TM.AN: COMMANDING THE POWER OF COLLABORATIVE TASK MANAGEMENT

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Abstract: The fundamental driving force behind any business, no matter of its size is the generation of tasks. The logical grouping of these tasks into business processes   has cause the phenomenal development of software packages to meet the need of natural internal business evolution, which is evident by the mass number of business applications available on the market today. However this paper will try to single out a specific area that has not received as great amount of application development attention, due to its in-between nature. The TM.AN (Task Management and Administrative Notification) application focuses on this unlit area by developing/outlining the needed features to encourage a more task oriented culture, thereby exploiting its applied benefits. This paper, describes the concepts that inspired the development of TM.AN such as the lack of information/progress sharing between employees and the design principles for instance the development of a structure to capture performance information from employee, task and customer entities.

1 INTRODUCTION

Often the greatest challenges are found in the most smallest and ordinary of things as can be seen from cases like the splitting of an atom. This false initial presentation is not confined to a single area of science or business and thus can be seen in many other situations in life. Therefore the process of breaking down the simple activity of task creation, assignment and progress exchange into a structured system that can be utilized along with other resources such as customer information, is an equally challenging endeavor to pursue, as long as it possesses the capability of generating a viable and effective management output. However certain valid justifications are necessary to strengthen the case for focusing development efforts that will be presented herein.

1.1 The Problem of Task Generation

Today most establishments have a growing customer base that on a daily basis calls for tasks to be assigned to team leaders and team members sparked off either by internal or external customers, thus in an intensive business arena these tasks assigned amount to a staggering number. Often the content is far too lengthy or unclear where the requested task can be easily classified by a standard category. These task categories are common and are usually a daily business activity e.g. customer follow-up, where the goal can be summarized into a few direct power sentences i.e. a task statement.

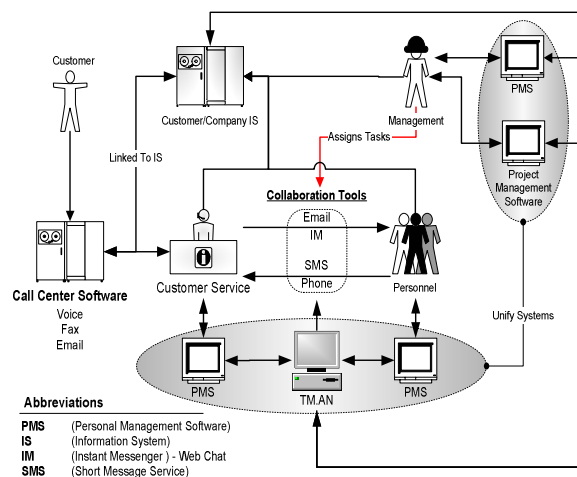If tasks are assigned verbally without directly following it up with documentation procedures, this

Figure 1: Niche Location

can intern lead to the task being forgotten or backlogged when remembered. In addition when weekly and monthlymeetings occur, whose main purpose is to determine the progress of each task assigned, a common occurrence is that a team member notes down their tasks either in a calendar book, notepad or electronic application and thereby prioritizes their tasks accordingly. Succeeding this event is a separation of work focus by team members i.e. each member will go off to tackle a certain issue divided and agreed upon. This consequently causes a deficiency in structured progress information exchange as no one team member will be fully aware to the extent of the other's progress including the manager, unless a manual request for an update transpires or an information system is available that is capable of tracking the progress. This is an issue because the process of manually requesting an update is a time consuming checkup activity that engulfs the time and effort of two individuals rather than one. Hence the problem lies here in the ineffective interchange of information among team members. There is no fix set of protocols to convey a task request, nor is there any structured mechanism in which tracking of tasks can take place. To add to the complexity of things, the nature of an email oriented culture has further extended the difficulty in the management of tasks as the distinction between direct task requests, notification of events, inquiries, memos, etc. merge into a single routine of divide and conquer via manually filtering/sorting email messages. Note that the above observations are taken from the environment analysis of the FedEx, but are logically applicable to many other companies. Summing it up best is Figure 1, where it highlights the area that requires unification, namely the integration of PMS (Personal Management Software) of the various employees into a single structured unit. Drawing the attention to project management software one of the most heavily utilized functions is to define milestones (high level tasks) that can be used as a master template for the creation of sub tasks. By basing sub tasks on a master template it can be directly linked to it and further assist high level management to view and track the progress of reaching the high level goals via examining the micro events (tasks) occurring to make this milestone possible. What is important to remember is that every employee must be freely able to create as many tasks as they deem necessary to achieve their goal, thus enabling flexibility and the conception of duty delegation. In addition, there should be a mechanism for management to dynamically set the amount (percentage) that one employee is contributing to the milestone. Of course the unified system must be able to utilize some if not
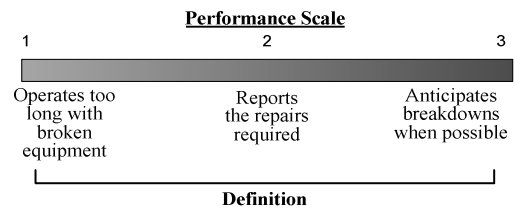

