A fog-founded addition podium for Staff Management tenders

[1]**Name of 1st RADHIKA SHUKLA**
[1]Designation of 1st Assistant Professor
[1]Name of Department of 1st Faculty of Computer Science & Applications
[1]Name of organization of 1st Gokul Global University, Sidhpur, Patan, Gujarat – India

Abstract

WFM is primarily focused on managing the scheduling, pay, regulatory compliance, and other essential aspects of the hourly workforce. These workers are employed across various industries, including retail, hospitality, healthcare, manufacturing, logistics, and e-commerce. Within the WFM industry, there are several leading products that cater to the needs of organizations of different sizes and industries. While there are some standard configurable solutions in the HCM and WFM space, there is no single standard solution that effectively integrates WFM with HCM and other associated systems. Many clients end up creating in-house applications to meet their specific needs, which can have a significant impact on their Total Cost of Ownership. These in-house applications tend to be rigid in nature, and clients may face many challenges in making further enhancements to keep integrations up-to-date with new product features.

Keywords: Workforce Management, enterprise application integration, integration framework, integration platform as a service, Pipebox.

INTRODUCTION

The field of Software Engineering is currently undergoing a significant transformation, as Model-Driven Engineering has emerged as a vital aspect of the process. This approach prioritizes the use of models throughout the software development lifecycle, enabling engineers to concentrate on pertinent aspects of a system while disregarding irrelevant details. Models serve as abstractions that streamline the process, allowing for a more efficient and effective development cycle. This emphasis on modeling is revolutionizing the field and has the potential to significantly impact the future of software engineering.

As mentioned in the abstract, there is no standard, generic and configurable solution that can seamlessly interoperate with different WFM, HCM and other associated systems. This solution intends to address that problem statement.

Workforce data can be characterized as data about employees, their jobs and roles, assignments, locations, labor cost codes, pay grades, skills, feedback, work histories and other applicable data elements.

Advanced workforce systems also require data about sales, other transaction metrics, location information and a lot of other organizational information imperative to WFM solution.

A) Typically, in a customer's complex IT landscape, a lot of development effort is needed to source, transform and load the various data elements into the target workforce management system.
B) When such data types change, these need to be transmitted to the workforce systems quickly, accurately for relevant contexts.
C) A lot of transformation is needed before they can adapt to a target workforce management system.
D) Developing such integration can take anywhere between 6- 12-month time frame and development costs that can range between USD 250,000 to USD 1 million if built from scratch. That adds to the customers total cost of ownership for new integration and changes and affects implementation schedule.
E) Workforce management as a discipline is growing phenomenally, as employee engagement, labor cost optimization and productivity improvements are constantly being refined and reformed. The need for newer data elements is on the rise for such target workforce management systems

F) Some of the leading workforce management systems have tied up with Cloud based integrators to offer tools for such transformations to be developed.
a) They are specific to certain products only. There is no generic platform that can talk with many different target Workforce management product systems.

b) Such platforms provide development tools and procedures. Even if these reduce effort in coding, it still requires significant effort to create all the different logical structures and transformation logic bit by bit.

c) They are significantly costly. Such integration platforms do not provide error handling capabilities for the limitations that are introduced either by their integrating system or by the workforce platform that the transformed data is sent over to.

The solution provides integration and transformation capabilities for key workforce data elements as needed by a Workforce Management System. The solution address more than one entity data transformation and can act as single source of information for all WFM needs.

The invention addresses the below objectives:

