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Research paper

Robust Information Control Panel

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Abstract

The knowledge worker in today's digital enterprise utilizes multiple systems to perform day to day business activities. One of the most regularly performed tasks is to view the alerting and updates that occur across multiple systems. In a digital complex network that comprises several different systems, the knowledge worker ends up spending a significant amount of time in toggling across multiple systems to view the alerting. Apart from viewing alerting, the knowledge worker also performs many one-click tasks.
A integrate view of information's and alerting from multiple systems could help in saving the knowledge worker the burden of lap across multiple systems to view information while upgrading the overall knowledge worker experience and productivity levels.
The Robust Information Control Panel intends to ease the life of a knowledge worker by providing view of the information from multiple systems. In addition to providing a personalized integrated view, the A Robust Information Control Panel also provides the ability to perform basic actions on information such as approvals thereby leading to increased knowledge worker productivity.

Keywords: *Intranet; Integrate Alerting; Knowledge Worker efficiency; Real-time information; Workplace Productivity*

1. Introduction

Digital Workplaces consist of fairly ultra-modern core-systems such as Sales systems, Finance systems, Human Resources system apart from non-core business systems such as E-mail and other collaboration systems.
Most of these systems typically have their individual information systems. When the information is spread across multiple systems, the knowledge worker will have to endlessly switch across each system in order to view information and complete a particular task.
This paper explores the opportunities around providing the user with a personalized synth view of the information spread across multiple system and the associated benefits.

2. Present Situation

In today's enterprises, business functions are performed with the help of multiple IT systems. Each of these systems delivers multiple information to the users. In order to perceive the information integrated personalized integrated information, the users will need to switch windows regularly or login to multiple systems. Market research indicates that computer users at work change windows or check e-mail or other programs nearly 37 times an hour. In fact, 45% of knowledge workers work only 15 minutes or less without getting interrupted, and 53% waste at least one hour a day due to all types of distractions. (1)
The switching across multiple windows is due to the disconnectedness among the systems.
Each system has its own information system and for a knowledge worker within an enterprise to be able to view information, the knowledge worker will have to jump across multiple systems. This has an impact on impact on the productivity. (2)
Present digital environments can be characterized by certain traits with respect to information

Isolated Sources of Informations	Isolated systems and tools. Most of these systems have their single alerting systems
Infor-mation's Overburden	The number of information that are delivered in certain systems are extremely high and no effective refine mechanism for
Perceive only information's	Information's are uni-directional and knowledge worker will not be able to transact on information
No infor-mation Distribute	Information's can be distributed or delegate to the other knowledge worker only by login into single system

Fig 1: Present situation in digital workplace

Presently the information is not refine and presented to the knowledge worker in a personalized and dependent manner based on their role, prior actions, preferences, information flags, information relationships and behavior.
The information's are perceived only and there is no powerful mechanism to distribute the information from the information perceives itself with other co-workers or group members.

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3. Robust Information

An achievable path to address the challenges in handling high number of information from multiple systems by providing

1. An Integrate Perceive of information spread across multiple systems.
2. A powerful information refine and recommending structure to provide a personalized set of high priority information.
3. An ability to perform bi-directional communication through information.
4. An ability to distribute information with other knowledge worker

Integrate Perceive of Informations	All the information's are provided in a single control panel perceive such that the knowledge workers need not toggle across systems
Actual Informations View	Actual information's will be delivered.
Bi-directional Capability	Capability for knowledge workers to act on information from within the control panel
Easy distribute of Informations	• Knowledge workers on the move can distribute the control panel with other knowledge workers, can perceive information's.

Fig 2: Outcome to the challenges in Present Digital workplace

3.1 Integrate Perceive of Information Spread across Multiple Systems

The information can be extracted from isolated business systems such as Customer Relationship Management Systems, Human Resources Systems, Finance Systems, Email systems, Instant information system, Document managing systems and presents all the information in a single unified view to the knowledge worker. All the information is provided in a single control panel view (Robust information control panel).

3.2 Information Filtering and Proposed Mechanism for Personalized View of information

While presenting the information from multiple systems to the knowledge worker, the typical challenge from a knowledge worker perspective is in handling information overload. A information proposed mechanism is prioritizes and presents a subset of the all information. This mechanism can be implemented using a proposed engine (3) that performs

1. Action based recommendation
2. Mutual Filtering
3. Rule Based Recommendation.
4. Pattern Based recommendation.
5. Role based recommendation.

