaluation Criteria	Testing Methods	Weight	Hubble	SpreadSheet Server	MicroStrategy	Zoho
1	Compatible with Oracle	Product website	Required	Yes using GL Wand	Yes using Reports Wand	Yes , but it is not easy	Yes using Databridge
2	Role-based security	Product website	Required	Yes	Yes	Yes	Yes
3	Imports from different systems	Product website	10	10	10	10	9
4	Automatic updates	Product website	8	9	8	9	9
5	Customizable reports	Product info	9	10	9	10	10
6	Visuals	Demos and videos	8	9	4	10	10
7	Ease of learning	Demos and videos	8	7	10	8	10
8	Customer support	Company website & reviews	7	9	9	5	9
9	Training	Company website	6	10	10	7	4
			Score:	513	480	483	499

Total score is calculated by multiplying each individual score by the weight of that requirement. All weighted individual scores are then added together for that solutions final score. The options we examined turned out to be very similar. This analyzed simply the usefulness of each solution, cost is taken into account in the next part.

Cost Benefit Analysis Summary

These are the printouts of cash flow analysis of all alternative solutions:

Cash Flow Analysis: Hubble		
Cash Flow Stream	\$ (1,532,200)	\$ 5,460,062
Internal Rate of Return (IRR)	364%	
Net Present Value (NPV) @ 12%	\$11,976,216	
Net Present Value (NPV) @ 15%	\$11,301,130	
Payback in Years	3	

Cash Flow Analysis: Spreadsheet Server		
Cash Flow Stream	\$ (1,159,800)	\$ 3,509,300
Internal Rate of Return (IRR)	310%	
Net Present Value (NPV) @ 12%	\$7,484,063	
Net Present Value (NPV) @ 15%	\$7,052,286	
Payback in Years	3	

Cash Flow Analysis: MicroStrategy Analytics		
Cash Flow Stream	\$ (1,638,200)	\$ 2,707,740
Internal Rate of Return (IRR)	176%	
Net Present Value (NPV) @ 12%	\$5,043,862	
Net Present Value (NPV) @ 15%	\$4,712,495	
Payback in Years	3	

Cash Flow Analysis: Zoho		
Cash Flow Stream	\$ (1,587,200)	\$ 2,428,916
Internal Rate of Return (IRR)	203%	
Net Present Value (NPV) @ 12%	\$7,454,371	
Net Present Value (NPV) @ 15%	\$6,961,384	
Payback in Years	3	

_____By combining all of the projected expenses and forecasted additional revenue & savings, we have come up with the projected Internal Rate of Return (IRR). IRR is a strong indicator whether or not a project can be beneficial to a company, especially PCC Wyman Gordon. All of the IRR is above 0% which is positive, it demonstrates the need for improved IT infrastructure.

Proposed Solution

After thorough examination, we recommend purchasing InsightSoftware's Hubble. InsightSoftware has several products that were created to improve the exact situation PCC has found itself in: dumping data into Excel, no system with live updates to report the stages of the ring forging process. Hubble is the top rated of these solutions, and has the best user interface.

Hubble is the perfect software infrastructure to support the system depicted in our Use Case and To-Be Activity diagrams. Its combination of familiar data tables and intuitive data visualization tools lends itself to the current ability of PCC employees while providing room for improvement and expansion. Hubble can pull data from many different systems, including Oracle, which means it will be easy to integrate the different systems that are currently in place at Wyman-Gordon. Though not the lowest cost, Hubble has the highest ROI after 3 years. Purchasing Hubble to use for the proposed system will be a worthwhile investment for PCC.

Appendix A

Data Collection Methods

The data collection system that we would use to find the highest quality solution:

