A Case study on
E-Procurement system of Honeywell & Vedanta

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Implementation of SAP in Honeywell's e-business application and how other industry like Vedanta manage their procurement system without using SAP keeping the system simple by incurring less cost on technology.

ITSS teams in Honeywell work on a wide range of technologies and have demonstrated capabilities to deliver total solutions, right from concept to deployment phases, and to provide application support services to Honeywell businesses.

: By Krishna Mikkeleni (Director of HTSL, India)

Source:http://www.honeywell.com/sites/htsl/businessprocessn3_CN2P9IBBZTSTQNPUZSBB4BQ48 YGARA4YO0730104151405_H1J0YZFDXSDSIDE81DUE8GH5FYU79TONN0730104433352.htm

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Our MES provides us real-time information on the relationship between two discrete data sets and helps us in quick decision-making. IT should align with the business plan based on yearly, monthly and daily basis. Our MES provides us real-time information on the relationship between two discrete data sets and helps us in quick decision-making.

: By Pankaj Khanna(ED, Vedanta Aluminium)

Source: http://cio100.cio.in/subrata-banerjee.html

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SAP (System Application Programming) used to design **ERP (Enterprise Resource Planning)** has become a major part of every business. Each and every industry has its own way of implementing e-business to gain competitive advantage over other superior firms. Since early 1880, the business entrepreneurs laid much more emphasize on quality control, inventory management, how to add value at each and every stage of supply chain and an effective means of measuring and analyzing them. Majority of the big firms came up with the concept of data processing. Companies started spending to build on knowledge management team. By 1990 software applications by IT industry started playing a vital role in the market.

This sector grew so fast over the decades in countries like India & China that today we have reached to a new dimension in IT industry that is business intelligence. Business Intelligence is not something that is limited only to IT industry but also plays vital role in manufacturing sector, education, government, retail, sales promotion, advertisement, insurance, banking to increase the speed of communication and minimize the additional cost of manual maintenance. Cloud computing enabled by IT industry has given a new horizon to use flexible networks and resources allocation.

This new era of doing business have given birth to a new structural dimension for upgrading technical support team, administration operators, server management team, system engineer and thus evolution of various studies like software engineering, IT management, knowledge management, database management system came up across the globe. With time CIO (Chief Information Officer) came into picture as it was now essential to have a separate administration to handle IT department within a company.

However in this evolution internet and web based network played a very important role to connect people and data across the globe and with time mobile commerce collaborated with the growing business opportunities. Now days in business we have collaborative approach in each stage of supply chain integrated with technology to carry out the process cycle.

Company Background

Honeywell International is a major conglomerate company that produces a variety of consumer products, engineering services and aerospace systems for a wide variety of customers, from private consumers to major corporations and governments. Honeywell is a Fortune 100 company with a workforce of approximately 1, 28,000, of which approximately 58,000 are employed in the United States. See Honeywell's logo, mission, and vision & quality policy at Exhibit-8

The company is headquartered in Morristown, New Jersey. Its current chief executive officer is

David M. Cote. Honeywell has many brands that consumers may recognize. Some of the most recognizable products are its line of home thermostats (particularly the iconic round type), Garrett turbochargers and automotive products sold under the names of Prestone, Farm, and Auto lite. It is a $36.556 billion Company.

Source: http://honeywell.com/About/Pages/our-company.aspx

History

Honeywell came into being through the invention of the damper flapper, a thermostat for coal furnaces, in 1885 and subsequent innovations in electric motors and process control by Minneapolis Heat

Regulator Company tracing back to 1886. In 1906, Mark C. Honeywell founded Honeywell Heating Specialty Co., Inc. in Wabash, Indiana.

Honeywell's company merged with Minneapolis Heat Regulator Company in 1927. The merged company was called the Minneapolis-Honeywell Regulator Company. Honeywell was its first president, W.R. Sweatt first chairman.

The current "Honeywell International Inc." is the product of a merger between AlliedSignal and Honeywell Inc.