3.2.1. Action based Recommendation

Depending on the action of the knowledge worker, the information can be classified. The action of the knowledge worker can be captured based on historical data. Depending on the data, the information can be presented. For instance, when the knowledge worker tends to click on the approval related information at a specific time of the day, may be towards the close of business, then such information is typically presented to the knowledge worker during this time.

3.2.2. Mutual Filtering

The information can also be presented to the knowledge worker, depending on the protocol set for knowledge workers of similar profile. For instance, the information priority list could be similar for a knowledge worker with the role of a project manager as well as a knowledge worker who is a program manager. This similarity can be utilized if specific Rules for the information is not set.

3.2.3. Rule-based Recommendation

Knowledge worker might have specific rules for prioritizing information. Example, knowledge worker might set information from customers are of top priority than other information. Using the defined protocol, the information are prioritized and delivered accordingly.
By default enterprises can also set protocol based on certain attributes. For instance a knowledge worker is associated with a particular location and a particular domain, then information relating to that particular location and domain takes precedence.

3.2.4. Pattern-based Recommendation

The knowledge worker will have the option to select a particular pattern that will increase the context of information delivery. For instance, if the knowledge worker is on travel, the pattern for Travel can be selected. This will enable the system to deliver the information as per a typical knowledge worker's priorities during travel. Similarly, if the knowledge worker is viewing the information post work hours, the pattern will help deliver the information that the knowledge worker prefers to view post work hours. The applicable pattern would be

a) Work Hour pattern
b) Holiday pattern
c) Travel pattern
d) Meeting Pattern

3.2.5. Role-Based Recommendation

Depending on the act of the knowledge worker, the information can be prioritized. For instance, for information from set Information Feeds, if the act of the person is – Human Resource Manager, then information classified as Human Resources takes a higher priority. If the act is that of a Sales Manager, then Customer and location related sales information from Information Feeds take a higher precedence.

3.3 Bi-Directional Transmission through Information

Certain information requires single-click actions based on which the information is sent across to the various systems. Such action oriented information is presented to the knowledge worker within the Robust Information Control Panel. Single-click actions can include actions such as approvals and rejections, acceptance and rejections of meeting invites.

3.4 Distribute information with Other Knowledge Workers

Knowledge workers on the move can distribute the information with other knowledge workers, such that the knowledge worker can view the information. For instance if a Sales executive is away from work due to travel or customer meetings, the executive

should be in a position to distribute the control panel to their peer or subordinate, such that the business happens without any impact due to the executive's absence.
Knowledge worker can also choose and pick authorities for delegating one or more actionable information. In order to achieve this, the underlying system should also have capability to accept such task/information delegations. For instance, if a Senior Manager delegates the request for travel approval from information control panel to a Manager; the Manager should have similar access and authorization privileges to travel systems. Also the access and authorization privileges should be set for this travel request only. This dynamic provisioning for access and authorization should be enabled at real time from Robust Information Control.

