

## Service landscape for private universities in Indonesia based on service oriented architecture and cloud technology

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### ABSTRACT

Information technology (IT) has been widely adopted and is believed to improve academic processes' efficiency and run private universities' academic functions (PTSS) in Indonesia. Nonetheless, adopting diverse technologies for them will also create many challenges. PTSSs are struggling to survive in terms of technological implementation, in the sense that the investment and implementation rate in the PTSSs just cannot catch up with the technological advancement rate. Even when more PTSSs are trying to transform into digital entities, the next problem will be system integration and flexibility. This study aims to overcome this problem by implementing a framework that can be both integrated and flexible while also serving the efficiency of investments. Many studies already suggested that service oriented architecture (SOA) and cloud technology are the solutions. Nevertheless, none has been able to define what standard services can be applied within those platforms. To determine this, we use the BIAN service landscape, which was translated from the banking industry, offering a comprehensive view of the business domain and business capabilities alongside its service functions. While BIAN offers common services throughout the same platform, we modify the framework using the OASIS model from SOA, which allows the framework to be flexible in complying with many platforms of databases, programming languages, and network infrastructures. We completed our study by defining one business area: academic processes, three business domains, 19 business capabilities, and 84 service functions. We are strongly confident that our findings and study results will act as a reference in creating a cloud-based platform for Indonesia's higher education academic systems.

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## 1. INTRODUCTION

Information technology (IT) has been widely adopted and is believed to improve academic processes' efficiency and run private universities' academic functions (PTSS). They are expected to continually develop and implement systems that will provide them with appropriate functions to communicate with their stakeholders, mainly the students [1]. Academic processes have been intensively based on technology; it shifts how students-lecturer interact in the classroom using ubiquitous computing devices [2], monitoring students' academic progress using big data and data warehouse [3]. Such intense is

not only done in western countries [4], but also in developing ones such as Saudi Arabia [5] and Thailand [6], and also in Indonesia [7]. One research conducted in Kepulauan Riau, Indonesia, showed that students are getting more engaged in lecture activities and will finally give a satisfactory appraisal of the competitive advantage for that private university.

All of those mentioned above have created the term technology-enhanced learning (TEL), which refers to the benefit of utilizing information and communication technologies in learning and teaching. The term goes back to 15 years ago [8] and usually incorporates other terminologies such as electronic learning (e-learning), LMS, and mobile learning (m-learning). Many of them are starting to add features of virtual classrooms via online learning and video conferencing. Cloud servers allow institutions to offer these innovative teaching methods that students can access anywhere via tablets, computers, or mobile devices. Nonetheless, adopting diverse technologies for them will also create many challenges. In Indonesia, the number of PTSs (around 3,000) is far higher than the state universities (122 universities) [9]. It is estimated that out of 6.9 million Indonesian students, 68% of them (4.7 million) are studying in PTSs. PTSs have increased higher education access to society amid the limited capacity of state campuses. This will require an excellent academic system, and obtaining one that provides benefits for a particular PTS is undoubtedly not without obstacles. Major obstacles that the campus often faces include the amount of investment needed, the quality of staff, IT infrastructure, and system compatibility with existing business processes [10].

Big (funded) PTSs are making advancements in their systems, and lesser (funded) PTSs struggle to survive technological implementation. Back then, the investment and implementation rate in the lesser PTSs just cannot catch up with the technological advancement rate [11]. Even when, nowadays, more and more PTSs are trying to transform into digital entities [12], the next problem will come integration and flexibility [6]. Modular IT implementation will inevitably lead to disintegration and inflexibility, and it will become a chaotic environment when more systems are implemented [13]. PTSs need to have those problems solved because of the ever-fast changes of technologies and government regulation regarding PTSs academic, operational activities that also keep changing. Each system within the higher education ecosystems can be changed without affecting other sub-systems; the service can be distributed and available to every request without being limited by the database technologies, programming language, or other technological platforms [14]. One research suggested having integrated systems between private universities, not only within each university [15]. service-oriented architecture (SOA) is an IT solution in terms of integration and flexibility and can be done in stages. SOA has become an architectural model widely used in providing service-based architecture solutions or services [16]. Moreover, it is also a reusable model that can use a service that has been provided without having to create a new design for the same service. What most importantly, it is an architectural framework that provides flexibility for organizations. Scalable cloud storage offers PTSs the ability to expand storage capabilities quickly. All of those means cheaper cost [17]. Cheaper costs in IT can only be applied to shared resources, and shared resources mean cloud paradigm [18]. Due to the prevailing financial issue and at some PTSs also facing the growing needs for a good and reliable academic system, the cloud environment can salvage PTSs from those two issues. It is a chance for them to exploit the opportunities afforded by cloud technology while minimizing the associated security risks to allow access to advanced IT infrastructure, data centers, and applications and protect sensitive information [19].