In 1999. Although AlliedSignal was twice the size of Honeywell, the combined company chose the name "Honeywell" because of its superior brand recognition. However, the corporate headquarters

were consolidated to AlliedSignal's headquarters in Morristown, New Jersey rather than Honeywell's former headquarters in Minneapolis, Minnesota. When Honeywell closed its corporate headquarters

in Minneapolis, over one thousand employees lost their jobs. A few moved to Morristown or other company locations, but the majority were forced to find new jobs or retire

In 2002 Knorr-Bremse took over from Honeywell International Inc USA its share of joint ventures in Europe, Brazil and the USA. Bendix Commercial Vehicle Systems became a subsidiary of Knorr-Bremse AG. In December 2004, Honeywell made a £1.2bn ($2.3bn) bid for Novar plc. The acquisition was finalized on 31 March 2005.

In October 2008, Honeywell Ltd. was named one of "Canada's Top 100 Employers" by Mediacorp Canada Inc., and was featured in *Maclean's* newsmagazine. Later that month, Honeywell was also named one of Greater Toronto's Top Employers, which was announced by the Toronto Star newspaper.

Honeywell established Honeywell Technology Solutions at Bangalore, India in 2002. Honeywell Technology Solutions (HTS) is a research lab within Honeywell dedicated to innovative product

research. It has over more than 120 centres in the globe.

Source :
http://en.wikipedia.org/wiki/Honeywell

IT Solutions

IT Services & Solutions, a business unit of HTSL named as ITSS, partners with various Honeywell businesses across the globe for value maximization through the application of information technology.

ITSS has consulting, application development, package implementation and application support capabilities in various functional areas such as MRO, Telematics, SCM, CRM, PLM, e-Business, HR, Finance, Engineering Analysis (Mechanical), etc. ITSS teams work on a wide range of technologies and have demonstrated capabilities to deliver total solutions, right from concept to deployment phases and to provide application support services to Honeywell businesses.

Source:http://www.honeywell.com/sites/htsl/ businessprocessn3_CN2P9IBBZTSTQNPUZSBB4BQ48Y GARA4YO0730104151405_H1J0YZFD XSDSIDE81 DUE8GH 5FYU79TONN0730104433352.htm

Major Business Units in India

The major business units of Honeywell are Aerospace where it is being the market Leader, Automation Control System a market leader in

European, Asian countries and US market. It also has transportation system and speciality material.

Source: http://honeywell.com/About/Pages/ our-company.aspx

Honeywell Automation India Ltd. (HAIL) is a leading provider of integrated automation and software solutions that improve productivity and enhance safety and security of homes and businesses. With over 2500 employees and an annual turnover of about Rs. 868 crores, HAIL is headquartered in Pune with 8 offices all over India. Set up in 1988 with manufacturing, designing and engineering facilities in the industrial city of Pune (160 km southeast of Mumbai, India), HAIL today is the market leader in most of the business areas it operates in.Driven by its strong values and organizational behaviors.

HAIL businesses includes: Global Services, Control Products, Honeywell Process Solutions, Honeywell Building Solutions, Honeywell Security Group.

Sources: http://www.honeywell.com/sites/ india/HAIL.htm

Honeywell ERP System

Improving bottom-line performance requires effective supply chain management - making the right products the right way, and making them available when needed. Effective supply chain

management (SCM) and true business optimization require integrated information between the supply chain execution process and the supply and distribution processes. Honeywell's enterprise resource planning (ERP) products integrate ERP systems, such as the SAP system, with Honeywell's Experian Process Knowledge System (PKS). This established a robust, bi-directional integration link to ERP systems in order to synchronize enterprise business systems, such as order entry and fiscal accounting, with process plant operations.

The following benefits are realized through integration of Honeywell solutions with ERP and SCM systems:

- Tighter supply chain by bringing production orders directly to plant-level scheduling systems

- Improved planning and financial analysis by reporting corrected inventories of products, such as Liquid and gas products, instead of inconsistent raw measurements.