4. Analytical View

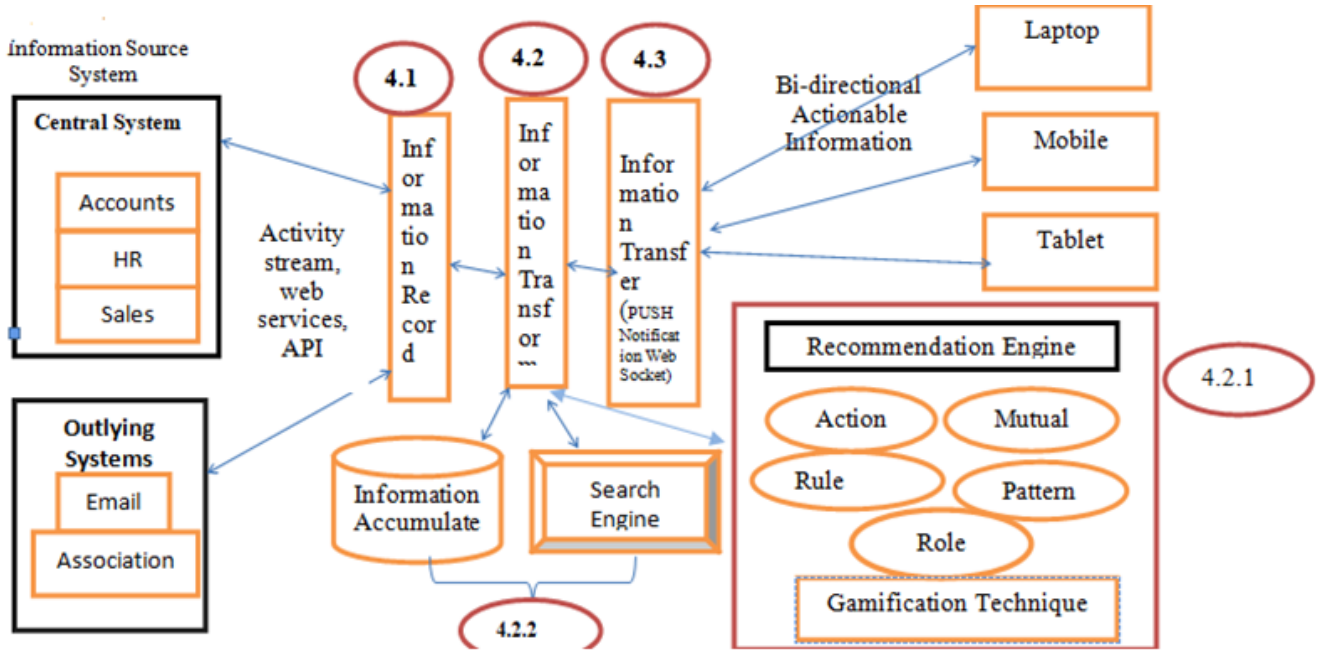

Fig. 3: depicts a representative Analytical architecture of Robust Information Control Panel. This is a basic representation and can be further expanded based on requirements.

4.1 Record

Sources for messages can be from Core business systems such as Sales systems, Finance systems, Human Resources system and from non-Core systems such as E-mail, collaboration systems. Sources can be within and outside of the enterprise.
The Message source systems may have different ways of exposing messages such as Web services and Activity streams (4). Some of the source systems provide direct API to consume messages.
Message capture process have custom built component to capture messages from various Message source systems and route messages to message processes.
A publish subscribe mechanism (5) wherein the messages are pulled from various systems and then routed to Message process components for prioritization of messages is adapted

4.2. Processing

The messages from the message capture component are integrated and stored in the local storage. These messages are then prioritized based on various factors such as pre-set rules, user role, and user age behavior and based on mutual filtering (6) principles.
Message process provides the ability to delegate messages to other users. It also provides the ability to share the messages to select users.
Message process facilitates transactions which require bi-directional flow of messages and actions, for example, knowledge worker actions such as approvals and rejections from Adaptive Messaging Dashboard.

4.2.1. Refine and Proposed

Information process, processes information based on priority by employing a proposed engine. This proposed engine prioritizes information based on protocol that are built using a combination of Knowledge worker roles, personalization preferences, mutual filtering information and analytics information. In addition
a Gamification engine will also be integrated, which enables protocol based on Gamification mechanism for better Knowledge worker adoption of Robust Information control panel.

4.2.2 Information Searching and Accumulate

Information transform also integrates with information accumulate and search engines. The information accumulate, accumulates data such as Knowledge worker information preferences, analytics information and archive information. The search engines provide ability to search for information that is available within the information accumulator.

4.3. Provide / Transfer

Information delivery process delivers the prioritized information in a standard format that can be consumed across different devices such as Tablets, Mobile, Laptop and platforms.
Information delivery process has mechanism for push notification. This employs publish-subscribe mechanism and Web sockets that simply forward server communication to knowledge worker's browser instantly without having knowledge worker to refresh.