Many studies have dealt with the technical issue on how to develop a good platform using SOA architecture, and cloud-based platform in the education sector [20], especially the higher ones [21-22], but lesser have dealt within the application level, which discussed the kind of services that can be created to be commonly enjoyed by universities. They were limiting their scope to only one specific university [23-25]. While working with SOA and cloud platforms, we can have high commonalities in share functions. Our initial investigation suggests that the service landscape can facilitate this issue. This approach can expedite SOA analysis with the academic process modeling domain business and service capability [26]. Service Landscape can show capabilities that should be owned by a service layer that can support a typical organization's business processes. The service landscape was firstly introduced by banking industrial architecture network (BIAN) and issued Service Landscape for the banking sector called BIAN Service Landscape. It is an example of standardization in mapping business domains and their capabilities, which can support business processes in the banking sector, as they need a very high standardization level amongst one bank to another. It is also defined as a frame of reference that categorizes and organizes the BIAN Service Domain for easy access. Domain service is used to define service operations offered by the BIAN Service Domain to model their banking process technologically [27]. By using the BIAN Service Landscape, banking companies can quickly analyze the capability of service that must be built to support business activities. Therefore, we believe by designing this study using an SOA, Service Landscape approach, and cloud-based platform, we will be able to create a framework of common service domain and functions for every PTSs at their disposal.

## 2. RESEARCH METHOD

In designing the service landscape PTSs, we use the design science research methodology process model [28], customized and adapted to our study stages. Our study begins with identifying the problem and motivation, continued to the next stage of defining goals and solutions, design and development, review, and lastly, communicating our findings. Throughout this study, we performed a data collection activity consisting of interviews and observations. We were fortunate to have acquired eight private universities in Bandung, Indonesia, that are willing to be interviewed and observed (under anonymity) on their academic systems' current position. The interview processes took place at each PTSs, on August 13 until 15, 2019; next on September 3 until six and September 17-18, 2019; October 3 to 5, 2019; and lastly on November 15, 2020. Each interview took an average of 2 hours. At each meeting, we highlighted different topics such as the business process; organization profile with their structure, vision, and mission; problems or needs within the processes that need to be addressed; and actors, their role in the processes, and specifically defined the information flow between each actor across the processes. Besides interviews, we also conduct observations simultaneously on the 3rd and fourth week of November 2019. This event highlighted more findings that were not mentioned by the interviewees earlier. We recorded and summarized our findings and validated them to the interviewees before deciding to put them all as research facts.

### 2.1. Identifying the Problem and Motivation

As described earlier, we can identify two problems that we would like to elucidate; number one is integration and flexibility, while the second one is efficiency. When PTSs using technology to support its academic activities, it must be integrated with high flexibility to generate a flow of information from the beginning of academic processes (student registration) until the end (graduation). This flow is defined as the business area within our scope of the study. To a greater extent, we also found that since PTSs mostly work on a very tight budget, it requires them to select the technologies (cost-effective) carefully. The SOA-based solution is in demand for the first reason, while the second reason suits the cloud architecture. SOA can be applied as a web service that performs the service's function to be consumed by other system parts. We map the level of priority between 3 problems that have been identified earlier during our data collection process and are depicted in Table 1.

