Figure 1. KMT picture obtained from Atos Origin website at http://www.atosorigin.be/Services/BI/Index.htm
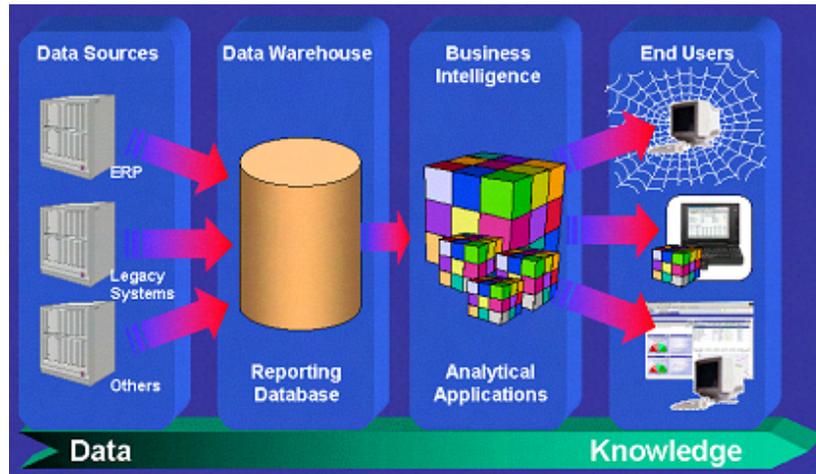
Knowledge Management Technologies:

Human Resources at the University of Denver

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Introduction

In this paper, the Knowledge Management Technologies (KMT) used by the Human Resource (HR) department at the University of Denver (DU) will be discussed. The DU environment is similar to a conventional business environment, but there are still many differences. DU is decentralized, which makes it hard to organize cooperative projects for the overall environment. Implementing KMT in a decentralized environment is not easy, but it may help build a more centralized organization in the future. Organizations that work together build a team environment, share information, and share technologies for the common good of all.

Ideally, organizations that use KMT are more centralized because they share databases, information, and technologies throughout the company. There is less chance of an organization implementing technologies several times throughout the company because no one knew that others were doing the same thing. An Organization that uses KMT saves time, money, and its employees are more informed. Sun Microsystems, Inc quotes Thomas Stewart as saying, "Intelligence becomes an asset when useful order is created out of free floating brain power . . . when it is captured in a way that allows it to be described, shared, and exploited." (2001).
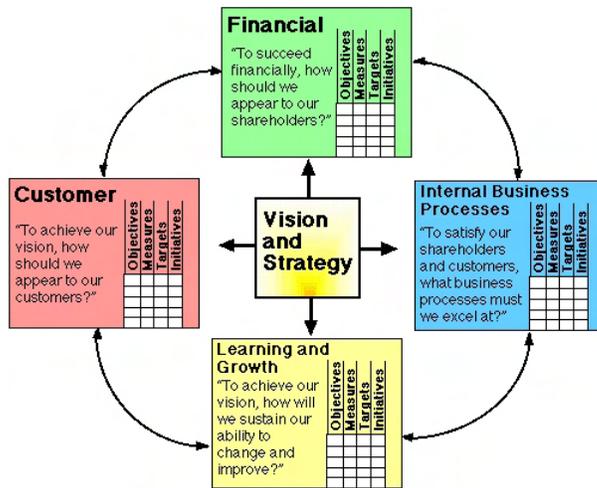
Figure 3. BSC picture obtained from The Balanced Scorecard Institute website at

http://www.balancedscorecard.org/basics/bsc1.html

Implementing the proper KMT tools may help DU with making the necessary changes to become a more centralized environment. These changes take encouragement or backing from upper management or a sponsor to be successful. If the employees do not see the value, in changing how they have always worked, then the change will not be successful. Each department at DU has its own way of working, its own budget, and has to show its own profit for the University. The HR department is no different then any of the rest of the departments at DU. HR has the same requirements of showing that the department runs effectively, and does this by using the Balanced Scorecard (BSC) approach. HR has many non-financial, as well as, financial measures that need to be tracked to show to show they are meeting the requirements set forth by the Vice Chancellor of Business & Financial Affairs (BFA). Arveson states that the BSC is a management system (not only a measurement system) that enables organizations to clarify their vision and strategy and translate them into action. It provides feedback around both the internal business processes and external outcomes for continuous improvement of strategic performance and results (1998).