Figure 2: Defining a Perform Scale for Tasks

all of the collaboration tools available to the company's disposal. An interesting point to note about figure 1 is that the various software e.g. PMS information stored are cloaked from the internal human resources that suggests that information is not necessarily shared, but rather exported when required. Lastly call center software packages nowadays act as the first point of communication between the customer and the company, offering the unification of all nodes of interaction such as phone, email, web chat, etc. which along with customer data and history can greatly assist the service level produced. Regardless of this assistance the backend aftermath of the customer interaction or service request is not structured and this very much highlights the issue that TM.AN is aiming to bolster. Therefore one can sum up figure 1 by stating that front end interactions with customers, which typically is brief can be unified fairly easily, however the back end request for resolution remains dispersed and uni-encapsulated i.e. each employee masks their activities from one another, due in part to the natural way of human interaction and work focus.

2 LITERATURE REVIEW

Under this section two main goals are put forth, firstly to clearly classify the product category to which TM.AN belongs to, thereby enabling all relevant alternative solutions to be extracted and secondly to evaluate the effectiveness of task data as a solid measurement for employee performance.

2.1 Product Category Fitting (PCF)

The first question that one should ask about an application is the category to which it resides under. To answer this, lets examine the most fundamental element of TM.AN, that is a task. A task can be simply a self-related event which is part of one's personal or professional daily life, where the task can be either self generated or created by another person. Furthermore tasks can be assigned to more than one person, depending on the complexity and the time constraints applied. Thus if the area for

tasks that are self generated and for a personal use are examined (personal event managing software), found will be thousands of applications that offers this service effectively, along with a wide range of rich features. However the application is not aimed at self generated and personal tasks. The next type of tasks is those generated from a single or small group of sources (project manager/team) and assigned to lower levels of employees for execution. Here again one will find a vast number of project management software applications that cover a vast range of complex concepts. Then it is obvious that the subject application is aimed for professional use, where tasks are created and assigned by different individuals (not self generated) meaning that it is a collaboration tool. An immediate argument that occurs is that email is a collaboration tool which satisfies any task type and is immensely successful. However if one is categorical, email is a generic collaboration tool that is an instant messaging and document carrying software, which suffers from a few flaws. The first and most common flaw is overflow of input, in that an employee of an email oriented company is nowadays bombarded with sometimes hundreds of email messages per day, which may have nothing to do with any task at all. Second, emails have a send and forget policy where once the email is sent the tracking of it is thereby eliminated, thus an email system totally lacks structure in the area of progress tracking. Lastly email systems have no inbuilt mechanism to truly distinguish emails apart, so that it can represent them in a categorized form. This being the case, email is not a powerful collaboration tool, but a potent communication relaying tool.

Back to the topic at hand the categorization of the application. Vessey and Sravanapudi (Vessey I. et al., 1995) in analyzing CASE tools as a collaborative technology identified three collaborative supporting architectures taskware, teamware and groupware. Where the nature of taskware outlines a standalone task without the possibility of sharing it with others (self generated and contained). Teamware is the sharing of work resources or products and groupware being an act of expression through communication with others about the work undertaken. At first glance one might jump ahead and select the teamware category, but sharing a working resource for example design focuses on teamware diagrams such as DFDs (Data Flow Diagrams) or ERDs (Entity Relationship Diagrams) and facilitates a venue to communicate about design changes and decisions. Therefore the groupware category lends itself as the most suitable classification of the subject application.