- Improved product quality by distributing master recipes and product specifications for plant use

- Improved customer satisfaction by tracking product batch, along with a link to laboratory results

- Reduced unplanned maintenance by reporting equipment that runs lengths to maintenance systems

- Increase visibility of key business goals such as on-time product shipments, excess inventory, and capacity utilization.

Honeywell uses ERP in almost each and every system starting from accounts maintenance, promotional advertisements, performance appraisal, raising applications to employee portal. Each and every stage of supply chain starting from procurement, ordering, buying, manufacturing, processing to delivery is well defined and taken care by SAP based ERP system. It indeed helps in vendor management, employee knowledge management and inventory management too. All these system can be tracked on real time basis and instant updates can be seen. Out of all these, procurement system has played a very important role in Honeywell.

Source:http://hpsweb.honeywell.com/ Cultures/en-US/Products/BusinessApplications / ERPConnectivity/default.htm

Honeywell Procurement System

Overview

Honeywell system is one of the most complicated systems as Honeywell expertise in electronic segment. Electronic segments contain items like IC, resistors, diodes, transistors, amplifiers, filters, relays, circuit board which are very microscopic in nature and have to be handled with care. Smaller

the size of inventory tougher is the task of housekeeping and keeping a track of it.

More over at a time a team usually raises more than 100 items which are very minute in nature and sometimes whose availability would be widespread in more than 7 to10 countries. It is the job of procurement team to get back those orders and get the items from various locations over the globe and then sent it in one complete package to the desired team.

Each day around more than lakhs of items are ordered by Honeywell across the globe by several departments and where each team may have different requirements. Each and every processing team has its own inventory management team and is connected to all other similar teams globally through intranet. The process includes a huge cob web transaction between various departments where each component ordered undergoes a several steps of approval so that the orders are safe, secured and authenticated.

Moreover a huge care has to be taken in packaging and logistics system as same resistors or diode could have been ordered by several teams on the same day, to be delivered to the same place and to the same departments but to different teams. Packaging and delivering the right items on time without mismatching the items with other similar orders without missing any item is rather more important. Sometimes a package may contain hundreds of items, where it is to be delivered to a specific person who raises the order. In case the item ordered was out of stock, then they had to contact with vendors and get the requirement fulfilled. These vendors could access the same ERP package through extranet login ID's.

The package is not delivered directly to person who raises the order but delivered to the procurement house, where the person goes and collects the ordered items. This process is optimized to such an extent that the process is safe as well delivered on time with minimum errors. All these are tracked by ERP and it is the knowledge management team that enables the system in such a way that everything runs smoothly within the company.

Functions and Benefits

Basically procurement system deals with purchase of electronic items, receiving it, delivering, billing, invoice processing and shipping.

The benefits of using ERP in procurement system are as follows:

- Buyers Productivity Increased substantially

- The system is organized and become predictable

- Healthy forecast of arrival of orders before hand

- Redundant Data Entry got limited

- Lower Transaction Cost

- Shorter Order-Time Cycle

- Lower Inventories(Low Taxes)

Users and people involved

The whole process involved the Production and Operation Department, Procurement Department, Server management department, Marketing Department, Finance Department and inventory management department. See Exhibit-7 to see the vendors of Honeywell.

Intranet of Honeywell is widespread across the globe in more than 180 locations available 24 hours a day and 7 days a week. Usually the operational engineer is responsible for raising an order. The project managers, procurement team, inventory team are all directly interrelated through network via intranet where they take part in the procurement process. Whereas vendors play a significantly direct role via extranet in meeting the orders when the data warehouse of procurement team shows that the stock is out.

The HR, Domain Leads and Business Unit heads do not play a direct role but on the other hand can access the data without causing any modifications to know what is happening tracking budgets, number of ticket raised and how the system works and to check if it is being handled properly.