HR not only interacts within its own department but with all departments of the University of Denver (DU). HR manages all employment related information pertaining to employees for the whole University. In exploring how HR uses KMT and assess the need for future KMT, I interviewed Sharon Gabel, Assistant Director, Organizational Effectiveness (OE). Gabel has been with the HR department for over five years. The OE department was formerly called Training & Development. Gabel explained that changing the name to OE has allowed HR to acknowledge many areas that OE was performing already or needed to start performing. Gabel says that OE supports the University and its employees by aligning actions and knowledge to achieve goals. OE helps to focus intangible assets, such as, people, processes, technology and information to achieve both individual and organizational goals.

General Human Resources (HR) Knowledge Management (KM) Background

I started the interview with general questions about how HR uses KM. I thought it would be good to know how HR thinks in general about its use of KM and then how it applies any KMT tools. The following is the summary of answers to the questions I asked Gabel from our interview on April 14, 2005.

How does HR define KM?

Formally, HR does not define KM. However, Gabel says that HR knows KM is important, and wants to use it to track areas like turnover, faculty knowledge, and policies. Right now HR has no formal method of tracking any of these areas, and when employees leave DU, their knowledge goes with them. Gabel said that a workflow system would help to keep track of these areas and organize the information that is scattered throughout HR at this time. For HR, a workflow system tracks all the flow of information as it comes into and out of HR. For example,

this would include tracking an employee and all associated information about them from the time they apply for a job until they retire.

How do data, information and knowledge affect HR's operations and performance? What role does information and knowledge have in HR?

Data is the foundation of HR. HR tracks demographics and basic data to help with decisions for DU's employees. Without this data, HR would not have the information needed to make knowledgeable decisions. Gabel says this information is mainly tracked by hand or with Excel spreadsheets or Access databases. Most of the information tracked is used in the BSC reports to show how HR is performing financially and non-financially for DU.

Is the customer a part of your KM initiative? Why or why not and how do they fit in?

HR's customer is the employees of DU. HR serves the employees through identifying areas of skill and knowledge that help the employee's achieve goals within their jobs. Gabel mentioned a Training & Development advisory group that was formed to identify skills and knowledge to help employees achieve goals set by the University.

In your organization, does HR systematically determine what data, information and knowledge adds-value to your employees' interests?

HR attempts to add value for the employees of DU. Every year there are performance reviews to help determine what may be added to an employee's career plan. This includes training, career development, and benefits.

Interview Results of HR Knowledge Management Technology Issues

The general KM questions I asked Gabel brought up many issues that the HR department has in working with KM. While HR has some KMT tools in place, other tools could enhance

how they work with KM. A lot of effort in HR is spent on repeated tasks, moving information

from one document to another or even one database to another. Much of the information shared

between the different areas of HR is the same information. Central databases would help to

alleviate the passing around of information.

Repositories

Gabel reported that HR does a lot of capturing and exchanging of KM through

paperwork. This paperwork is done by hand, or within programs like Access databases, Excel or

Word. Employee files are still housed in file cabinets. At times, it is hard to find the information

that is needed because it is misfiled.

HR does use the DU Banner system to store and retrieve basic employee information.

The Banner system is tedious to use and getting the information out in a useful format is not easy

or even doable at times. Special programs need to be built by University Technology Services

(UTS) in order to get information that is useful for HR. UTS does not always have the time or

resources to create these queries or programs that HR needs to obtain the information for its

work.

HR has two areas that were recently updated to use some newer KMT tools. The first is

an applicant tracking system. This system tracks a perspective employee application through the

hiring process. The system houses all applications of applicants that apply for jobs at DU. This

information is available to all of HR and managers that have access to the system. This process

has cut down on the paperwork, and reentry of data from one system to another. The other area

that was updated was the website. Downloadable documents were located to a central page for

easy access by all employees.

HR does not specifically track or match an individual with the best source of knowledge. They have no system to track who in the organization knows what. Usually, employees just know what person knows what or asks another person if they might know someone. Gabel also said that they have in the past, and still do to some extent, use groupware to communicate with groups of people. Gabel said this method is not popular at DU, as most people just like to talk to other people in person or on the phone.

Gabel proposes for a repository model to be successful it needs to be targeted and information that matters to the employees or it will not be used. There needs to be incentive for employees to use the systems implemented. Systems like groupware systems or an intranet go unused if the employee does not know what is there for them.