a) Addresses ~80% of HR personnel business scenarios out of the box - role and job changes, transfers, borrowing assignments, combination scenarios with multiple HR changes going in together, skills and certifications changes and company specific attributes
b) that are required to forecast workforce labor
c) Helps define organizations, stores and manages their on-boarding
d) Helps define custom corporate workforce information such as certifications, skills and other data elements
e) This system is designed to integrate with various WFM systems such as Kronos, BlueYonder, Infor WFM and others.
f) This system provides business user configurable settings to build the "pipes" in a matter of days. Compared to a 6- 12-month time frame and development costs that can range between USD 250,000to USD 1 million if built from scratch, this product optimizes duration and budget
g) The system is offered on a SaaS as well as an On-premise model. This even further reduces the administrative and financial hassles of using a system that is similar in nature.
h) They are not designed to address unique types of data elements such as trees and graphs which are modern data models required for solving modern day workforce themes
i) The product offers a unique Configurable & Scalable Rule Framework that is designed to address data effective tree like data structures
j) This product offers unique capabilities to synchronize meta data information between the destination Workforce system and itself thereby reducing the need to maintain the platform. It can sense the solution personality of a workforce system and define the various structural aspects of its solution
k) Error handling and healing - The solution offers an ability to detect errored conditions with the target workforce system and suggest, auto heal some of those problems based on how the resolutions have been defined.

RELATED WORK

This section presents a review of technical and scientific literature, encompassing proposals from both industry and academia. To assess the industry's offerings, we consulted the 2015 Gartner Magic Quadrant, which highlights the top providers of Enterprise Integration Platforms as Services (iPaaS) in the market, showcasing the latest technologies. We also conducted a review of academic proposals by searching the SCOPUS and DBLP databases. Our aim was to identify integration platforms with either complete supporting tools or conceptual proposals that could be experimented with.

Industry Proposal

Gartner, Inc. is a highly respected and globally recognized company that specializes in providing valuable insights and information on technology usage and trends worldwide. Their reports have been known to influence critical technology and business decisions across various industries. One of their most recent reports, the 2015 Magic Quadrant21, focuses on assessing providers of Enterprise Integration Platforms as Services (iPaaS) based on two essential factors: ability to execute and completeness of vision.

In evaluating the ability to execute, Gartner assesses providers based on their capability to deliver platforms that meet software engineers' expectations and drive project success. Meanwhile, in evaluating completeness of vision, the providers are assessed based on their ability to support emerging requirements, lead the market, and grow a profitable and self-sustaining business.

The providers are classified into four categories based on their performance: niche players, visionaries, challengers, and leaders. Niche players are relatively new or small companies that have excellent technology and satisfied customers. Visionaries, on the other hand, understand the specific requirements of the iPaaS market and innovate with new market strategies. Challengers are those who have been in the market for several years and have many clients but may have a limited perspective on market evolution. Finally, leaders are those with thousands of clients, a solid reputation, notable market presence, and proven and functionally rich platforms, with regular releases to address emerging requirements.

In this regard, Gartner has identified some of the platforms classified as leaders, which we will briefly present here. Boomi is an iPaaS that supports integration application processes between cloud platforms, software-as-a-service applications, and on-premise systems.

Boomi offers a visual designer with pre-built connectors that allow users to build integration processes with minimal coding. Solutions are deployed into a dynamic runtime engine, and Boomi has centralized management for all integration solutions, whether deployed on a cloud or on-premise. Additionally, Boomi provides a tool to test and monitor the process while running, including connectors for well-known applications such as Dropbox or Jira, as well as standard connectors such as FTP or HTTP. Overall, Boomi is an excellent choice for businesses looking for an iPaaS solution that prioritizes efficient integration, user-friendliness, and flexibility.

Pipebox is a highly advanced cloud-based web development tool that enables users to create, execute, and monitor integration solutions using the industry-leading platform. This innovative technology is the result of a collaborative effort between academia and industry, aimed at creating a revolutionary tool that leverages the principles of Model-Driven Architecture. The tool was initially developed as an academic project with a different name by the first authors, who were supported by a team of dedicated researchers. It has since been acquired by investors and rebranded as Pipebox. The contextual toolbar is designed to facilitate ease of use, with a list of available commands for each interface, and a help command available in every toolbar except for the start interface.