Table 1. Problems Priorities between Respondents

| Samples     | PTS1 | PTS2 | PTS3 | PTS4 | PTS5 | PTS6 | PTS7 | PTS8 |
|-------------|------|------|------|------|------|------|------|------|
| Criteria    |      |      |      |      |      |      |      |      |
| Integration | 1    | 2    | 2    | 3    | 1    | 1    | 3    | 3    |
| Flexibility | 2    | 3    | 3    | 2    | 2    | 2    | 2    | 1    |
| Efficiency  | 3    | 1    | 1    | 1    | 3    | 3    | 1    | 2    |

The number 1 until 3 defines priority levels, where the lower the number means, the higher the priority. Interestingly, integration scored 16, flexibility scored 17, and efficiency scored 15. This result shows that the three problems are equally important to solve. Motivation is defined to trigger the problem-solving effect, allows PTSs (even smaller ones) to enjoy the benefit of technology for their academic processes. We model SOA and cloud-based platforms to be able to interact with the service landscape seamlessly. SOA acts as middleware, and the cloud platform will handle the reusability model.

### 2.2. Defining Goals and Solutions

Defined by previous researches, Our goal is to have a cloud-based architecture of academic processes for PTSs which assured to have a very great extent of integration [6, 13], flexibility [6, 14-16], and efficiency [17-19]. Nevertheless, the next question is, what should we put inside the system? This will be answered when we define goals and solutions. Based on the results of the identification of the problem, the solution offered is to develop a service landscape of PTSs integrated systems. Service landscape generated should cover all academic processes. SOA-based architecture and cloud platform will provide the working environment below the service landscape of academic processes.

### 2.3. Design and Development

We design a landscape of services by doing interviews and look at the integrated systems in various PTSs. The service landscape can be constructed by performing a thorough analysis of academic processes and services. We then categorize candidates resulting from this analysis capabilities into groups (up-down approach). The service analysis and identification are made using SOA analysis to produce business domains and service capabilities contained therein. The service landscape consists of 3 main elements: the business

area, business domain, and service domain [29]. We have defined our business area in the earlier section (2.1) as academic processes and services starting from new student registration until graduation management. The next action is to determine the business domain and service domain. We use a customized BIAN approach with the SOA-based OASIS model [30]. OASIS is famous for its flexibility in modeling since it is a reference model. A reference model is not directly tied to any standards, technologies, or other concrete implementation details. It does seek to provide a standard semantics that can be used unambiguously across and between different implementations. It will understand significant entities within the academic processes and relationships between them within a service-oriented environment.

### 2.3.1. Requirements

It is used to collect all necessary data of the academic processes included in service landscape. We divide these processes into main academic processes and supporting academic processes. Also, we carried out an analysis of the role of IT academic systems in the PTSs. The analysis result is a checklist requirement and will be treated as a reference later in the review stage. We extract from online surveys, interviews, and observations, 27 academic processes involved and will be included in this service landscape. The depicted systems checklist, as shown in Table 2.