Communities of Practice (CoP)

HR has developed many CoP groups. This is one of the better-formed KMT areas of HR. Some of the groups formed are:

- HR Liaisons act as the communication link between the Human Resources department and their own department.

- Advanced Technologies & Information Group (ATIG) improves critical processes that support effective operations, leverages technology applications, improves communication, and aligns human, information and organizational capital in support of strategic goals.

- BFA Webgroup meets to discuss ways to improve the effectiveness and efficiency of the BFA websites. This group is led through the Organization Effectiveness department of HR.

- Training & Development advisory group meets to discuss and identify skills and knowledge to help employees achieve their training goals.

Gabel says that CoP groups are valuable and employees participate if they feel the group is worthwhile. The value added to HR is not measured and Gabel thinks it should be to know if the CoP groups are successful or not. It is critical for CoP groups to be successful that the relationship between HR and the groups are dynamic. This means there is an exchange of information both ways. If the CoP group no longer holds value, employees quit coming.

Continuous Learning (CL)

CL is another area of KMT that is well developed for HR. HR offers training face-to-face and online. HR employees deliver the face-to-face training and the online course are offered by an offsite online company called Skillsoft. Gabel says training for employees is promoted through the Performance Review Development System (PRDS). The managers of the departments at DU do these reviews yearly. HR relies on these managers to suggest the training programs HR offers through these reviews. The other ways HR promotes its training is through interoffice memos and on the HR website.

Gabel says that the Organizational Effectiveness department of HR also offers performance development advice and customized training for employment matters. These last two types of training help employees to continue learning and growing and hopefully move onto better positions within DU.

HR looks for ways to improve its training for employees. Some of the training programs have feedback and evaluation opportunities but not all. So, at times HR is guessing at how to improve its programs. Many of the programs that are evaluated are put into the Balanced Scorecard reports that are done quarterly to measure the success of the programs that HR runs.

Business Intelligence (BI)

Gabel feels that BI is an organized version of the repository. Her example was that Banner (DU's main database for information) houses all the basic employee information. The information needs to be mined by some form of BI program for it to have any real value for HR. Much of the information that would be helpful to HR is only captured on paper or electronic documents. Gabel says a workflow or Human Capital Management (HCM) system would help them to put this information in a repository that the BI system could then organize the information in a usable way for HR.

Gabel feels that the information they gather by hand now is useful for management to make decisions but that the process of gathering it is time consuming and some information is missed. Gabel also said that if a BI system was implemented in HR it would need to add concrete value, be easy to use, and be flexible enough to add future data needs not known yet.

Analysis of HR Knowledge Management Technology Issues

What is HR doing well?

Repositories

HR has three systems that allow them to use central repository data to facilitate the work they do for DU. The first system is the Applicant Tracking system. This system was implemented in July and tracks tasks associated perspective employees. Some of the tasks tracked include putting a job description in the system, approving the job description, making the job available to perspective employees, accepting applications for the job, sending perspective applicants to the hiring manager, and taking the job description down when it is filled. This process was long and cumbersome before the Applicant Tracking system was implemented. Since the previous process took such a long time, valid candidates were not available by the time

their application was approved. This employee repository makes the potential employee's

information available to all DU employees involved in the hiring process and good job

candidates may be contacted sooner for possible job offers.

The second system is the Training and Development's (T&D) online registration. The

central repository tracks all T&D courses, and people that take the courses. The online

registration is available to all DU employees taking courses through HR. This system has saved

the HR employees from having to input all this data by hand into Excel spreadsheets. The

system runs reports that are used in the Balanced Scorecard report to show that HR is reaching

employees with required training classes.

The last system HR uses is Banner, which is the same system all of DU uses. The

difference between Banner and the other two systems is that the University Technology Service

(UTS) employees control Banner. HR may use Banner to some extent but is limited into what

they are allowed to do in the system. Basic employee information is tracked in Banner, and HR

may run queries and reports to access this information. Both the previous systems interact with

Banner to share the employee information between the systems.

Communities of Practice (CoP)

HR does well with the technology available to them in the CoP area. HR stays in contact

with the employees of DU through one of the main CoP groups, the HR Liaisons. This group

meets quarterly to become familiar with HR practices or policies and then the liaisons share that

with their department's employees. Since HR had a small number of employees, the liaisons

make it possible to reach many people who would not otherwise get the help they need in a

timely manner.

