1. **How extensively did each organization’s IT service/operations framework address the various components of its IT infrastructure? Discuss which infrastructure components were addressed well, and how other components could have been better addressed.**

The seven major components of the IT infrastructure ecosystem include Computer Hardware Platforms, Operating Systems Platforms, Enterprise Software Applications, Networking/Telecommunications, Consultants and System Integrators, and Data Management and Storage (Laudon & Laudon, 2020, p. 177).

Nordics, a global telecommunication major, focused on Enterprise Software Applications as most of their IT business application were on SAP applications. Nordics also focused on Consulting and System Integration Services.Nordics outsourced to several IT service vendors forcomponents of its IT infrastructure. AVON, IQ, and a number of small vendors were utilized to oversee maintenance and enhancement of all their major IT applications as well as their data center and networks. Nordic heavily outsourced and this is normal. At the turn of the century outsourcing averaged thirty percent of any IT budgets. Companies worldwide spentone hundred seventy-six billiondollars on outsourcing in 2003. This amount increased to two hundred and thirty billion dollars just one year prior to the 2008-2012 migrations from the older SAP to the newer MUS versionat Nordics (Wang, 2008).

The Croatian IT company focused on Data Management and Storage as they utilized the SCRUM framework to improve software engineering processes. Software was utilized in order to organize and manage data in an efficient way. The Croatian IT company also focused on Internet Platforms for their cloud communications services. The IT service/help desk was operational IT support to the larger ecosystem built around the service lifecycle and conducted service operation activities such as preventative maintenance activities and planned adjustments.

Given the amount of responsibilities that fell onto the team of six members responsible for tracking IT development trends and the resulting Product Backlog that was created, perhaps this IT company could have better addressed and utilized Consulting and System Integration Services to become more efficient.

Lastly, the governmental organization completing a data center migration focused on Operating System Platforms, Internet Platforms and Computer Hardware Platforms. Given that data centers store and safeguard information technology and hardware assets, these were key infrastructure components to focus on. The governmental organization determined that the organization needed to move its data center to a suburb of the metropolitan area to reduce the storage and rental costs associated with its data center as well as be located in a newer, updated facility with more reliable cooling systems. The data center migration activities included information security management, hardware mapping, and assessing power supply requirements.

1. **What challenges of managing IT infrastructure are evident at each organization? How are these challenges being addressed? Suggest how they may be addressed better.**

Nordics faced challenges in streamlining processes and creating efficiencies to reduce delays, unnecessary costs, errors and quality problems. The business application systems at Nordics were primarily SAP-based systems that had been developed over a decade. One of the challenges was stabilizing and streamlining the process for the Development Drop lifecycle. Nordics had a program of bi-annual SAP releases, with a number of parallel projects going live in between, which was not as efficient as a more streamlined method of quarterly releases. The first Development Drop was not well-planned or adequately tested and resulted in inefficiencies and ad-hoc remedial measures.

Another challenge was Nordics operated on a very customized SAP solution and at one point the customized solution was no longer able to be upgraded. A substantial part of the solution was in SAP version 4.6C from the early 2000s. In addition, Nordics was challenged with integrating SAP solutions as Nordics acquired other companies, who had their own SAP solutions on a higher version of SAP. Nordics remedial solution was to split their SAP environment. The factories and warehouses remained in the old SAP 4.6C system, along with the ecosystem of the custom solutions. The market units, professional services, and the corporate units moved to the newer versions of SAP. Being split meant twice as much support needed for each system and more room for error in how the systems communicated.

In 2010, Nordics began project Unity! as a possible solution to integration. The Unity! Solution was to be a single solution that would interface with all the other add-on products of the SAP suite and non-SAP applications. Given the high complexity of the Unity! Solution, the rollout did not go as planned and there were continued delays.

Nordics method of taking new developments into the products systems was not predictable, streamlined or efficient, and created another challenge. To attempt to correct this, Nordic initiated the Project Albatross to restructure the way SAP releases were managed and re-engineer the SAP Release process.

Additionally, Nordics faced a challenge of communication to all teams and stakeholders involved.Nordics worked with several vendors and the multi-vendor affiliations led to team dynamic and interpersonal issues. Given the complexity of SAP systems, it was critical that teams were communicating clearly and consistently. After the Project Albatross initiation, Nordics Group IT Solution Experts as well as Program Managers needed to ensure end-to-end life cycle requests.

Finally, there were staffing challenges and changes in the Nordics program management team structure as well as financial challenges given the large projects that impacted IT infrastructure. For example, the Group IT Drop Manager had a difficult time monitoring financial management and explaining it to business unit stakeholders. A solution with an average hourly rate based on the composition of the team in SAP Release R1211 was offered, however, the strategy backfired due to staffing shortages and inadequate planning.