Table 2. Academic Processes took from 8 PTSs

| No | Academic Processes            | Description   | No | Academic Processes             | Description  |
|----|-------------------------------|---|----|--------------------------------|--|
| 1  | Registration                  | It explains the registration processes. Some PTSs can be collective or individuals, computerized or manual, and scheduled or incidental.          | 15 | Student Progress Report        | List of grades per subject and total GPA on the current semester and study period so far                       |
| 2  | Written Admission Exam        | Written admission exams are mostly done periodically.   | 16 | Academic Transcript            | Final academic grade transcript in a certain period  |
| 3  | Non-written Admission Exam    | non-written admission exams such as interview and physical exams. Some departments require this process to be undertaken by prospective students. | 17 | 1st-year registration          | Taking a package of subjects that have been already prepared by the department. Only done for 1st-year student |
| 4  | Selection Process             | It explains the cross-selection processes and their hierarchy.  | 18 | 2nd to final year registration | Registration of subject per semester for students from 2nd year to final year                                  |
| No | Academic Processes            | Description   | No | Academic Processes             | Description  |
| 5  | Selection Result Announcement | Explains about the announcement processes and verification after the announcement   | 19 | Student Plan Card (semester)   | Summary of subjects to be taken by students per semester   |
| 6  | Class Operation               | Explains about daily class management   | 20 | Course Update                  | Changing subjects; allowed before the 4th week of each semester  |
| 7  | Class Schedule                | Explains about class schedule and rescheduling management   | 21 | Student ID Management          | Process of acquiring student Id for freshman and lost student ID   |
| 8  | Presence Management           | Explains the process of classroom presence management for each course and lecture   | 22 | Payment Management             | School tuition fee to be paid each semester  |
| 9  | Classroom management          | Choosing a classroom according to lecture and class capacity according to class operation and schedule  | 23 | Lecturer Stipend               | Management of honorarium for lecturer per subject and total (usually managed monthly)                          |
| 10 | Course Management             | Information about courses (description, lecture, pre-requisites, rules, and other course management activities)                                   | 24 | Curriculum                     | Master curriculum of each department as reference for academic processes                                       |
| 11 | Lecturer Management           | It explains the assignment of the lecturer to course, teaching quota and home base.   | 25 | Academic Counselling           | Counseling of academic progress  |
| 12 | Mid-term Exam                 | Management of question exams, schedules, the class exam for a mid-term exam   | 26 | Judicium                       | The decision of final GPA and quality index for final year student   |
| 13 | Final-term Exam               | Management of question exams, schedules, the class exam for final-term exam   | 27 | Graduation                     | Explains about graduation process from registration, validating documents and renting the uniform.             |
| 14 | Grade                         | Grading for the midterm, final term, and total grade for each student   |    |                                |  |

This process is done with a questionnaire machine software and one-on-one interviews with the system’s stakeholders from our respondents of 8 PTSs. These 27 academic processes will then be cross-referenced in later stages to generate standard capabilities to be used by every PTSs. Some processes are standard, while some are not; we only take the common ones to create the service landscape in the design and review stages later. An example of this stage’s result is depicted in Figure 1.