IT Technology used

Client Server Model: Honeywell uses an effective client server model where the users are connected to a central server. See Exhibit-1 to understand the detailed process. The data are exchanged between several systems over intranet through a server that keeps a track on each and every system. Most of the data warehouse are accessible through servers and hence are secured by firewalls. Sometimes extranet users may access the data from the same server. So they connect a server with a bridge to another server that has the subset of information of the superior server, so that essential information is not leaked out to the vendors. The data is being exchanged over a common network where router takes care of the division of network from the central sever to all other system. Similar pattern is followed by the vendors in their respective industries to have a control on their data warehouse.

Cloud Computing: It plays a very important role in data processing, integrating and connecting the various client server models together over the same platform irrespective of whether it's an intranet source or extranet. It allows flexible allocation of virtual servers and rapid exchange of data between several servers and system, between two or more servers, between two or more systems, between two servers and data warehouse and between two data warehouse.

Procurement Process

The buyer that can be an engineer or an operational concern person within Honeywell orders for an item required a month prior to actual start of project. The buyer logins to the procurement portal available on the intranet. The form is accessed. The form contains fields like item details, item code and Honeywell standard code for that item. The quantity needed and expected price is also filled up. Price doesn't play an important role in the form. It only helps to add on the total price and let them know the total budget of Order rose based on which project manager can take decisions. See Exhibit-2 to understand the detailed process. The wrong entry of price may not cancel or reject the procurement process by vendor but may release an invoice later which may not match with the buyer expectations and can cross the expected budget. After buyer submits the form, it is delivered automatically to the project manager's account with a copy of mail sent to domain lead.

Domain lead can just see the details but project manager has to log in and approve it. During the approval he can reject some of the item if he finds unnecessary without informing the buyer and finally submits the forms. In the whole process very less typing is involved and it has more drop box, push buttons, check box etc.

Once the order is raised it goes to Honeywell procurement team. They check if the item codes

map with the items of the data warehouse. If the items codes are not available then they further raise an order to procure it from vendors. Shipping, invoice and payment become their responsibility. If some of the item codes are not matching or wrong they sent an alert to the person who raised an order to again raise the same order with correct code following the same process.

If the item codes are correct and also available then these items are immediately gathered, packed, labeled and sent to the procurement house. The procurement house will send a mail that they have received the packet and can be taken back by the engineer. In the meantime invoice is sent to the project lead and a copy to buyer through autogeneric mail via ERP.

Once the engineer collects the packet from procurement house and checks it, he would inform to project manager. On a single click on the invoice proposal accessible from project manager's invoice portal he approves the payment. Rest is taken care by the accounts department through online transactions to transfer the amount to procurement team. The whole processes at several locations interconnected to each other are taken care by SAP /ERP package.

Vedanta Company Background

Vedanta is an international mining and metals company headquartered in London, United

Kingdom. It is the largest mining and non-ferrous metals company in India and also has mining operations in Australia and Zambia. Its main products are copper, zinc, aluminum, lead and iron ore. It is also developing commercial power stations in India in Orissa (2,400 MW) and Punjab (1,980 MW).It has the highest capacity power plant. It is a ***$7.9 billion*** Company. See Vedanta's logo, mission, and vision& quality policy at Exhibit-8

Source: http://www.vedantaresources.com/ what-we-do.aspx

Vedanta Procurement System

Overview

Vedanta system is one of the most giant systems among the metal companies. It has a large stake being occupied by the vendors. They expertise in metallurgy. Mining segment which contains orders like bauxite, quartzite, limestone, cathode tubes, graphite, fuel, producer gas, coaletc. are basically very macroscopic in nature and are ordered in high volume. Bigger the size of inventory easier is the task of tracking them but complex is the logistic system and housekeeping and need large storage space. In companies like Vedanta optimization of plant layout, safety, lean management, space utilization are key concerns. Moreover at a time a team usually raises not more than 1 or 2 orders in a month which is very less in comparison to Honeywell.

The order is huge and transaction is once in a while. Their vendor locations are constant and don't change over period of time. Usually an order can be fully met from few vendor at a specific location for which a specific department, team or person may be given in charge of it. The exchange of data is very minimal between the departments of Vedanta in concern to the procurement system. Each day higher than 1000 tons of material would be coming but that can be an outcome of a single or one time order. What are important for Vedanta are not security but cost and time of delivery so that they can reach minimum levels of inventory.