1. Observation and Manufacturing System Overview:
 - a. Identify the problem - The problems have been identified by PCC Wyman-Gordon regarding it's tracking of the ring forging process
 - b. Understand how the forging process works.
 - i. Some products fit into special order categories, but we can observe what information needs to be collected to fulfill customer expectation in delivering correct specifications
 - ii. Interview the people involved in the manufacturing process to find out what information is needed for the purpose of inputting, storing, and outputting data
 - c. Cost-tracking of individual orders
 - i. Determine the cost of raw materials in quantity and quality
 - ii. Job-costing system (Labor charge, Machinery uses)
 - iii. External factors (changes in specification, regulation, etc.)
2. Detailed Information about the Development of System
 - a. Determine how many users will use the system
 - i. 10,000 users
 - ii. 5,000 create report
 - iii. 38 plants + data center
 - b. Language setting
 - i. English
 - ii. Spanish (Find out how much of works uses Spanish as home language)
 - iii. Other Languages
 - c. Timing Synchronization of the System
 - i. Under which time zone was a report created? How do we output time to users?
 - ii. Reports to be synced immediately when updated and be accessible to all users. Keep track of which reports are viewed by which users.
 - iii. How to promote timely decision to be made by decision makers using system overview
 - d. Type of System we plan to use
 - i. Just-in-time order system
3. Interaction within internal users and with external users (ex. customers)
 - a. Identify how many departments and categorize user's primary tasks within the system
 - i. Manufacturing worker, Manager, Accountants, Customer Reps, etc.

- b. Create integrity and access control to comply with Sarbane-Oxley
 - i. Determine who can access to what?

Interview Questions with Users

In order to determine the requirement of the system that promote efficiency and ease of use, we would interview users. Each user is different as far as their function in the job, so we would tailor questions specially for each type of users.

Reference 1.b.ii.

People involved with manufacturing process wear special equipment to protect themselves, thus it's difficult for them to stop and update the current step of the process in the report

1. Which technology do you anticipate you can easily log information on as necessary to keep track of process?
2. What kind of information do you need to store as you proceed with the process?
3. Can you specify the information that you need to know before proceeding with the order?

Reference 1.c.

This involves information sharing with accountant, people on the manufacturing floor, and suppliers

1. How does the job-costing system work at PCC Wyman-Gordon? Please list all details at the best of your knowledge
2. Is there any obvious way to reduce cost and save time?
3. In general, how would you use the system to make your job easier, yet improve your performance?

Reference 2.d.

We're trying to determine which process system PCC Wyman-Gordon uses and to determine if they'd perform better under a different system

1. What system do you currently use to deliver work completed to customers? (ex. Just in time, LIFO)
2. Do you think the system could be better? Please provide details and why.

Benchmarking Systems

Determining the type of systems required will be determined at Final Deliverable. Factors including processing order, ERP, DBMS, etc. will be included and system requirements will expand as we discover more.

We will benchmark in the following categories:

1. Product
2. Process
3. Functional
4. Financial
5. Performance
6. Strategic

After gathering data, we can compile a list of the minimum requirements that the system *absolutely must* have. Based on those criteria, we will research and select systems that meet those requirements. Then we can walk through each system in each category listed above and rank each system accordingly. The system with the lowest average rank will match our needs the best, and will be the one we use.

The criteria below will allow PCC to evaluate whether or not the system is successful. Some metrics for choosing the initial system however, after compiling a list of alternatives, are ease of use, integration with oracle, and graphic value. There are some systems that are easy to learn, but do not provide very basic information. We would much rather choose a system with powerful data analytics and ability to automatically create charts and graphs that give an easy visual representation of the data. This is easy to identify from pictures and tutorial videos that reporting tools have on their websites.

