

System Analysis Program Development (SAP) in Enterprise

Muhammad Amir Jamil Jamlus, Ikmal Khairulezuan

Faculty of Computing, Universiti Teknologi Malaysia

¹amirjamil@graduate.utm.my

²ikmal-@graduate.utm.my

Abstract - This paper presents to the reader the SAP that nowadays many organizations use for Enterprise Information Systems. This paper will discuss what SAP is and what it does for business. This paper will also explore the different products SAP offers its customers and how it benefits them. Through this discussion, we hope readers can know the importance of SAP and how it helps to increase the efficiency of the organization's business models. This paper records the study of System Analysis Program Development (SAP) in the enterprise by looking into some of the well-known products like SAP S/4HANA Cloud and SAP BTP. The objective here is to look into the features of the products and understand their uses and how they can help improve organizations' business models and operations. This is achieved from hands-on trials and tests from the product's free trials provided. Tests include exploring the accessibility, functionality, and efficiency. Results show that both SAP S/4HANA and SAP BTP hold to their reputation of being accessible, functional, and efficient in executing tasks related to business requirements. To conclude we found both products from SAP to be useful and efficient from our tests and explorations and we see how both of these can help businesses around the world to thrive.

Keywords - SAP, ERP, SAP S/4HANA, SAP S/4HANA cloud, SAP BTP.

I . Introduction

When we talk about the organization, the goal of all organizations is to make a profit and have better management in all sectors including internal and external management to make sure the organization can adapt to the often changing atmosphere and can last longer. By doing so, organizations need to have better tools to help them in making their organization performance efficient and productive. System Analysis Program Development was the original name of SAP, which was later abbreviated to SAP [1]. In 1972 [1], the German company's name, Systemanalyse Programmentwicklung, which translates to "System Analysis

Program Development," served as the foundation for its name. SAP is a software company, originally providing software as a service with its first products SAP R/2 and SAP R/3 [1]. SAP produces one of the most significant software tools that helps organizations to centralize all of their data and integrate it as it will be useful for employees to see real-time data changes. Many businesses still use traditional business models with decentralized data management, which means that each business function stores its data in a separate database. This makes it difficult for employees to obtain additional information. This also causes data redundancy across multiple departments, increasing IT storage costs and data out of date as many data are not linked to each other database. SAP ERP introduces centralized data management, giving multiple business functions a unified view of the truth. This allows businesses to better manage complex business processes by giving employees across departments real-time access to the entire enterprise. As a result, businesses can improve productivity, customer experiences, management speed, operational efficiency, and ultimately grow. [1] SAP software provides ten solutions: (1) ERP and Finance, (2) CRM and Customer Experience, (3) Network and Spend Management, (4) Digital Supply Chain, (5) HR and People Engagement, (6) Experience Management, (7) Business Technology Platform, (8) Digital Transformation, (9) Small and Midsize Enterprise, (10) Industry Solutions.

II . Background

A. SAP S/4HANA

Today, apart from other numerous products that SAP offers, SAP S/4HANA is one of their flagship products, is the global standard when it comes to enterprise resource planning software (ERP) and is the market leader, serving 20,000 subscribers worldwide as of the 2nd quarter of 2022 [2]. Since 2017, SAP as a company has improvised its SAP S/4HANA offerings by adding key features (e.g (1) machine learning capabilities, (2) transportation management functionality) [4]

and also includes intelligent technology enhancement for various fields (e.g (1) artificial intelligence, (2) blockchain, (3) Internet of Things). By the year 2021, SAP will be developing an embedded human resources line of business and has expanded the industry-specific specialties of SAP S/4HANA which now covers industries like (1) energy and natural resources, (2) service industries, (3) consumer industries, (4) discrete industries and (5) financial services [4]. Taking a deeper look into one of the most well-known features of SAP S/4HANA Cloud which is the SAP S/4HANA Finance, we realize this feature is very robust and integrated which makes it very good at handling (1) financial accounting, (2) controlling, (3) treasury and risk management, (4) financial planning, (5) financial close and (6) consolidation [3]. SAP S/4HANA Finance is actually the successor of SAP ERP Financials, boasting a significant amount of upgrades of which are (1) processing and speed upgrades, and (2) analytics and reporting capabilities which are 1800 times faster than the predecessor SAP ERP.