Nordics could have addressed these challenges better through less-customized systems, more integrated communication, LEAN initiatives, streamlining processes and creating standard work, and increased staffing. Becoming less siloed and more integrated can enhance efficiencies and opportunities (Drogseth, 2004).

The Croatian IT company’s biggest challenge was creating efficiencies, managing financial considerations and managing the Product Backlog tasks. The Product Backlog items were constantly changing given the changing nature of the IT system. One solution to address this challenge was the way the Product Backlog was designed in a way that if the tasks were successfully completed, they would bring new automation that would facilitate everyday work for the employees working on the project. There was a problem-solving approach and communication was crucial to share informationacross the team, even to remote workers.

Another challenge was the Product Backlog and Sprints focused on functional requirements rather than on operations of services. The absence of strictly defined roles of Product Owner also increased the responsibilities of all team’s members to represent the project externally to other stakeholders and to handle the tasks that appeared in the Product Backlog. The SCRUM framework emphasized measures of product/service development, which were not visible in supporting IT service desk daily operation activities. Overall, the SCRUM framework was a positive implementation for the IT service desk and Croatian IT company. They saw success using agile principles for software development and daily operations in their IT service desk.

The governmental organization’s biggest challenges were the aggressive timeline, issues with network and power cables at the new data center and trying to ensure limited downtime for end-users. These challenges were addressed through clear communication, including the use of a white board to map out participant responsibilities and tasks to address challenges, proper planning and being focused on minimizing user downtime and minimizing the impact on the organization’s end-users. Along with proper planning, the organization set as realistic of expectations as they could. The case provides advice to others going through data center migration such as ensuring a lot of planning and taking into consideration all of the needs and requirements of time, staff, hardware, software and all partners. While these suggestions and improvements could have further assisted the governmental organization, overall, the data center migration was successful and there were only minor setback and challenges.

For each of the three case studies, the theme of change and change happening at increased paces, and the impact on information systems is evident. Lazar and Alexandru (2010) explain the demand “for having an IT network infrastructure that is capable to respond to the needs for improving the delivery of new business services and to deal with IT budget constraints,” which is applicable to each case (p. 238). Additionally, the cases shared a commonality of managing budget constraints and seeking cost-saving solutions, which is a common challenge for organizations (Lazar & Alexandru, 2010). Each organization approached opportunity to design their IT infrastructure ecosystem in a way that aids in meeting goals and results.

1. **In terms of organizational information integration, does each company appear to be pursuing the correct technological path? Suggest alternatives, additional initiatives, and/or next steps for each.**

In the governmental organization’s case, yes, they appeared to pursue the correct technological path. Datacenter migration helps in improving the organization's information systems. Data migration to an updated system such as cloud is one of the ways of ensuring data security. Moreover, the movement of data to a modernized data center ensures the availability of up to date security measures. Datacenter migration is also essential as it provides opportunities for assessment of the data center’s security protocols and procedures. Additionally, there is increased efficiency as data center migration allows proper evaluation of the organization’s information technology systems and processes (Maluf, Bell & Ashish, 2005). Well planned and executed data center migration changes the overall organization of a company thus creating long-term effects on business efficiency. After data center migration, the company needs to ensure that services that were running before the migration are still running and verification of the security protocols.Given this, the governmental organization addressed the appropriate initiatives in working towards successful data center migration.

In another case study of the University at Albany’s data center consolidation and migration, several benefits of data center migration are cited such as repurposing physical space, climate control, backup generators, security, virtual environment, automation of server management, faster network, staging and work form, equipment inventory and applications inventory (Mugridge & Sweeney, 2015). While the University at Albany is a different industry from the governmental organization, the case does illustrate further benefits of this technological path of data center migration.

In the case of the Croatian Company, SCRUM is a better way of rolling out operations management. SCRUM endorses self-organization principles through the delivery of operational services based on the iterative and incremental approach. The elements of SCRUMproduce sets of dynamics within the organization. SCRUM application within an organization has a great contribution to work productivity and visibility(Vanja & Siljevinac, 2018). It also helps in the adaptation to change and enables the information technology team to deal with challenges encountered with mutual collaboration. Instead of SCRUMagility, the Croatian Company couldconsider extreme programming which is an agile practice aimed at software quality improvement and responsiveness according to customer needs.

In the case of Nordics, innovation in IT service innovation has the purpose of better development through the creation of prototypes in production. In this case, innovation was not a better choice for the organization. There was a dropout during the lifecycle of the innovation due to staff shortages thus most critical activities including handover from design teams and testing of defects were not done(Sankar & Rahul, 2018). During the development procedure, Nordicsought to have better intended to guarantee the accomplishment of the advancement procedure and expertise to manage plausible difficulties.

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