ATIG is a process group mutually formed by all of the Business & Financial Affairs (BFA) departments to help track technologies throughout the departments. HR's Organizational Effectiveness area that Gabel heads was instrumental in helping to form this group. The purpose of the group is to form a community where technology ideas are shared and then used collectively where possible. This group meets monthly face-to-face but sub groups also use email to correspond on technology issues in between meetings. Before this group was formed, everyone made technology decisions on their own and sometimes wasted time and money on projects they did not need or duplicated efforts others had already done.

The BFA webgroup was formed to begin to bring some consistency to the BFA department's websites. The group meets monthly to discuss best practice issues for the websites and share ideas for improvements to the websites. Before this group started meeting everyone had varying ideas and designs for the websites. The OE department started this group and the effort to standardize the BFA websites to help employees evaluate the usability and performance of their online information and processes.

Continuous Learning (CL)

HR has two main areas for CL, one is the face-to-face training program and the other is the online learning courses through Skillsoft. Both of these programs are good alternatives for employees to get CL. The face-to-face training courses organized by HR often involve managers from other departments. One example is the Workplace Law sessions that all DU managers have to take. These sessions help managers to learn how to manage better and how to handle various situations. Other sessions like PRDS help people to manage their careers. The training offered varies and helps employees in their jobs as well as their lives.

The second online training through Skillsoft offers many self-study courses that employees may take at their leisure. Some managers allow employees to take classes as part of their career development. Employees may even receive certificates if they take four courses in a concentrated area of training courses.

Business Intelligence (BI)

Most BI information that HR has is tallied by hand. The various facts gathered for BI is helpful for the Balanced Scorecard reports that are due quarterly and yearly. The information gathered helps HR give the information about how well they are serving the employees to the Vice Chancellor of BFA. The Balanced Scorecard reports help HR and all the BFA departments determine where they are succeeding and where they still need to perform better.

What could HR do better?

HR could do many things to improve efficiency and effectiveness for DU's employees. The following is a discussion of areas where HR could do better in serving its clients, the employees of DU, as well as the work performed in HR.

Repositories

HR is lacking in the area of Repositories. As Gabel mentioned they do have the University system called Banner that houses quite a bit of information about everyone associated with DU, including the students. However, Banner is not an HR repository system and gaining access to the information in a usable format is not easy. Therefore, it would be good for HR to have a central repository system that was shareable by all of HR and one that is able to interface with Banner. Access to various areas of the repository could be given through setting up roles, so that only the appropriate personnel have access to private information. This might include

giving employees access to benefit screens. A workflow system or Human Capital Management (HCM) system would be very beneficial for HR. This type of management system would:

- Streamline the HR systems, business processes, and technologies to reduce operational costs. HCM provides a rapid return on investment through reduced operational costs and increased efficiency, by connecting people to delivered business processes, automating common administrative tasks, and leveraging industry best practices.

- HCM deploys employee and manager self-service to facilitate increased efficiencies, reduced costs, and a paperless environment. HCM self-service applications deploy secure, role-based information and transactions across the enterprise.

- HCM aligns the workforce with corporate goals and objectives. It leverages entire workforce to drive organizational performance through workforce analytics and organizational development applications that cultivate learning and manage performance.

Tracking all this information in one place would save HR countless hours in how they perform these activities now, if they are even able to track these tasks.

Communities of Practice (CoP)

In general, HR does a good job of CoP, but two systems that would make it easier for employees to want to participate would be a Learning Management System (LMS) and an Intranet. These systems could allow HR and employees to have personal areas to track learning and other items of interest. There is a lot of information that could be put on an Intranet that is not good to put on the Internet website that HR has right now. A secure area that employees log

in to would be helpful for disseminating information and participating in online user groups or blogs.