Our comprehensive platform provides a range of modules to facilitate integration solutions. One of these modules is the Environment module, where servers can be created on either the Pipebox Cloud or the customer's own machine, ensuring the necessary resources are available for running integration solutions. The Credentials module enables secure storage of authentication data for various services. Meanwhile, the Solutions module is the heart of our proposal, storing integration solutions that can be designed, debugged, run, and monitored. One can use the Templates module to store reusable solutions as starting points for new integration solutions. The Connectors module allows access to available connectors, which can be purchased or disabled as needed. The Users module manages user accounts and access, while the Alerts module provides notifications of important events. Finally, the Configuration module enables additional user profile details. The Solutions module is a crucial aspect of our platform, offering a comprehensive list of available integration solutions, including their name, state, creation date, creator, and associated environment. The design status indicates whether the solution is valid, modified and needs redeployment, or locked for another user. The running status indicates whether the solution is currently running. Users can choose to create a solution from scratch or begin with a predefined template using the contextual toolbar.

The toolbar also facilitates the editing, moving, and copying of solutions, providing a seamless user experience.

Detailed Description of The Invention:

A) User Interface

The product features a friendly user interface for a typical admin work. This user interface gives control right to the Business Users to define various derived WFM data elements, map Source elements to corresponding WFM elements, searchable form to get give employee details interfaced to WFM system. Additionally, it provides facility to define certain onetime setup data elements required for integration with WFM system. In a typical implementation, there is a dependency on IT Support team for such activities and usually adds a turnaround time for easy admin tasks.

B) Configurable data model for comparison

This product offers configurable data model for all such fields. All employee fields which need to account for employee data change can be configured. No separate coding is required to take care of any data change condition.

C) Configurable Rule Engine

Data transformation for a WFM system is all about "Rules" – it can be business rules defining how to transform particular record or can be driven by the target WFM system in scope. This product offers flexible, scalable and Configurable Rule Engine. Product implementer can virtually create and define any business scenario with the employee fields and mathematical operators provided in the Product UI. While the product delivers some rules out-of-the-box, rule can also be extended for client's unique requirements.

D) Scalable processing unit for high pay loads

Hence it is highly scalable for higher loads.

E) Flexible output modes

Traditionally file formats have been used for any integration with WFM system. API integration is growing popularity these days due to ease, frequency etc. This product has facility to integrate via both file and API based connections.

F) Expansive list of data attributes

It is a one stop shop for all types of Workforce data attributes- organization/team information, employee/workforce information, sales/business operation information required for sound workforce decisions, pay related attributes.
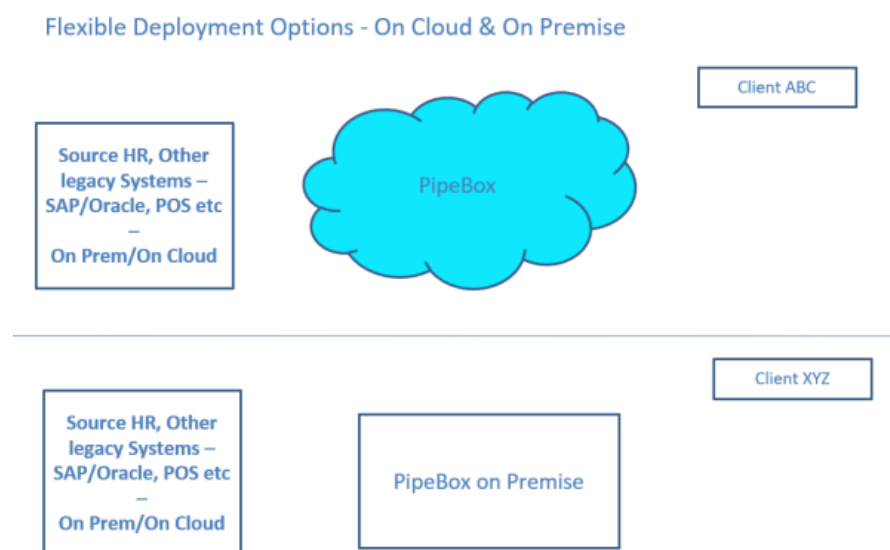

Fig. depicts that the solution can be deployed on cloud or on premise as per client requirements

One Stop Solution for All WFM Needs

Information:
Employee Data
    Personal
    Contact
    Assignment/Job
    Employment
    Contractual
    Organizational

Above Store Users
Store Data
    New Store
    Store Updates
Store Hours
    New Store Hours
    Hours updates
Store Labor config