The time can be saved by effective means of processing and lean management rather than over standardizing the system, keeping the system less complicate so that understanding the system doesn't involve lot of time and training as in case of Honeywell because security is not an important concern over here but time is important.

Functions and Benefits

Basically procurement in Vedanta deals with purchase of materials, receiving it, delivering and billing, invoice processing and shipping. The benefits deriving from Vedanta procurement system are as follows:

- The orders are immediately raised without undergoing approval and much authentication

- Process is fast and increases the productivity

- Large volume can be met in shorter time

- Reduced Lead time

- Elimination of extra cost of technology and its maintenance of ERP/SAP packages

Users and people involved

The whole process involves the Production and Operation Department, Procurement Department, Network management team, Marketing Department, Finance Department and HR department. See Exhibit-7 to see the vendors of Vedanta. Intranet of Vedanta is not widespread across the globe and is different in nature as well as feature in terms of their location.

Vedanta features available in Orissa network can be different of that available in Chhattisgarh. Event heir existing system may be working in different way. The operational engineer, procurement team, accounts team and HR for reimbursement are all directly inter related through network via intranet over a local share drive and they take part in the procurement process. Whereas vendors play a significantly directly role as an external user where he may get a temporary access of the IP address of the share local drive in meeting the orders. The Project manager, General Manager and inventory team do not play a direct role but on the other hand can access the data without causing any modifications to know what is happening, track budgets, number of orders raised and how the system works and if it is being handled properly.

IT Concept used in Vedanta

Local Share Drive: Vedanta accesses a local drive present in the network that can be accessed by two or more people at a time. The person should have access to the IP address of the allocated drive. However the accessibility of share drive for a specific person can be easily removed or added by the network administrator. See Exhibit-3 to understand the detailed process

Subset of data Accessibility: The share drive can have further share areas divided inside it, which can hide further important details from one another creating a subset of information out of available data.

Vedanta Procurement Process

The buyer that can be an engineer or an operational concern person within Vedanta orders for material required for production a month prior to actual start of project. The buyer fills up the available form and shares it in the local share drive. The vendor gets the temporary access to the share drive. Vendor updates the form, sends the ordered material and places the invoice in the share area. See Exhibit-4 to understand the detailed process

After receiving the order buyer transfer the invoice to the accounts team share area and fills the necessary details. Accounts team looking into the invoice and details filled up by engineer makes the necessary online payment to the vendor. In case of reimbursement, HR approves it and the accountant transfers the amount to the buyer's salary account for the advance he paid from his own pocket to the vendor.

Comparison of Honeywell with Vedanta

The e-procurement system of Honeywell is of high security, reliability with less data entries. Auto generated mails is another feature of the ERP system. This system is highly organized compared to the older systems.

The problem of Honeywell system is that the Honeywell codes are not available all the time. Another problem is the over standardization of the system which makes it difficult to access. The number of steps in the data entry process is also more which make it more time consuming.

On the other hand the e-procurement system in Vedanta is much cost-effective. It is easy to understand and use, thereby makes it less time consuming. The maintenance cost is also low.

In Vedanta's system the accessibility is less. The security measures are less compared to the Honeywell system .Another problem is that every time the employee has to do more data entries while entering new entries. The individual responsibility is high where in Honeywell ERP takes care of it. See ehibit-6 & exhibit-7.

In Honeywell only 1 to 1 access takes place with no leakage of information to 3rd party. Login system is there for all members. Whereas in Vedanta many users are involved at a time. More than 2 people can be operating on the same document at the same time which would lead to data entry discrepancy. No login system is there in Vedanta procurement system.

Key Highlights

Different companies implement different e-Business technique to enhance their process and add value to them but the approach can be different. It is not justified saying **Vedanta** could also have used SAP or why not **Honeywell** used local share drive to reduce cost.