An interesting point brought about by Henderson and Cooprider (Vessey I. et al., 1995) is that tasks

should have an anonymous feedback rating system to comment on the efficiency of work performed i.e. the task's performance. Additionally noted as favorable essentials contained in a groupware based application, are the inclusion of direct email messaging in case of immediate notification requirements and calendar management. That should comprise of both individual calendar management functions as well as the sharing of fellow co-worker's events i.e. events can be posted into authorized calendar books of others. As for the email notification facility, it is already present in the application, thus providing a feedback option in terms of rating a task, is a simple and quickly achievable feature.

2.2 Task as a Performance Measurement

The performance efficiency of an employee will be judged based upon the information extrapolated from task data, which emphasizes on the importance of the task entity being a strong indication of performance. Then it is only logical to briefly investigate if the task and related information stored encompasses enough data to be exploited as a solid measurement of an employee's performance or is the task measurement only a partial quantifier that requires readouts from other assessments to achieve a comprehensive overall employee appraisal.

Hannesson (Harkins S.S. et al., 2001) recommended that a performance appraisal covers the activities which an employee performs as part of their daily routine and more importantly forms a clear definition for each type of task executed, as to what is meant by a good job. Thus to define how well a job is performed a scale should be composed that rates the performance, in which every value on that scale has a simple and clear meaning to it. Hannesson (Harkins S.S. et al., 2001) gave a job example that entails basic equipment maintenance
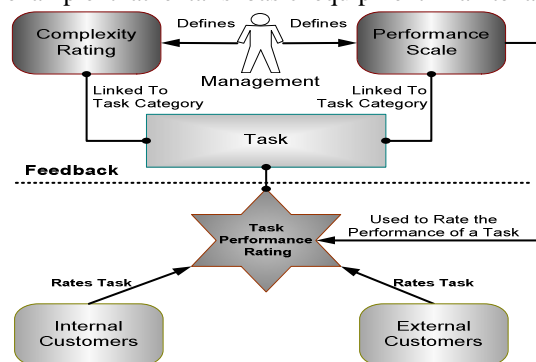

Figure 3: Required Elements for Task Performance

and applied a scale of one to three (poor, average and outstanding performance respectively) and

defined the scale illustrated in figure 2. Further more Hannesson also provided a sample monthly job review sheet that composed of columns: task of job, when it is to be completed, task done and comments. These columns used in the review sheet have a resemblance to the data fields stored in the database of TM.AN. On the other hand Kirksey's (Kirksey J. et al., 1994) article begs to differ, stating that in order for an appraisal to be truly valid a so called 360° perspective is needed, in which it has a pool of 'feedback from both internal and external customers to receive a broader, more accurate perspective on employees'. The main difference between the 360° appraisal and the more traditional type is a dictatorship style, where the process is manned by a single person (the supervisor) that acts as the judge, jury and executioner. However the 360° appraisal casts a full jury, which can compose of all entities that the employee interacts with such as external customers and internal customers (top management, peers, departments, etc.). Therefore this achieves a more dynamic and fair appraisal as the sources of feedback are diverse, covering all angles and perspectives, thus leaving no position for an employee to hide and hence rendering it a more valid rating system. The important issues to note about this type of appraisal is that it offers peer rather than manager feedback (stronger), encourages more self-development, assists in correlating ones own perceptions of performance with the actual and decentralizes an employee's focus on satisfying the manager alone, thereby refocusing it on the internal/external customers that now will contribute to their performance evaluation. It is clear that a task can act as a standalone performance measure in a certain frame of mind. However the contradicting arguments expressed that this type of task based single evaluator assessment, is ineffective at gaining a factual rating of an employee's performance. Regardless, the application stores enough data about a task to satisfy Hannesson's recommendation for evaluation, but lacks one key element that is the weighting of a selected task. Thus one could put in place a weighting to each main category listed in the DB (Database), in which a three point scaling system can be used as mentioned by Hannesson, but stored will be the definitions defined on the scale. This then could take the shape of the supervisor editing these main categories and assigning the appropriate values to it. Therefore when a rating is required these definitions can be extracted and formulated into a visual three point grading bar, which is exemplified by the upper portion of figure 3. With regards to Kirksey's (Kirksey J. et al., 1994) point of offering a broader range of feedback inputs, if we compare it to Vessey and Sravanapudi's (Vessey I. et al., 1995) comment on offering a