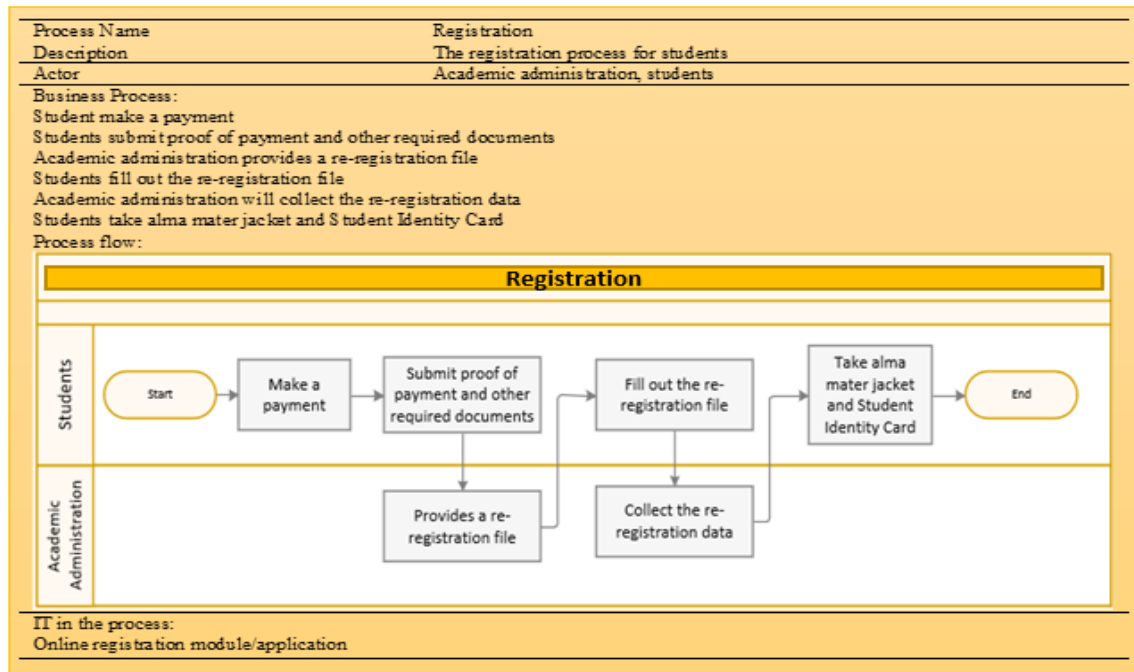


Figure 1. Registration Process

**2.3.2. The analysis**

It analyzes academic process services using OASIS methodology to result in the business domain and business capabilities. Information taken from the requirement stage will be processed into several domains, such as follows:

a) Analysis of business domain

The business domain was decided by analyzing the academic processes that happened within our respondents. While each business domain represents its independence, it is interconnected to create seamless academic processes [31]. Domain analysis performed in previous stages is yielding three business domains, which are (1) Admission of new students, (2) Teaching and Learning Process, and (3) Academic administration. Some namings are different from one PTS to another PTS, but all refer to the same meaning.

b) Analysis of business capabilities

First, we determine candidates of services built from one academic process (business capabilities), as shown in Table 3. Each business capability that has been defined earlier on the requirement stage will be analyzed one by one, just like what we did in Table 3. We cross-referenced our findings from all our respondents and trimmed down the business capabilities from 27 processes in the requirement stage into 19 that is common to each PTSs, as shown in Table 4.

c) Analysis of SOA and Cloud Technology

Integration can be done by providing information from academic processes as services, using SOA principles (flexible, sustainable, reusable integration) and instruments to plot academic processes’ variables [32]. The integration of SOA with academic processes possibly will pilot the creation and use of new learning settings. This condition requires the latest software and hardware required to meet the institution’s demands and high costs. Cloud Computing helps organizations like private universities by offering cloud-maintained solutions and better software, hardware, and maintenance [33]. Also, mobile instruments such as laptops, phones, and tablets provide remote access to resources available [34]. We determine SOA and cloud technology preferences by interviewing our respondents, as shown in Table 5.