The adoption of technology depends on the nature of business, standardization of process, availability of resources, complicacy and most important is the cost, time, security concerns and the culture of business. All industries may not have the attitude and culture to adopt a new technology immediately and implement them. Training is required and it takes time to undergo any kind of new technological change within a company. It is difficult to change the mindset of people who are well habituated with their existing technology and will be reluctant to any kind of new upgrade in technology as it would need extra training ad knowledge for it. Managing change is a greater risk.
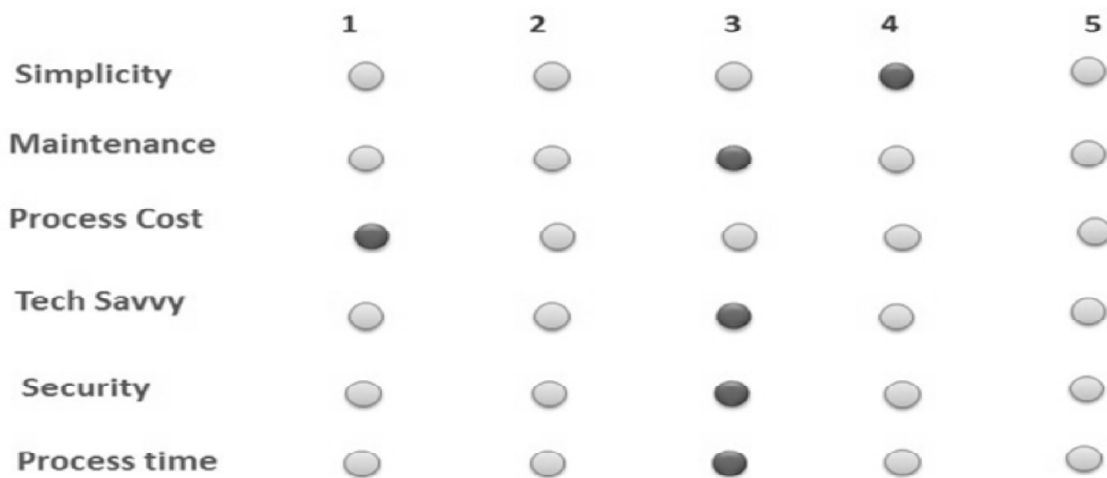
Future Aspect of e-Business

In near future Vedanta may adopt ERP systems if they find it adding value for the cost that they would incur for adopting a new technology.

Whereas companies like Honeywell where the culture motivates them to accept the changes easily would switch over to next generation IT solutions and march fast to take maximum benefits out of latest emerging technology.

Exhibit - 1
Client Server Model in Honeywell

Exhibit - 2
Honeywell Procurement Flowchart

Exhibit - 3
Vedanta Share Drive on Network

Exhibit - 4
Vedanta Procurement Flowchart

Exhibit - 5

Rating for Vedanta

	1	2	3	4	5
Simplicity	○	○	○	●	○
Maintenance	○	○	●	○	○
Process Cost	●	○	○	○	○
Tech Savvy	○	○	●	○	○
Security	○	○	●	○	○
Process time	○	○	●	○	○