The Community Intelligence Labs website states the following reasons for why CoPs deliver value (1997):

- Developing and spreading better practices faster

- Connecting "islands of knowledge" into self-organizing, knowledge sharing networks of professional communities

- Feeding and being fed by web-based repositories of both proven solutions and new approaches

- Fostering cross-functional and cross-divisional collaboration

- Increasing your members' ability to initiate and contribute to projects across organizational boundaries

Continuous Learning (CL)

CL is another area that HR is doing well, but could do better. With a Learning Management System (LMS), HR could track so many more activities than they are able to do now. The main system they have now is an online registration and then face-to-face training. With and LMS they could track the complete learning experience of the employee. The LMS has accounts for employees that keep track of all the learning they take, how well they did, and then that information may be used to reward the employee. The LMS also tracks everything about the courses that are offered. It also tracks any assessments or evaluations of those courses that the employee takes. This type of system would greatly improve the efficiency of how HR tracks the employee and the learning courses they take.

Assessing the importance of a learning management system is summed up by the Chief Learning Officer website where it states "a learning management system provides the platform for the enterprise's online learning environment by enabling the management, delivery and tracking of blended learning (i.e., online and traditional classroom) for employees, stakeholders and customers. A robust LMS should integrate with other departments, such as human resources, accounting and e-commerce, so administrative and supervisory tasks can be streamlined and automated and the overall cost and impact of education can be tracked and quantified." (Jan. 2003)

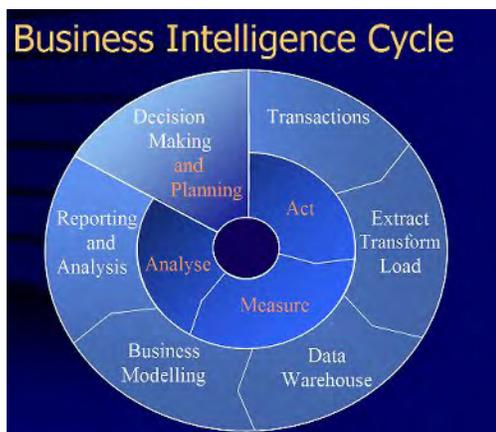## *Business Intelligence (BI)*

Figure 4. BI picture obtained from The Information Systems Business Intelligence consultancy services website at http://www.isa.co.uk/bi_portal.htm

For HR this area could be the most beneficial area. A BI system that mines the information HR already has would be a good start. Many areas that HR works in relate to taking care of the employees and the employees information, so a system that would track the information would be helpful. The HCM system mentioned above when fully implemented mines the information that HR needs everyday and it does it in real-time. There is no waiting until someone can tabulate it by hand. The ClearView Business Intelligence Ltd website states

"that to survive and prosper in business today, managers and other decision makers need to understand every aspect of their organization. A primary objective of Business Intelligence is to identify the best ways to improve business performance so that target levels are achieved and profits increased. By providing the right information to the right people at the right time, business intelligence enables companies to make better decisions faster than ever before." (2003)
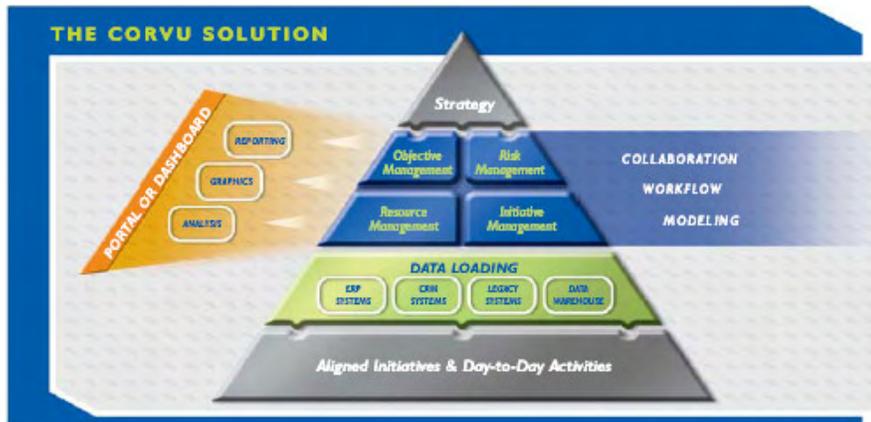

Figure 5. HCM picture obtained from The CorVu Corporation website at
http://www.corvu.com/public/usgov_hcms.htm

A HCM system could be the one stop shop for HR at DU. The HCM could potentially help HR's functions evolve to what DU employees and administration expect it to, such as:

- Attract, retain and motivate the best employees.

- Collaborate with managers to understand their needs, and then develop a sound strategy that supports DU's goals.

- Act as leaders and strategic advisers, delivering a plan based on real knowledge, not guesswork.