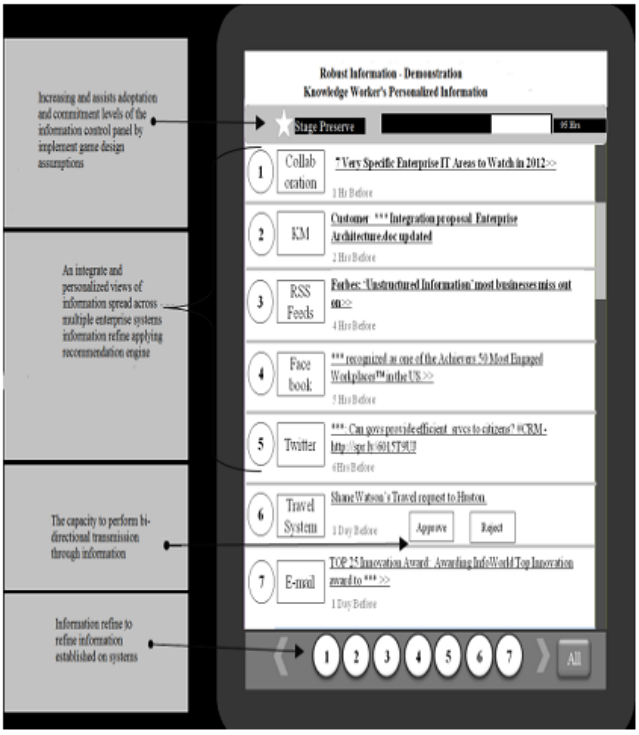

Fig 4: Robust Information Control Panel and its Features

5. Applying Gamification Techniques to Sustain User Commitment

Gamification is the technique of applying game-design thinking to business contexts. Gamification is primarily aimed at increasing the commitment levels, which could yield better business results. Increasing usage levels of the Robust Information Control pane can be achieved using Gamification (7) Techniques. As the primary intent of the Robust Information Control pane is to increase the productivity levels by saving time, game design techniques (8) such as Attainment, Advancement and Marker are applied. For instance the following illustration depicts Gamification in Robust Information control panel.

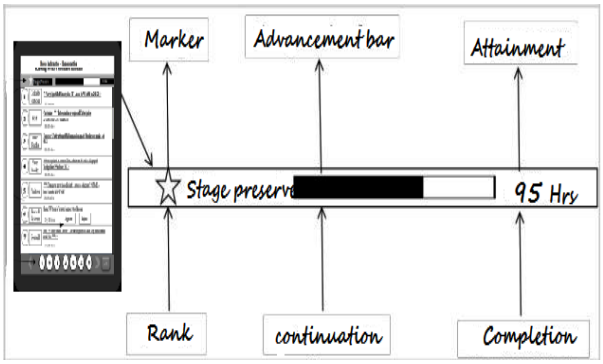

Fig 5: Using Gamification to increase user commitment

1. Marker: Marker indicates status. Markers are the digital rewards credited to a knowledge worker based on the knowledge worker reaching a particular level of activity.
2. Advancement: The advancement bar indicates the cumulative time saved using the Robust Information Control pane and can aid in understanding the value of utilizing the control panel while increasing the commitment levels.
3. Attainment**:** It represents the total time saved as a value.

Depending on the audience, specific Gamification tech- niques can be applied to increase and sustain adoption and commitment levels.

6. Pivotal Analysis

6.1 Regularity

Regularity for update and notification are common requirements for information and reflects the relevance and prioritization of the updated information. Not all information needs to be real time, nor dynamic. Careful consideration should be given to the segmentation of these requirements to ensure that available resources and relevant information are processed judiciously and communicated according to need and environmental capability.

6.2 Execution Approach

With the introduction of information automation and the potential for a real time information requirement, execution sizing and infrastructure resource capability should be part of the planning and design phase of an robust information implementation.

6.3 Role-based Security Access Model

Role based security access models commonly rely on a reliable application profile management system based on a role assignment and credentials that can be addressed by single sign on capability. The facilitation of integrated information requires information interfaces provided through web services or application program interfaces. Profile management integration between platforms and security architectures should be evaluated to ensure that robust information is a viable option in the target environment. The robust information automation model can include automated information via triggers that meet defined thresholds. The triggers can be achieved through information platform configuration parameters and based on the level of criticality and prioritization.

6.4 Event/Action Oriented

Information notifications may be based on event triggers and requires an action by the target recipient based on role. Events can be passive and unidirectional or asynchronous in nature without the requirement for intervention. Action oriented notifications may rely on a queuing and accounting mechanisms such as information-Oriented Middleware **(9)**.

In addition, the action oriented notifications may require or provide the opportunity for a response, therefore establishing a bi-directional flow through a request-response model. The transformation of information between downstream systems and target applications may be configured to adapt to the requirements of the originating applications. The Advanced information Queuing Protocol (AMQP) **(10)** is an emerging standard that defines the protocol and formats used in the information server and client to facilitate interoperability. AMQP provides a flexible, open standard application layer and is considered a wire level protocol for routing, including common information methods like request-response.. Regardless of the standard selected to support an robust information model, flexible and integrated interface protocols are part of the design and planning phases of an robust information model.

7. Conclusion

Although, organizations make information available immediately and remotely, every knowledge worker has distinct challenges in consuming it. Creating conditions for easy information consumption is one of the critical areas to be focused to improve knowledge worker commitment and business productivity. Devising such a conduit for trap, evaluate, transformation and broadcasting relevant and actionable information across multiple human

touch points such as web, mobile, laptops will be a vital for the enterprise. In order to take advantage of the available information in a timely manner, enterprises must relook and remodel its information delivery strategy in such a way that it the relevant information in a more personalized, contextual and timely manner eventually leading towards more efficient business actions and decisions.

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