Table 3. Business Capabilities and Service Functions

| No | Business Capabilities          | Service Functions   |
|----|--------------------------------|---|
| 1  | Registration                   | +insertDataPendaftaran(), +setDataPendaftaran()   |
| 2  | Written Admission Exam         | +getDataPendaftaran(), +createDataUjianSeleksi()  |
| 3  | Non-written Admission Exam     | +getDataPendaftaran(), +createDataUjianSeleksi()  |
| 4  | Selection Process              | +getDataUjianSeleksi(), +createDataSeleksi(), +editDataSeleksi()  |
| 5  | Selection Result Announcement  | +getDataSeleksi()   |
| 6  | Class Operation                | +setDataKuliah(), +getDataKuliah(), +createDataKuliah(),<br>+editDataKuliah(), +getDataJadual(), +getDataMahasiswa(), +getDataDosen(),<br>+getDataMK(), +getDataAbsensi() |
| 7  | Class Schedule                 | +setDataJadual(), +getDataJadual(), +getDataMahasiswa(), +getDataDosen(),<br>+getDataMK(), +getDataAbsensi()  |
| 8  | Presence Management            | +setDataAbsensi(), +getDataAbsensi(), +createDataAbsensi(), +editDataAbsensi(),<br>+getDataMahasiswa(), +getDataDosen(), +getDataMK()                                     |
| 9  | Classroom management           | +setDataKelas(), +getDataKelas(), +createDataKelas(), +editDataKelas(),<br>+getDataMK(), +getDataDosen(), +getDataMahasiswa()   |
| 10 | Course Management              | +setDataMK(), +getDataMK(), +createDataMK(), +editDataMK()  |
| 11 | Lecturer Management            | +setDataDosen(), +getDataDosen(), +createDataDosen(), +editDataDosen(),<br>+deleteDataDosen()   |
| 12 | Mid-term Exam                  | +setDataUTS(), +getDataUTS(), +createDataUTS(), +editDataUTS()  |
| 13 | Final-term Exam                | +setDataUAS(), +getDataUAS(), +createDataUAS(), +editDataUAS()  |
| 14 | Grade                          | +setDataNilai(), +getDataNilai(), +getDataMataKuliah(), +getDataMahasiswa()   |
| 15 | Student Progress Report        | +setDataKHS(), +getDataKHS(), +getDataNilai(), +createDataKHS()   |
| 16 | Academic Transcript            | +setDataTranskrip(), +getDataTranskrip(), +getDataKHS()   |
| 17 | 1st year registration          | +setDataDaftarUlang(), +getDataDaftarUlang(), +createDataDaftarUlang()  |
| 18 | 2nd to final year registration | +getDataMahasiswa(), +setDataDaftarUlang(), +getDataDaftarUlang(),<br>+createDataDaftarUlang()  |
| 19 | Student Plan Card (semester)   | +setDataKRS(), +getDataPKRS, +createDataKRS(), +editDataKRS()   |
| 20 | Course Update                  | +getDataKRS(), +setDataPKRS(), +getDataPKRS()   |
| 21 | Student ID Management          | +getDataMahasiswa()   |
| 22 | Payment Management             | +getDataMahasiswa(), +getDataMataKuliah(), +setPembayaranSemester()   |
| 23 | Lecturer Stipend               | +getDataDosen(), +setDataHonorDosen(), +getDataHonorDosen()   |
| 24 | Curriculum                     | +setDataKurikulum(), +getDataKurikulum(), +createDataKurikulum(),<br>+editDataKurikulum(), +deleteDataKurikulum()   |
| 25 | Academic Counselling           | +setDataPerwalian(), +getDataPerwalian(), +createDataPerwalian (),<br>+editDataPerwalian (), +deleteDataPerwalian ()  |
| 26 | Judicium                       | +setDataYudisium(), +getDataYudisium()  |
| 27 | Graduation                     | +getDataTranskrip(), +getDataYudisium(), +getDataPerwalian()  |

Table 4. Business Domains and Their Business Capabilities

|                       | BD1: Admission of New Students  | BD2: Teaching and Learning Process  | BD3: Academic Administration   |
|-----------------------|---|---|--|
| Business Capabilities | 1) Registration<br>2) Exam<br>3) Selection Process<br>4) Selection Announcement | 1) Class Operation<br>2) Class Schedule<br>3) Presence Management<br>4) Classroom Management<br>5) Exams<br>6) Grades<br>7) Student's Progress Report<br>8) Academic Transcript | 1) New Registration<br>2) 2nd-year to final year registration<br>3) Finance<br>4) Curriculum<br>5) Academic Counseling<br>6) Judicium<br>7) Graduation |

Table 5. Analysis of SOA and Cloud Technology on Academic Processes

| No | Main Topic               | Sub-Topic                            | Result (n=24) * |
|----|--------------------------|--------------------------------------|-----------------|
| 1  | Architecture Preferences | On-Premise only                      | 3 (12.5%)       |
|    |                          | On-the-cloud only                    | 12 (50%)        |
|    |                          | Hybrid (on-premise and on-the-cloud) | 9 (37.5%)       |
| 2  | Platform preferences     | Desktop based only                   | 0 (0%)          |
|    |                          | Web-based only                       | 3 (12.5%)       |
|    |                          | Mobile-based only                    | 3 (12.5%)       |
|    |                          | Hybrid (a combination of the three)  | 18 (75%)        |
| 3  | Technology               | API services                         | 20 (83.33%)     |
|    |                          | Microservices                        | 4 (26.67%)      |

### 2.3.3. Review

It is used to review the service landscape generated using a checklist of academic processes produced on the first stage (requirement). From the beginning of the requirement stage until the design stage, we have defined one business area, three business domains, 27 business capabilities, and 104 service

functions. After we cross-examined them between PTs within our samples' scope, we decided to use only 19 business capabilities and 84 service functions as depicted in Table 6.