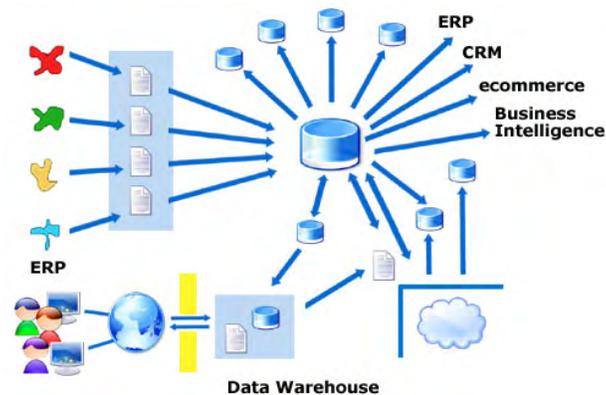- Plan for changing market conditions instead of merely reacting to them.

Conclusion

Figure 6. KMT picture obtained from Digital Consulting & Software Services, Inc. website at

http://www.dcss.com/ProfessionalServices/databasedesign.asp

Overall, HR has a mixture of new and old KMT that they use in their department. HR

has implemented some new KMT systems, such as, the Applicant Tracking system. This could

have been an opportunity to implement a full HCM system. That system would have served the

whole HR department by tracking an employee from the time they apply to when they retire. By

buying only one piece of a HCM, HR has limited itself to only the tracking of the application

process.

At the end of the interview, I asked Gabel her opinion about the following statement from

the Atos Origin website, which discusses the enabling of BI:

"Enabling BI inside organizations can appear simple, but behind the scenes is a complex

network of people, processes, and systems. Synchronizing these three areas is critical to

improving the success of BI initiatives. Optimizing the people element requires knowledge of the

roles and responsibilities of individuals. Understanding the connections between the individual's

role, their reporting structure, and their involvement in various business processes (i.e. order-to-

fulfillment) will provide the framework for linking individuals back to clearly defined objectives

and associated key performance indicators (KPI). This people-and-process-based approach will help build a blueprint that links executive strategy, initiatives, and goals to process and performance improvement requirements." (2001)

Gabel made the following points:

- Organizational Effectiveness is people processing technology as compared to the statement.

- People category of relationships and networks are a key part of the people, processes, and systems.

- In addition to synchronizing, aligning strategic goals is vital.

The effectiveness and efficiency for HR could mean tying together performance metrics, agency initiatives, human capital requirements, forecasting, the budgeting process, and agency mission. I think the statement speaks a great deal, to how HR could link the people, and processes together with a HCM system to improve the effectiveness and efficiency of the department and DU as a whole.

Overall Recommendation

1. Implement a Human Capital Management (HCM) system that includes the
   employee workflow areas that fully integrate all of HR's functions:

   a. Workforce Planning

      i. Resource Demand Planning

      ii. Position Management

      iii. Project Planning

      iv. Costing & Forecasting

      v. Time & Attendance

   b. Talent Acquisition

      i. Hiring Management

      ii. Online Job Bank

      iii. Career Planning

      iv. Background Checking

   c. Workforce Performance

      i. Performance Management

      ii. Goals Management

      iii. Competency Management

   d. Learning & Development

      i. Skills Assessment

      ii. 360 Multi-Source Feedback

      iii. Learning Management (LMS)

      iv. Learning Content Management (LCMS)

   v. Learning Content Library

   vi. Succession Planning

 e. Enterprise Compensation

   i. Compensation Management

   ii. Long-term Incentive Planning

   iii. Salary Planning

   iv. Incentive & Reward Management

 f. Workforce Collaboration

   i. Skill Search

   ii. e-Meetings

   iii. Instant Messaging

   iv. Portal Management

   v. Survey Management

   vi. Content Management

 g. Workforce Analytics

   i. Dynamic Reporting

   ii. Analytics

   iii. Industry Benchmarking

 h. HR Management

   i. HRMS

   ii. Finance (AP/AR/General Ledger)

   iii. Vendor Management

   iv. Incident Tracking

Recommendation Review

Figure 7. Recommendation picture obtained from Southbank Consulting website at

http://www.southbank.co.uk/about/contact.htm

The recommendation that I gave to HR (Gabel) was that a HCM system would be of great value in allowing everyone to share the information needed to perform the various jobs in HR. Gabel already knew that a system like a HCM system would be a good answer for the information flow issues that HR experiences today. Gabel said that implementing a system like this would take quite a while as new technologies that are expensive need to be justified. Gabel also said that the new ATIG process would help with the process to obtain a system like a HCM. The ATIG process will help ensure that when HR does implement a HCM system that it will be fully researched and the right product is selected. Gabel really likes the idea of what an HCM system offers if implemented correctly. Right now HR does a lot by hand or within shared documents. Gabel thinks this type of system would allow HR to follow the employee from when they apply for a job until they retire or leave DU.