feedback rating implementation, essentially the two are referring to the same issue of incorporating a feedback mechanism into a groupware application. The only difference is that Kirksey suggested the sources of feedback, internal and external customers. Having said that, this then highlights the importance of a feedback mechanism as being a key contributor to a groupware application's effectiveness and success. So if we briefly review TM.AN's core features for the previous key element, it offers the ability to assign tasks that come from "internal customers" and at the same time the tasks created are directly related to "external customers", but missing from it is the feedback mechanism, however the structure of the mechanism i.e. the data and logical relationships are already in place within the system. Therefore all that is required is an additional process for feedback creation, submitting and storing, thereby achieving the necessary extended data to create and map out a so called 360° appraisal, as is partially illustrated by the lower portion of figure 3. One could envision that the external customer's feedback takes the shape of offering monthly the opportunity to rate the performance of services received. In which the customer could have an interface that displays all of the tasks related to the organization and therewith submits their feedback on the desired tasks. The points mentioned previously have not as of yet been incorporated into the application, however the current structure of the application does not prevent these new features highlighted from being easily molded in. Neither will its induction cause the existing system composition to be modified in a reconstruction sense, but instead in more additional building block fashion.

3 DRIVING MOTIVATIONS FOR CREATION

The FedEx who TM.AN was intended for supplies software solutions to their existing and new customers. In which the process of after sales service support, lacks true documentation and customer interaction visibility and thus the construction of TM.AN was deemed necessary to tackle four key areas in this regard:

1) Interaction Transparency **2)** Performance Monitoring **3)** Progress & Info Exchange **4)** Activity Documentation. Where interaction transparency is the ability of any of the concerned parties being able to view and log the various task interactions occurring between a single employee and the customer, even at the most simplest level. One of the key advantages of adopting an interaction

transparency policy is that each employee is consciously aware as their manager can be, of the activity's performance with respect to handling the designated duties and the effective documentation of them. Secondly, by putting forth an interaction transparency policy, employees are forcefully encouraged to collaborate, as by doing so they are effectively placing a record of occurred communications that can be used as proof of transpired events and also permits one to generate fairly automatically a daily report for activities performed. However the strongest advantage is that Indirect Customer Interactions (ICI) taking place are not shielded from other involved employees. As if this occurs, the customer may feel a lack of internal communication within the company as each person has no idea of his/her previous interaction. Even employees themselves may duplicate work or extend work effort as their lacks task transparency and information of ICIs.

To give a better understanding of the concept of interaction transparency or in the case of figure 4 the lack of it, depicted are some of the pressing issues that can arise. To begin with figure 4 illustrates that each employee uni-encapsulates five pieces of information, most of which are kept protected by the individual. One of the points which figure 4 attempts to exemplify is that much of what an individual knows and does (some of which is processing of tasks) is masked from other key individuals, whose involvement maybe instrumental in the success of their own activities. This in a personal and private sense is understandable and often desired, however it is not an attractive quality when the information stored by the employee can be better utilized when shared. Furthermore, even when information is shared by a person, it is done so with control and limitations being impose over the extracted content. Thus any additional information needed is still housed under the individual's knowledge pool and to access it direct contact is necessary, which may span over several communication instances. This inevitably leads to a single point of knowledge failure, if that person becomes unavailable. Moving on, if one draws attention to the lower portion of figure 4, put forth is the obvious notion that customers and co-workers can directly modify the required tasks that an employee has to perform, given that a task authorization type relationship has been formed. In which the modification process occurs via a communication tool such as fax, phone and email or via face-to-face contact. An important point to note about figure 4 is that every interaction that takes place whether it maybe from a co-worker or customer to one employee is shielded information i.e. the other concerned parties may not know about the interaction's occurrence as it passes through a

single person and thus the responsibility for the escalation and conveying of that task is solely reliant on one person. Finally, if one is to permit interaction transparency the needed scenario is simply to move the information elements outside the limited scope of an individual and place it into the public arena, whilst maintaining the same logical security that would be applied by that individual. Tools like Knowledge Based System (KBS) can move what has been learnt to the outside arena as can tools in regards to document sharing, however most tools with a task organization role tend to keep what a person is doing in the same encapsulated state, only improving and not moving the process (one of the goals of TM.AN) outside a single knowledge pool.
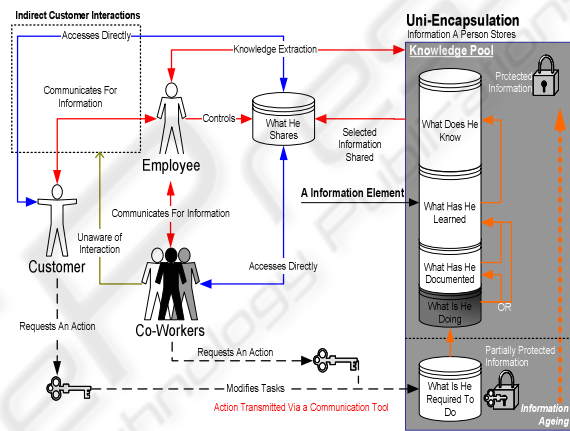

Figure 4: Lack of Interaction Transparency

Lastly as information aging occurs, it only seems logical to exploit it at its early stages as one would do a disease and if done so one can easily merge software tools from each of the information elements into a single unified system.

