Cloud**Chase** **Technology**​

Final Project Proposal | March 21, 2023

IST 615 : Cloud Chasers (Jack Dolitsky, Connor Caromile, Joseph Maugeri )

**EXECUTIVE SUMMARY 1**

CloudChase Technology’s period of rapid growth combined with an over reliance on our legacy systems calls our attention to the need to revise our business warehouse architecture. We are aware that as a leading manufacturer of high-tech components, our customer & industry requirements for equitable products come tied to the ISO-9000 operational standards of their production. In order to continue to produce in line with our growing demand, we must be effective in our operational management. The current state of global operational management is suffering several inefficiencies mostly stemming from the structure and capabilities of our legacy enterprise resource planning system. These inefficiencies are most pronounced in the inconsistency of data and visualization availability across plants, the bottleneck of management by the limitations placed on the SAP development team, and the current and prospective total costs of hosting and management. All of these are pressing and difficult to solve issues given the functionality that our SAP NetWeaver 7.0 for ABAP has when hosted by our company. Our team proposes that invest in a furthering of our relationship with SAP software through migrating our entire business warehouse to the SAP S/4 HANA Cloud as we will be more readily able to resolve our current issues and future issues while reducing our costs of ownership. SAP has been a reliable partner in our 20+ year history using their software. As it stands now, SAP has positioned the latest update of the NetWeaver BW to be particularly optimized for hosting in the S/4 HANA Cloud environment. Through a migration to their services, we can enable our SAP development team to have more tools and capabilities allowing them to address underserved plants in our organization more effectively. We can reduce our time spent reporting by enabling the visualizations built by the analytics team to be partitioned and distributed across plants as a function of the Cloud architecture. At our current rate of growth, we would have to invest time planning our hardware expansion with the potential for more downtime because of inaccurate estimates. This can be rectified by the more flexible storage and processing ability of a Cloud Hosted enterprise which will save us money.

**REQUEST FOR FUNDING**

**I. Description and analysis of problem or opportunity**

At CloudChase Technology, we are a company that fabricates complex products which are shipped across the globe. These products are made from screws, circuit boards, software, and compounds and perform highly technical processes that keep people safe when working with hazardous substances or ensure accuracy in scientific tests. CloudChase products go through rigorous testing at various stages of component development during production. Cloud Chase currently uses SAP NetWeaver for ABAP hosted on their mainframe computers in Germany, which is combined to onsite servers hosting HR data, Visualization Data, and Product testing data. There are complexities that have arisen by managing data through the centralized location of Germany, and not everyone is able to have adequate access to the resources and reporting needed to have an efficient supply chain across plants.

**I.I** *Problems experienced by History of Rapid Growth*

  The company rapidly approaches the manpower and hardware power limitations of our current system. In terms of our recent history, we have expanded in the last 10 years from 2 plants to 10 plants. 5 years through that time we estimated we would need an additional 200 TB of storage added to our datacenters to manage the additional plants. However, we did not account properly for the nature in which our company interfaces with this system at large. In the following 5 years, we have had to scramble to acquire additional storage as our operational load increased on our system. We also had to acquire more processing capabilities and intercompany bandwidth to account for the increased traffic being routed into the German plant. As we continue to expand, hire more staff, and develop more product lines, we will need additional resources dedicated to hosting our current environment’s load. Given that our structure is currently a cluster of nodes . . .

**I.II** *Problems stemming from continual use*

With our expansion we were forced at times to use our already imperfect legacy systems to handle a wider variety of information. As a result, there are several deprecated modules, cluttered table indexes, and an overall excess of data existing alongside the information used for production and reporting. Additional fields have been added as we have moved through time to denote our functionality, but they too add to the excess that we house in our system. On top of that, we are only able to provide direct query database access to our German plant. All other plants who also need sophisticated real-time data, must select, and replicate their own information via the SAP GUI presentation. This increases the individual storage requirements for each plant’s own operations and visualizations. This also increases our disaster recovery requirements. Additionally, each plant must divine their own analytics & visualizations in the void of any globally issued dashboards. The analysts who work solely with the SAP GUI interface must exhaust their own abilities before being able to work a reasonable case for an export up to the global team. There are innumerable fields to sift through that add to the time and inefficiency of all plant’s analysts’ work. While there are some components of our current environment that provide for this, we specifically fall short in the ability to build advanced, automated information pipelines that provide plants with the real-time information needed to keep our complex production process supplied and operational.

**I.II** *Problems preparing for the future*

As we continue to see rapid expansion there comes the increased risk for volatility in our expansion, and potentially outgrowing our current budget of resources before it comes time to renew. We have already seen in the last 5 years our record-breaking growth has put additional strain on the staff and resources that manage the ERP. Plants outside of Germany see an increased latency accessing the resources made available to them, and we are unable to optimize the current system any further. Our developers are limited in the capabilities they must preserve the structure of our system through time while also enabling our current production environment the specificity needed.

**II. Business case**

Why would we opt to choose the SAP S/4 HANA cloud over our own mainframe or another cloud provider? At face value we have already invested deeply in a relationship with SAP products and software and would be benefited to continue furthering this relationship by moving from PaaS to IaaS. SAP has recently committed to continuing to optimize our purchased product specifically for their Cloud environment. We would likely be able to save on costs through our currently strong relationship with them and would not need to undertake as much additional training if we chose to partner with them. Of course, if we continue to expand our own resources, we will not need to expand our training requirements. However, we will still leave our system developers with the inability to resolve several issues simply due to the architecture of the current system. Selecting any other cloud provider outside of SAP is unadvisable by our team, due to the current state of our systems and our organization’s trajectory.