RATING	VALUE
1	Very low
2	Low
3	Moderate
4	High
5	Very High

Note: The Rating was given by a panel of 13 members from students of Alliance University School of Business, Bangalore who understood entire procurement process in depth of both the companies Honeywell and Vedanta in details. The criteria to compare and rate them were decided on the basis of brainstorming followed by the Nominal technique.
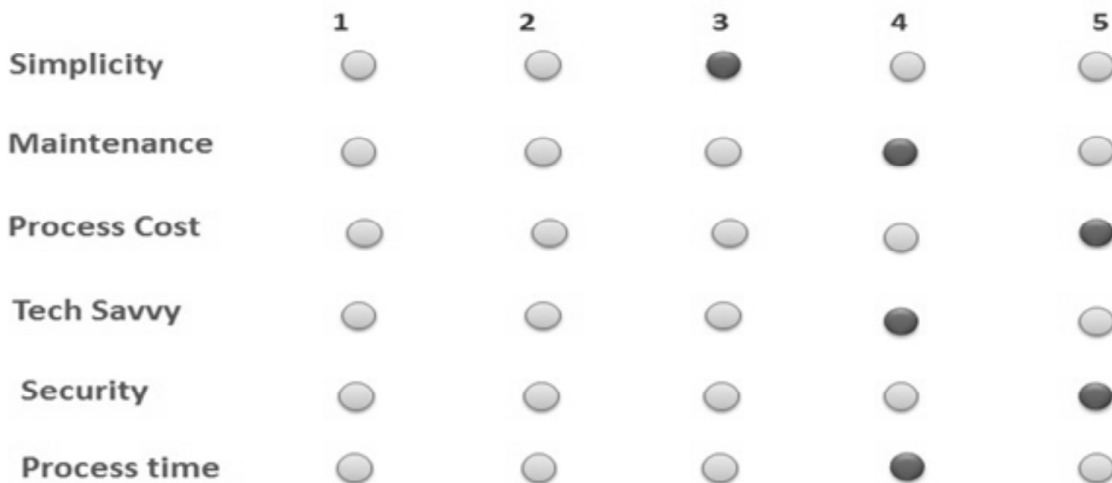
Weightage to each criterion was allocated based on result derived from the opinions of those members.

CRITERIA DESCRIPTION	WEIGHTAGE
Simplicity	7
Maintenance	5
Process Cost	6.5
Tech savvy	8.5
Security	10
Process time	8

Total Points: 2.70 out of 5

Exhibit - 6

Honeywell Ratings As per Brainstorming

	1	2	3	4	5
Simplicity	○	○	●	○	○
Maintenance	○	○	○	●	○
Process Cost	○	○	○	○	●
Tech Savvy	○	○	○	●	○
Security	○	○	○	○	●
Process time	○	○	○	●	○

RATING	VALUE
1	Very low
2	Low
3	Moderate
4	High
5	Very High

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Weightage to each criterion was allocated based on result derived from the opinions of those members.

CRITERIA DESCRIPTION	WEIGHTAGE
Simplicity	7
Maintenance	5
Process Cost	6.5
Tech savvy	8.5
Security	10
Process time	8

Total Points: 4.50 out of 5

Exhibit - 7

Vendors

HONEYWELL	VEDANTA
ABB	SAIL
NATIONAL INSTRUMENTS	ACC CEMENT
MOTOROLA	NTPC
TEXAS INSTRUMENTS	LARSEN & TOUBRO LTD
SIEMENS	TATA STEEL
GE	OCL INDIA LIMITED
INTEL	HINDALCO
PANASONIC	BHUSHAN

Exhibit - 8

Logos, Mission, Vision & Quality Policy

Honeywell

Vision : Be the premier growth company delivering unsurpassed value to Honeywell customers by providing Innovative Total Solutions and Services enhancing the safety, security, comfort, energy efficiency and productivity of the environment where they live, work and travel.

Mission: Maximize the value and impact on Honeywell businesses and customers by providing Technology Product and Business Solutions and Services setting standards of world class performance.

Quality Policy: To delight our customers by providing six sigma quality total solutions, demonstrating value and continuous improvement through competent and disciplined professionals.

Source: http://www.honeywell.com/sites/htsl/vision.htm

Vision : Our vision is clear and committed: achieving and sustaining a global leadership position in non-ferrous metals.

Mission : Our mission is to become a million-ton per annum producer at the lowest decile costs in aluminum, copper and zinc. In so doing, we will put India on the global metals and mining map.

Quality Policy : The majority of our operations are certified to the International Management Systems Standard ISO 14001. We follow safety and environment standards. We won the 2005 Recognition of Commitment Award from the Institute of Internal Auditors, USA, for our demonstrated strengths and continued focus on achieving operational efficiencies and process improvements. Vedanta is the only manufacturing company out of a total of four Indian companies to have ever received this award; the other recipients from India are in the technology and banking sectors.

Source:http://www.vedantaresources.com/ what-we-do.aspx

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