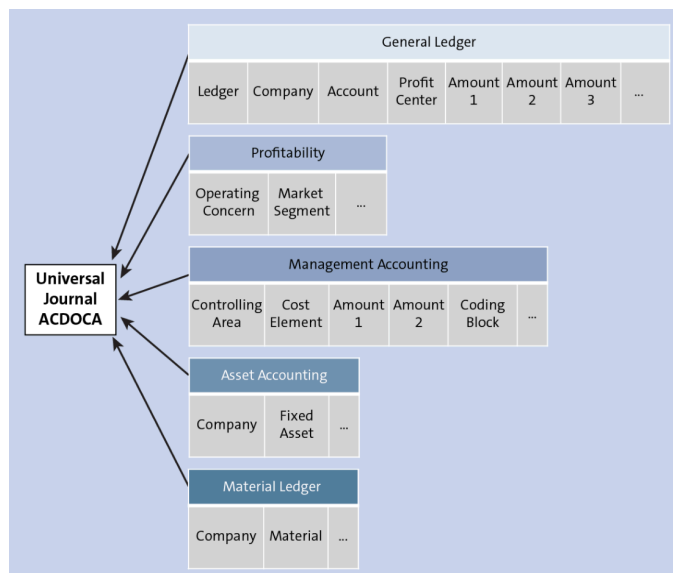


Fig. 1 A graphical representation of SAP S/4HANA Finance system architecture

After acquiring this knowledge we realize that one of the key factors behind the success of SAP S/4HANA software is the active updates SAP is making for the software to allow the software to adapt and improve over time. Additionally, SAP also provides its customers with the flexibility to choose the methods of deployment [4]. First, customers can opt for the on-premise deployment method which translates to the instance of SAP S/4HANA being physically hosted on customers' properties. In addition to that, customers also have the option to host their services on the cloud which can be SAP S/4HANA Cloud or a private cloud [4].

B. SAP Business Technology Platform (BTP)

Next, SAP has another well-known product which is the SAP Business Technology Platform otherwise known as SAP BTP. As compared to other SAP products like SAP HANA Cloud Platform, SAP BTP is quite a young product which was introduced in 2021 [3]. After a more detailed study of the product, we realized that SAP BTP is another brilliant evolution of other SAP products with some of SAP BTP's features being features of its predecessor's products. Based on an article, it is said that SAP has done this purposely to make it easier for customers to access intelligent features from one platform rather than having to hop onto different software [3]. SAP also wanted to constantly improve the offerings of SAP BTP and this was proven when in July 2022 SAP purchased Askdata to help improve AI-related capabilities in SAP BTP. SAP BTP comes in two types of environments which are SAP BTP Neo environment and SAP BTP Cloud Foundry environment where there exist common features between them and some unique features differentiating the two [3]. SAP BTP Neo is relatively more locally focused with access to features from SAP's own data centers and can also act as a gateway for customers to access SAP ERP features. When it comes to SAP BTP Cloud Foundry, the features are more global with its ability to access features from any data centers including the ones provided by hyperscale vendors, e.g. (1) Amazon Web Services, (2) Google Cloud Platform, and (3) Microsoft Azure [3]. SAP BTP is constructed on 4 foundational pillars which are (1) Analytics, (2) Application Development and Integration, (3) Database and Data Management, and (4) Intelligent Technologies. Analytics is the act of exploring data, finding trends, and making actionable plans from the insights. SAP BTP offers a robust platform for analytical tasks, including (1) SAP Analytics Cloud, (2) SAP BusinessObjects BI, (3) SAP Crystal solutions, (4) SAP Data Warehouse Cloud, and (5) SAP BW/4HANA [3]. Application Development and Integration allows for custom applications and extensions creation according to business requirements which includes the acceleration of development and innovation of cloud applications. SAP BTP being a language-agnostic platform, developers can enjoy the freedom of quite many programming languages which are (1) ABAP, (2) Java, (3) Node.js, (4) Ruby, (5) Go, (6) Python, (7) PHP, and (8) Groovy [3]. We also found that SAP Integration Suite allows for SAP BTP applications to run with existing applications or solutions, by facilitating information exchange between the 2 solutions. Database and Data Management provides a solution for data storage, access, processing, and integration. SAP BTP