Evaluation Criteria

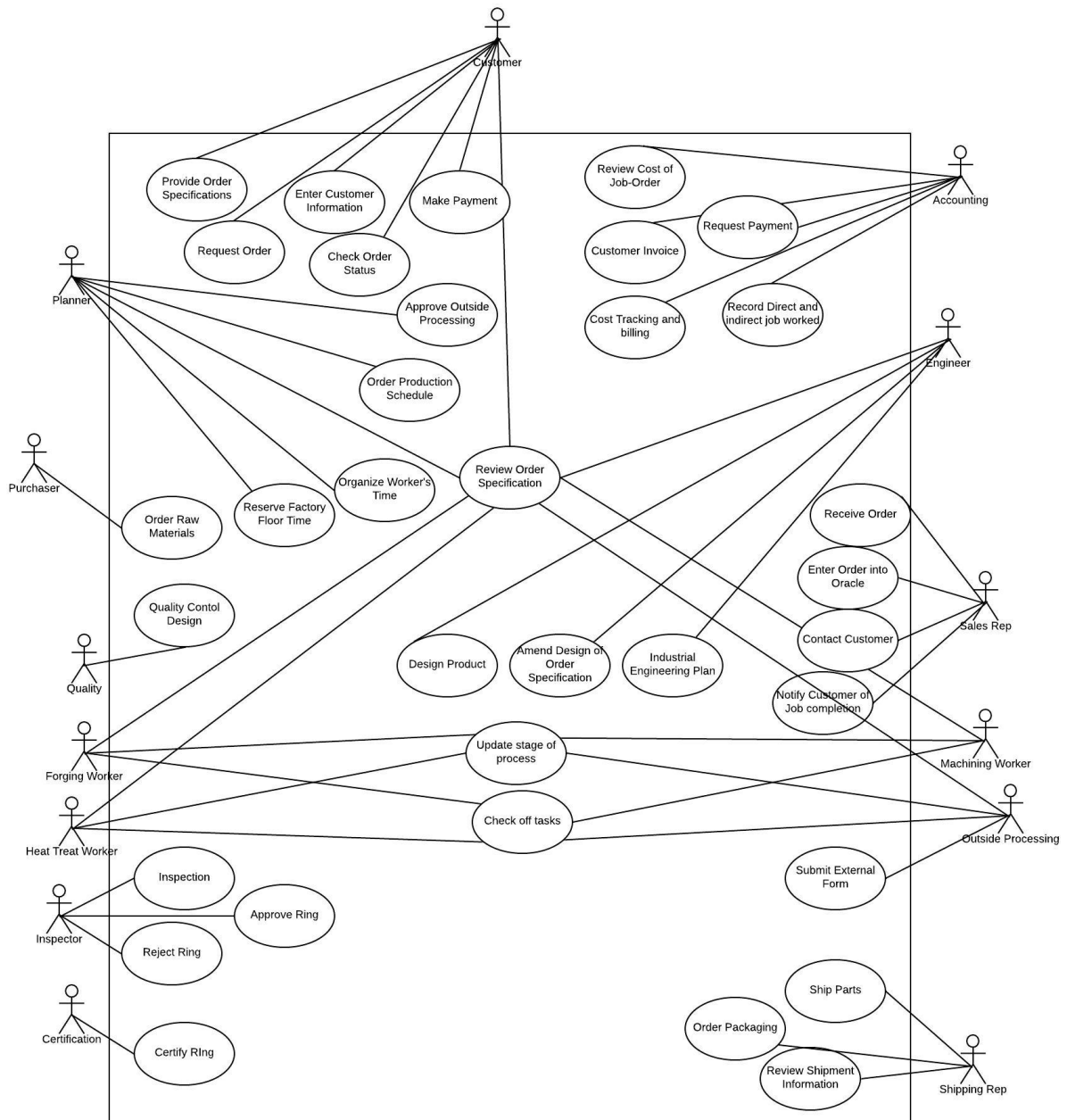
- Deadlines (predicted, estimated, in-process, and soft/hard deadlines on each steps)
- Timeline (display the whole process as a timeline to show quality, speed, and efficiency of work)
- priorities (to display what workers should prioritize and complete ranging from today to an week)
- Work in process (show raw, in-process, and completed steps so that people can track products in every milestones and steps)
- Orders (projects to be finished, inventory orders, and parts orders)
- Inventory (track overall inventories and see if any is needed to reordered/restocked to meet project requirements)
- Shipping (track in-company and out-company shipping process)

- transactions (records of financial transactions with confirmation process, confirmation if projects were paid, warn the company executives when projects payment are late)
- Financial check (if inventory needs to be restocked or something, need to check financially and company's affordability.
- Cycles (track production cycles)
- Date updated (automatic system that tracks whether in-process/important information or data are not updated, it will warn the company/managers/supervisors/workers to record and report.)
- Inspection (criteria on each steps, cycles, milestones, and completed works with manager/supervisor verification)
- Certificate (confirmation and verification for completed inspections)
- Technical / mechanical evaluation (to make sure all machines are still functioning)
- Success / Error rate measurement
- Law / policy / rules (display relevant and required in-company, state, and federal policies/laws/rules for each procedures, products, departments, and workers so that all employees will know what is needed to meet all expectations and requirements)

Performance Quality (assess each employees' performances and signal the managers/executives when an employee, team, department, or project is either over-performing or underperforming)

Appendix B

Use Case Diagram



Appendix C Activity Diagrams