Appendix A

Interview Questions

Please note: Answer the questions as best as you can. There are six sections that include general KM issues, the four emerging KM areas, and a concluding statement. Thank you for your time and help.

General KM Issues

1. How does HR define KM?
2. How do data, information and knowledge affect HR's operations and performance?
3. What role does information and knowledge have in HR?
4. Is the customer a part of your KM initiative? Why or why not and how do they fit in?
5. In your opinion, does HR systematically determine what data, information and knowledge adds-value to your stakeholders' interests?

Repository Model

1. Does HR capture knowledge in an external repository in order to organize it by some framework in an effort to discover similar knowledge? Technologies that support this external effort are imaging systems, databases, workflow technologies, document management systems using clustering techniques.
2. Does HR identify knowledge in an internally, usually explicit, relevant to a particular user's need? This method involves mapping a particular problem, situation, or a point of interest against the body of knowledge already captured through externally.
3. Does HR match a knowledge seeker with the best source of knowledge (usually tacit) by tracking the experience and interest of individuals and groups of individuals? Some technologies that facilitate these processes are groupware, intranets, workflow, and document management systems.
4. In your opinion, what is the critical success factors directly related to the success of HR's Repository Model initiative(s)?
5. In your opinion, do you think it is worthwhile to implement repository model efforts?

Communities of Practice (CoP)

1. Has HR developed any CoP? If so, what value do you think it has added to HR?
2. What types of CoPs does HR have? This could include a strategic organizational theme aligned with a strategic imperative, a core organizational competency, or a common development need tailored to individual needs.
3. In your opinion, what are the critical success factors for a CoP within HR?
4. In your opinion, why do you feel it would be good or bad to have or implement CoPs within HR?
5. What is your opinion about the following statement? "What sets a CoP apart from teams is that CoPs are defined by knowledge rather than task. Further, a community life cycle is determined by the value it creates for its members, not by project deadlines."

Continuous Learning (CL)

1. Does HR promote a continuous learning environment?
2. What types of continuous learning tools does HR offer?
3. Does HR actively seek evaluation or feedback of the programs it offers? If so, what does HR do with that evaluation or feedback?
4. How do you think HR can ensure that it provides a successful workplace learning culture?
5. What is your opinion about the following statement? "If the learner can view life (including work) as a "learning program", then the learner can continue to learn from almost everything in life. As a result, the learner continues to expand his or her capacity for living, including working."

Business Intelligence (BI)

1. Does the BI initiative map knowledge in HR?
2. Is the BI initiative in HR aligned with and supportive of the corporate strategic goals?
3. What are the strategic objectives of HR's BI initiative?
4. In your opinion, what are the requirements of a BI imitative in HR?
5. Does HR have a way to capture all aspects of Human Capital Management (HCM)?
6. In your opinion what are the key components of a successful BI initiative/process?
7. What is your opinion about the following statement? "All phases of the employee life cycle present opportunities to make strategic decisions, increase efficiency and performance, and align corporate objectives with individual goals. It starts with talent acquisition, continues through "onboarding," managing job performance, training and education, employee collaboration, executive succession, compensation decisions, and "offboarding.""

Conclusion

Do you agree or disagree with the following statement:
"Enabling BI inside organizations can appear simple, but behind the scenes is a complex network of people, processes, and systems. Synchronizing these three areas is critical to improving the success of BI initiatives. Optimizing the people element requires knowledge of the roles and responsibilities of individuals. Understanding the connections between the individual's role, their reporting structure, and their involvement in various business processes (i.e. order-to-fulfillment) will provide the framework for linking individuals back to clearly defined objectives and associated key performance indicators (KPI). This people-and-process-based approach will help build a blueprint that links executive strategy, initiatives, and goals to process and performance improvement requirements." Please expand on your answer.

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