PipeBox accept and transform all kind of WFM data

PipeBox

Errortron

Self Healing Framework for integration errors
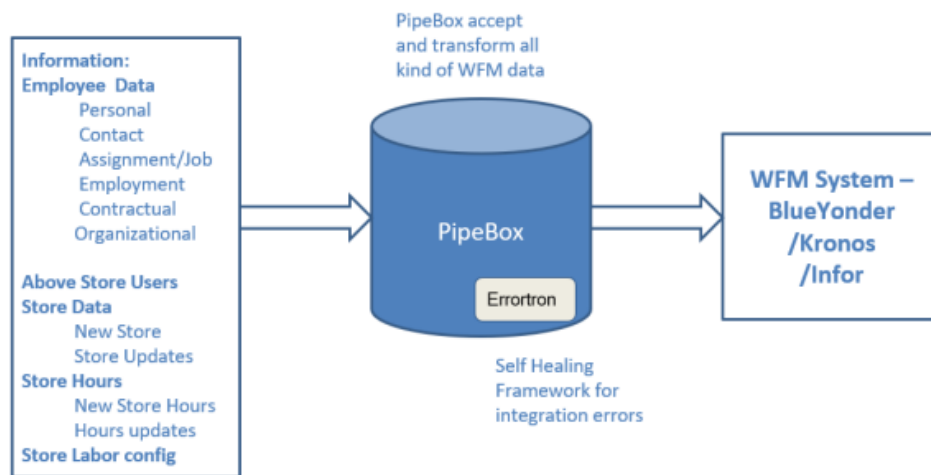
WFM System – BlueYonder /Kronos /Infor

Fig. depicts that the solution acts as one stop solution for client's all WFM needs. It not only caters to employee data transformation but also has in built facility for interfacing new store, store hours etc data in required data format.

Conclusion

Businesses constantly look for ways to enhance their processes and expand their operations. To support these efforts, they often rely on software applications that they either develop in-house or acquire from third-party vendors. However, this can result in a complex mix of applications that are built on different technologies, run on various operating systems, and have distinct data models.

A Workforce data readiness middleware that can continuously manage the information that can accept HR and workforce information from HCM systems. A business layer that can consume and transform such data in its domain model and generate outputs that available third-party Workforce Management Systems can consume. A system that can minimize the need for client organizations to design complex Integration systems with time and effort. Historically, these applications were not designed with integration in mind, which can cause significant challenges when trying to consolidate and utilize data across multiple systems.

References

1. ADP ,workforce Management- Optimization, productivity to reduce the workplace risks. https://www.adp.com/resources/articles-and-insights/articles/w/what-is-workforcemanagement.aspx#:~:text=Workforce%20management%20(WFM)%20is%20the,optimize%20pr oductivity%20 and%20reduce%20risk.
2. Forbes, Why Workforce Management is very important to improve efficiency and productivity. https://www.forbes.com/advisor/business/whatworkforcemanagement/#:~:text=WFM%20is%20important% 20because%20it,goals%2C%20while%20also%20improving %20efficiency.
3. Miller Joaquin, Mukerji Jishnu. MDA Guide Version 1.0.1. Needham, Massachusetts, EUA:Object Management Group; 2003. https://www.omg.org/mda/mda_files/Cephas_MDA_Fast_Guide.pdf
4. Boomi iPaaS solutions & tools for cloud-connected business; 2015. https://boomi.com/ Accessed May 21, 2015.
5. Platform-Cloud-data-Integration https://www.informatica.com/products/cloud-data-integration.html Accessed May 21, 2015.
6. Unleash the transformative power of APIs and integration Jitterbit; 2015. https://www.jitterbit.com Accessed February 12, 2015.
7. Azure integration services, microsoft azure; 2015. https://azure.microsoft.com/en-us/product-categories/integration/. Accessed May 20, 2015.

8. MuleSoft, integration platform for connecting SaaS and enterprise applications; 2015. https://www.mulesoft.com/ Accessed February 10, 2015.

9. Application integration and API management oracle; 2015. https://cloud.oracle.com/integration Accessed March 11, 2015.