provides several databases which include (1) SAP Adaptive Server Enterprise (ASE), (2) SAP IQ, (3) SAP HANA, (4) SAP HANA Cloud, and (5) SAP SQL Anywhere. Data processing, data manipulation, and data modeling can also be performed with solutions like (1) SAP Data Intelligence, (2) SAP Information Steward, (3) SAP Data Quality Management, (4) SAP PowerDesigner, (5) SAP Information Lifecycle Management, (6) SAP Landscape Transformation Replication Server, (7) SAP Data Services, and (8) SAP Master Data Governance [5].

SAP BTP Intelligent Technologies pillar focuses on automation and removing redundant tasks to free up time resulting in a more efficient workflow. It explores existing data warehouses for analysis and business insights which can help with tasks like tax assignment and collection.

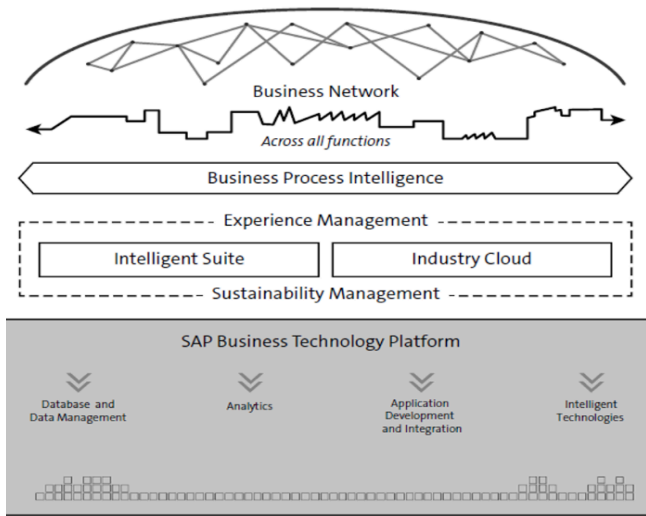


Fig 2 A graphical representation of the 4 pillars of SAP BTP

[5] The SAP BTP Services include (1) ABAP environment, (2) SAP Analytics Cloud, (3) SAP Build Apps, (4) SAP Business Application Studio, (5) SAP Cloud ALM, (6) SAP Conversational AI, (7) SAP Data Intelligence, (8) SAP HANA Cloud, (9) SAP Intelligent RPA and (10) SAP Data Warehouse Cloud.

III. Demo

A. SAP S/4HANA Cloud

In the free trial SAP S/4HANA Cloud, users can explore the different S/4HANA apps, features, and important functionalities of SAP S/4HANA Cloud in a live system. Users can start their trial from the Guided Tours section. On the Guided Tours section, users can find the roles and tasks available for the different business process scenarios (e.g (1) Project Management, (2) Finance, (3) Sourcing & Purchasing,

(4) Sales, (5) Solution Order Management, (6) Subscription Billing, (7) Supply Chain, (8) Asset & Service Management, (9) Extensibility, (10) Enterprise Contract Management).

During the guided tours or users explore the software, some parts of the free trial SAP S/4HANA Cloud have limited access and the action that the user chooses is not part of the service provided in the free trial SAP S/4HANA Cloud. In each interface that users go through in the free trial SAP S/4HANA Cloud, users can find out more about the apps' function and capabilities by switching on the application help on the top right of the screen with a question mark symbol. Other than Guided Tours, users can find more about S/4HANA Cloud in the Learning section which provides (1) Getting Started Guides - general demonstrations that go over some of the fundamental features and navigational ideas of SAP S/4HANA Cloud. Users can explore the SAP Help Portal's comprehensive library of learning resources or locate more guides in the Learning Center, (2) SAP Signavio Process Navigator -A cloud-native service that offers SAP's process portfolio insights and best practices, (3) openSAP Course - training courses of SAP S/4 HANA learning platform. Those users who are looking for detailed updates on the most recent developments in SAP S/4 HANA Cloud can check out the Highlights section to learn more about the latest news and updates about S/4 HANA Cloud software.