The following area of progress and info exchange examines tasks that involve at least one target person and a task owner, in which required is an effective exchange of collaboration information and the event's progress as it matures to completion. The key point to note is that exchanges maybe synchronous or asynchronous and thus it is important for asynchronous exchanges to be stored in a centralized location that is universally accessible. As it will allow the parties involved to check on the progress of the task, even if the person needed is unavailable, however even when the exchanges are synchronous miscommunications or forgetfulness can lead to issues. Hence in either case exchanges need to be logged centrally to maintain clarity of the progress made. Performance monitoring is the exploitation of the data stored about tasks in order to extract performance based information. If one cross references this with data of

employees and customers, further interesting inferences can be extracted from this connection. Such examples include viewing a customer utilization of the workforce, viewing the team's effort and outcomes, comparing employee compatibility with one another, etc. From a manager's perspective by having an effective performance monitoring system in place, achievable is a current mapping out of interactions taking place, an improved sensitivity to trends among the different entities in the organization and accountability for activities performed or not. Activity documentation refers simply to the structure documentation of all interactions especially of a customer type that has two phases activity instantiation and wrap-up duties i.e. fifty percent or more of the required activity actions are performed during the first phase and the rest of the duties are performed afterwards in an unknown timeframe. Activity documentation is needed in order for interaction transparency, performance monitoring and progress/info exchange to be achievable. Any interaction that can justify a task creation should be carried out, as even a few sentences of documentation can turn very useful later on when unseen circumstances occur. Also by documenting activities it provides an instant action statement that can assist an employee to execute routinely requested reports, gauge performance and even formulate a calendar outline. It is interesting to note the mentioned information that one can extract from so called simple task data, which is clearly quiet useful on many fronts. This indicates that the documentation of activities performed in relation to customer and employee data has a strong base for data mining. Having said that one can infer that an application which documents and assists in the carrying through of customer requests is a highly desirable notion, because thousands of businesses have customers to support and this support intern generates internally numerous forms of informal/formal task assignment that merges into one solid result, a complete customer resolution. However in most cases this internal resolution is either unstructured or lacks efficiency in one of the mentioned areas. Hence if one can develop an open and modular system that can handle a generic task assignment features, integrate it with customer data and meet the mentioned items, then a definite and large market is open for the taking.

4 CONCLUSION

One might get the impression from reading the previous passages that TM.AN is an application of some great nature, but the fact of the matter it is not,

as its peak of maturity has not even been touched. Potentially the most interesting thing discovered was that most developers have skipped this issue of managing and sharing task data by either creating applications that are meant for high level project management environments or by developing fine task organizational tools. One of the most important notions presented was expressed by figure four as it attempted to abstract the idea that in order to achieve sharing of what someone knows and has learnt, it can be done so via exploiting the point of origin (the assignment of tasks), thereby enabling one to access the above information elements, allowing the unification/integration of these elements by an intelligent application. Since it has been established that the process of task handling is important (processing) and the management deliverables are useful (output), no mention has been made to the inputting process for tasks, which should logically also hold a potential benefit. The communication tool used to relay task data have a high beneficial value, but is outside the scope of this paper. However it is useful to touch on it lightly, to further strengthen the importance of task management. Bellotti et al. (Bellotti V. et al., 2003) in their research confirmed that email and task management are frequently in separable, sometimes being indistinguishable and always a priceless resource, which needs a strong set of streamlining measurements to be applied to the email environment. The main point suggested by Bellotti et al. is that email is the primary communication tool used today in most businesses as the prime input source to a task management system, due to its widespread and accessible nature. Hence this all points to developing a task management system that stores beneficial and utilizable data, whose chief concern is a strong development, centered on task, customer and employee data. Where the development process should maintain three key points, increasing management's knowledge of interactions occurring through performance information, facilitate a task transparency environment and streamline the inputting process, by focusing on the available communication tools, giving priority to email.

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