Table 6. Final Review on the Business domain and Business Capabilities

| No | Business Domain                | #  | Business Capabilities     | Remarks                                  |
|----|--------------------------------|----|---------------------------|--|
| 1  | Admission of New Student       | 1  | Registration              |  |
|    |                                | 2  | Exam                      | <i>Combining written and non-written</i> |
|    |                                | 3  | Selection Process         |  |
|    |                                | 4  | Selection Announcement    |  |
| 2  | Teaching and learning process  | 5  | Class operation           |  |
|    |                                | 6  | Class schedule            |  |
|    |                                | 7  | Presence management       |  |
|    |                                | 8  | Classroom management      |  |
|    |                                | 9  | Exam                      |  |
|    |                                | 10 | Grade                     |  |
|    |                                | 11 | Student's progress report |  |
|    |                                | 12 | Academic transcript       |  |
|    |                                | 3  | Academic administration   | 13                                       |
| 14 | 2nd to final year registration |    |                           |  |
| 15 | Finance                        |    |                           |  |
| 16 | Curriculum                     |    |                           |  |
| 17 | Academic Counselling           |    |                           |  |
| 18 | Judicium                       |    |                           |  |
| 19 | Graduation                     |    |                           |  |

#### 2.4. Communication

At this stage, we prepare reports or documentation of this study. Documentation comes in the form of document research reports and guidance documents on the use of Service Landscape.

### 3. RESULTS AND ANALYSIS

The process passed from the stage of requirements until the review, then compiled into a technological service landscape for academic processes in PTs, as depicted in Figure 2. We completed our framework by resulting in 1 business area of academic processes, three business domains, 19 business capabilities, and 84 service functions out of the initial 27 business capabilities and 104 service functions. We visualized them using one rectangle of service functions inside a rectangle of business capabilities. Several business capabilities join together in a bigger rectangle of the business domain, which then groups into one as a service landscape of academic processes. Each business's capabilities and business domain are independent but integrated, with at least one function interconnects them to one another. For example, admission of new students started from the admission part of inserting registration data (+insertDataPendaftaran()) and validate it using +setDataPendaftaran(). 'Admission' and 'Selection Test' are interconnected using DataPendaftaran() function, and it applies to the other throughout this service landscape. Furthermore, some business capabilities and service functions were merged, as was described earlier in section 2.3.3. Flexibility is also the reason for the rectangle visualization. This result means that each PTS can easily requests which business capabilities or business domain they wish to implement. We also apply SOA and cloud architecture on top of this service landscape, as shown in Figure 3.

When it comes to implementing SOA, there is a wide range of technologies that can be used. Typically, SOA is implemented with web services, making the functional building blocks accessible over standard internet protocols. Our building blocks consist of a platform as a service (PaaS), software as a service (SaaS), SOA, and individual tenants (PTs). PaaS provides backend services for the provider to maintain the system, including runtime, databases, servers, billing, and more. SaaS is the business domain that we have already identified in the service landscape, consisting of admission of the new student, teaching and learning process system, and academic administration system. For future improvement and expecting changes in business processes, the changes will only be needed to apply part of the ecosystem (SaaS). We can add more business domains, business capabilities, and service functions within the application part to update or add more services for PTs.







amendments for maintaining standards in the educational process and improvements in the related field. More business domains, business capabilities, and service functions can be applied and put inside the framework. Private sectors play their part by investing in technology's infrastructure and runs operations and management; PTSs can rent the whole infrastructure, systems, and resources monthly expenditure following their strategic plans. Some detailed technical area still needs to be provided within the design part of the cloud-based platform such as virtualization scheme, database scheme, and API management scheme. Furthermore, we will also expect a transformation of higher education institutions based on the fundamental premise that this process is an ecosystem consisting of several interlinked and interacting subsystems. Transformation must support student intrinsic motivation for learning and provide students with strategies that empower them to learn. Technology and its implementation should also move in that direction. All, in the end, is to create a systematic effort of efficient and effective learning in higher education institutions and establish a systematic approach for implementing a continuous improvement strategy in the educational process.

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