B. SAP Business Technology Platform (BTP)

Upon registering for the SAP BTP Cockpit trial version, users are guided to the trial version of the SAP BTP Cockpit trial web application. The way SAP BTP works is by connecting to a database, usually provided by hyperscale vendors e.g. (1) Amazon Web Services, (2) Microsoft Azure (3) Google Cloud. Generally speaking, users are free to connect to the one that best suits their requirements according to the types of vendors or location of the database region. In the case of the trial version, we are given 2 choices of Provider and Region which are Amazon Web Services(AWS) or Microsoft Azure, and US East (VA) or Singapore. Users are also given the choice to create multiple sub-accounts depending on their requirements. Users can utilize SAP BTP by exploring the very large range of product offerings found in the Boosters menu some of which are listed : (1) SAP Build App, (2) SAP Build Code (3) Configure Access to the Authorization Service. For the purpose of this study, we will utilize SAP BTP's potential in creating a mobile application through the use of the SAP Build App booster. In the SAP BTP Cockpit, reach the Booster menu and look for the SAP Build App booster. After SAP checks for credentials, we can now activate and configure our IAS credentials. Upon

completion, SAP will now activate our SAP Build App web application and the admin portal for IAS. We can also refer to the Security menu to manage users and roles. Once the web application of the SAP Build App has finished activation, users will now be greeted with the Lobby page. Here, users are greeted with Learning and Template options which are designed to help first-time users. Users can also view current and past projects. Click Create to begin the application creation process. Here users have access to the tool palette according to their products' requirements with a low code format with the ability to adjust the hardware screen estate according to different types of devices.

IV. Conclusion

A brief idea of System Analysis Program Development (SAP) has been introduced in this paper, including a discussion of SAP definition, function, and product such as SAP S/4HANA Cloud and SAP Business Technology Platform (BTP) that we focus on in this paper. As the industry leader in ERP software, SAP S/4HANA is well-known for its wide feature set and ongoing innovation. SAP gives companies the financial capabilities and deployment options they need to adapt and flourish in the constantly changing digital landscape. One of the top integrated telecommunications companies in the world, Deutsche Telekom [6], uses SAP to implement RISE and supports it with SAP S/4HANA Cloud Private Edition. According to Scott Russell [6], a member of SAP SE's executive board, the investment made by Deutsche Telekom will enable them to gain new capabilities, increase productivity, and gain access to critical insights from across the entire organization, enabling them to react quickly to changes in the market and seize opportunities.

The flexible, unified SAP Business Technology Platform (SAP BTP) was unveiled in 2021 and combines functionality from earlier SAP products. It is built upon four foundational pillars: (1) analytics, (2) application development and integration, (3) database and data management, and (4) intelligent technologies. It also offers two primary environments (Neo and Cloud Foundry) and flexible deployment options. SAP BTP offers a variety of services with an emphasis on improving efficiency and streamlining procedures, such as database management solutions, analytics tools, and intelligent technology features. During the pandemic, Pfizer [7], a multinational pharmaceutical and biotech company, uses SAP BTP to link their processes with real-time data and distribute life-saving vaccines. This method enables them to make sure of any disruptions in the flow; the

volume output of the vaccines can be tracked and decisions can be made faster.

By using SAP, it will improve business processes and performance in today's fast-changing digital world. SAP's platforms, like SAP S/4HANA Cloud and SAP Business Technology Platform (BTP), provide extensive features and flexible deployment options that help businesses quickly respond to market changes, grab opportunities, and seize growth. Using real-time insights to improve decision-making and streamline operations, SAP enables businesses to remain competitive and prosper in the digital age.

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