**II.I** *Potential inconsistency resolutions*

There are several features available through migration that would enable increased performance for analysts, systems, developers, and auditors. By first choosing to load our required data into the cloud and making it selectively available to our users, we eliminate many redundancies and complexities that any single analyst would experience when accessing and querying our extensive hierarchy of tables. Through the migration our already optimized for the cloud platform would be partnered with features such as AI, Machine Learning, and robotic process automations on top of the tables and modules that it consists of. Through the cockpit we are able to map resources from the legacy system to new fields in the S/4 environment. We can decrease the inconsistencies that we have experienced by re-using historical architecture in ineffective short-term methods. The tool is specifically designed to map, cleanse, and transform years’ worth of data, and we would be in a better position overall and have increased capabilities with our data by using it. (Rajput, K. 2023)

**II.II** *decreased cost of management*

We can decrease our total storage across the company by choosing the right subset of data to migrate and conform to the most current format. This would decrease our disaster recovery policy, if it were not already decreased by outsourcing the hardware, scheduling, and security of it to the vendor. Additionally, SAP can further decrease our hosting costs by load-balancing done on their end. The SAP migration cockpit is a tool designed to allow for staging tables from both SAP and Non-SAP resources, which would help us consolidate our additional software now or in the future if we choose. It may be more optimal for us to migrate the additional resources such as UltiPro after we have acclimated to the new cloud environment. (SAP SE 2022)

**II.III** *Increased capability to SAP developers*

While SAP is truly reputable by continuing to provide feature extensibility to both cloud and on-premise solutions, there are several aspects of development that we are disabling our developers from performing by choosing to continue with our current architecture. They must first rely on the dated systems architecture and the cleanliness of fields to either divine new ones or reuse partially corrupted ones in future applications. Many of the desired features for modern developers are cloud based, and to attract the additional developers we will need, we will want to enable the skills they come equipped with, and expect to use. SAP provides a Cloud Application Programming Model, which contains a community and many proven, verified solutions for developers dealing with large amounts of recurring tasks. When opting for this and any of the services, SAP continues to reinforce the “No-Limits” approach to customization, meaning whatever tools we choose to use are all we will pay for. These tools ultimately improve the efficiency of our developers and our servers, resulting in decreased downtime for updates and better upkeep with feature requests. (SAP SE 2023)

**II.IV** *Increased access to visualizations*

Our current visualization team must work in silos by replicating their plant data locally and producing analytics from it. Those visualizations are then limited to the plant they are produced for, and unable to be repurposed effectively to other plants due to the nature of their construction. By first migrating and organizing our information to a cloud based location, these advanced real time analytics can be reconstructed with the proper fields, and partitioned according to plant. This also improves the accuracy of our current global perspective visualizations, because they would be inherently built from correctly configured plant data. Our current structure is due to the strict security requirements that we already uphold. We would stand to gain improved visualizations through the migration, and an increase in the security of our systems and our data. The replication of data for these visualizations creates an increased attack surface across multiple servers and workstations. Through the availability of cloud information, we could disallow the downloading and exporting already performed and have better control and awareness of what information exists.

**III. Cloud-based solution design**

Our team would elect a Hybrid cloud model, recognizing that some resources may not be able to be brought up at this time, (i.e. UltiPro) We may choose to perform that at a later time given the hybrid solution provided through SAP. The Cloud Migration Cockpit can be reused with any non-SAP system we have, at any time. As such we recommend the use of 4 SAP Cloud services that all work together. The first is SAP Cloud Integration for Data Services. This service integrates data between on-premises servers and cloud servers on a scheduled (batch) basis. The second service is the SAP Cloud Portal Service. This offers the creation of role-based, multi-channel sites to access business apps and content. The third service is SAP Cloud Transportation Management. This service will manage transports of development artifacts and application-specific content. The fourth and final service is SAP S/4 HANA Cloud. With this we will be able to store, process, and federate data in a cloud infrastructure. As time goes on and the company gets more acclimated to the cloud some of these services might no longer be needed such as the SAP Cloud Portal Service and the SAP Cloud Transportation Management service. We would able to still provide an SSO to this environment in that our c(CAP : SAP 2023)

**IV. Financial analysis**

The financial numbers here are estimates based on company size, workload, and data from the US office and Germany HQ. Our plan is to integrate the cloud connecting the US office and Germany first. The analysis was done using the SAP Discovery Centers financial calculator tool. SAP Cloud Integration for Data Services costs EUR 850.00 per month. SAP Cloud Portal Services cost EUR 3,450.00 per month, while SAP Cloud Transportation Management cost EUR 1,800.00 per month. Furthermore, SAP S/4 HANA Cloud cost EUR 14,250.00 per month. Altogether, these services have a total rough estimated cost of EUR 20,350.00 per month. It is worth noting that the company’s current annual revenue is $410,000,000. (*SAP HANA Cloud Capacity Unit Estimator)*

**V. Call for action (why this project should be funded)**

It is especially important this project be funded at the recommended level and no less due to the demands placed on our current system. The relationships that we have formed with our customers are built on our own abilities to manage our production effectively. We are an extension of our customer’s work because we provide them highly complex tools that work in extreme conditions. We ourselves now find extreme conditions of our own that threaten our ability to meet our customer’s demand while abiding with our industry’s standards. We have proposed the most effective way with the shortest turnaround time such that we will not delay our production by more time than we can recover by. If we choose not to migrate to a cloud, we run the risk of overburdening our system, complicating developer, and analytical roles, and failing to meet our customer deadlines. SAP will continue to provide for both our legacy or our future system with the same commitment to empowering businesses and reducing limitations. Above all our company is one that especially needs this customization as we are innovating new products and technologies all the time that require unique methods of quality assurance and data storage. We as a company have the term “Cloud Technology” in our name, and as it stands now, we are just beginning to do the chasing.

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