

SIMONTA: Responsive Web-Based Thesis Management System

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SIMONTA: Responsive Web-Based Thesis Management System

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Abstract - As one of compulsory student requirements to graduate, Thesis (Undergraduate, and Diploma) contains various procedures to be completed. Those procedures of each has different due date include topic submission, supervisor searching, proposal submission, proposal presentation, and oral defense.

Similar to other departments, Informatics conducts these processes as well. There are approximately 70 students following proposal presentation and oral defense each semester. This number grows as the number of students register thesis annually. Consequently, thesis monitoring and management effort grow significantly.

This research propose an accessible software for various stakeholders namely students, lecturers, and administrator. The software will integrate some existing business processes in order to help thesis implementation such as real-time, online, and paperless files including thesis proposals, letter of topic agreement, and advisor decree.

Index Terms - Management System, Thesis, Administration, Responsive, Online

I. INTRODUCTION

Thesis plays important role in developing student's scientific ability. It demands student to demonstrate both writing and speaking skill in high level of academic. Extensive scientific work and good speech are needed if one wants to pass the examination.

UNESA, one of government-owned universities, also conducts this activity every semester. Students from various faculties enroll this coursework as one of requirements to judicium phase. The phase is final evaluation performed by university committee to determine whether a student is eligible to graduate.

Despite of regular arrangement, repetitive errors arise resulting unseen future effects. First, the increasing number of untraced almost-expire students. Many students enroll and do their thesis unmonitored, and less-supervised. Secondly, less-managed thesis documentation files which is one of important requirement for national university ranking. Third, there still exists unbalanced share of supervision. These errors, together, are likely to

produce a degrading student quality. This unforeseen impact must be avoided if UNESA wants to keep its track to be top university in Indonesia.

SIMONTA is designed and developed in attempt to leverage mentioned errors. The main reason behind this software construction is to minimize human error during thesis arrangement, and organize supporting documents. SIMONTA is able to keep related records systematically. Records will be stored by considering categories, and time. Therefore, any future needs can be accommodated quicker.

Finally, provided screenshots demonstrate built modules which are already hosted at live server. The screenshot also shows that responsive concept in different platform.

II. PRELIMINARY KNOWLEDGE

A. Scientific Work

Scientific writing is a text discussing a certain problem in certain discipline by using methods of display completely, regularly, and consistently. As its name implies, scientific work demands a strong demonstration of scientific basic with 3 requirements, such as:

- Has content related to scientific knowledge.
- Utilizes scientific method or way of thinking.
- Displays a view of suitable scientific writing.

People who have scientific thinking will always have skeptical, analytical, and critical behaviors when facing social phenomena. In addition, utilizing scientific methods will obtain knowledge through rational steps or procedures. Any scientific activities will reflect working process use scientific methods indicated with correct, and relevant theoretical arguments. Furthermore, there is also exist analysis of assessment which links between theoretical arguments and empirical facts. Finally, scientific activities can be categorized to research, evaluation, and development.

B. Thesis

Thesis is a required scientific work done by final-year students in order to obtain Bachelor or Diploma title. This activity is usually proposed as a final step before judicium phase. The work can be either field or theoretical research report.

Field research is a research which focuses on empirical data collection with quantitative and qualitative approaches. While quantitative approach has deductive-inductive perspective, qualitative approach is oriented to deliver symptoms holistically and contextually through data collection.

Theoretical research is a research performed to solve certain problem with critical and in-depth analysis making use of relevant foundations. Those foundations are used as source to locate idea or concept as material to deduct existing knowledge then new theories can be obtained as future fundamental solution.

Thesis aims to give an understanding which is used by students to think logically and scientifically when decomposing and discussing problems then deliver them systematically.

Students who want to perform thesis must meet certain prerequisite conditions, such as:

- Has completed courses with total credit of 100.
- Has completed Research Methods course with minimum score of C
- Has cumulative grade of 2.25
- Active students (not in leave periods).
- Has enrolled Thesis courses.

Despite of differences in universities, thesis has similar procedures such as:

- Students find thesis topic by consulting prospective adviser.
- If the proposed topic is agreed by prospective adviser, then student must construct thesis proposal which is must be approved by the adviser.
- Students register thesis proposal presentation.
- If the proposal is approved then students have to complete the thesis with periodic consults.
- If the thesis is done and approved by adviser, then students may register oral defense.
- Students do oral defense.
- Students submit approved thesis report.
- Students obtain thesis score.

C. Responsive Web Development

Web development scope includes every action of web building in internet world. The development process ranges from single-page to complex-page websites process with various business process, internet application, and social media involvement. Since its establishment in 1989 in which Web 1.0 introduced with static and one-way information, web has grown rapidly with more features. Web 2.0 then launched with its wisdom concept and finally, web 3.0 is also initiated.

To enrich the user experience in web 3.0, a range of technology is introduced such as semantic, micro format, user-language searching, machine learning, and recommendation supply agent. Furthermore, a revolutionary concept of web view was born. Responsive-web concept has emerged to enhance mentioned concepts further.

Responsive web approach grants a concept of responsive architecture. This architecture attempts to response human existence in certain physical space.

The concept also produces smart mirror technology that can view resident's density automatically when reaching defined threshold. Finally, privacy level can increase.

Responsive web can provide a design and web development appropriately since it can response to users' behavior and environment. The environment changes include platform size, and screen orientation. This approach is implemented using a combination of flexible grid, layout, pictures, and accurate CSS.

III. METHODS

A model of software development is chosen as platform to analyze, design, and build the proposed solution. Thus, RAD model is chosen as foundation of Software Development Life Cycle. This model is chosen due to its robust and rapid approaches to design changes defined in real business process.

A. Model

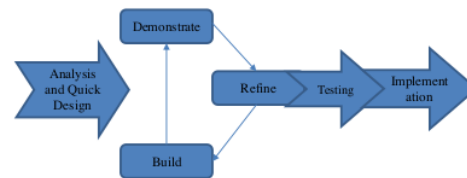


Fig. 1 RAD Model

There are 5 stages based on RAD model which is performed during the development of proposed solution, such as:

1. Analysis and Quick Design Requirement

A comprehensive analysis and design are constructed within minimal amount of time in order to obtain suitable functionality. The requirements in proposed solution include thesis registration, proposal registration procedure, consulting process, oral defense and revision process, and thesis advisory decree letter.

2. Build

Software development is performed in this phase to realize business processes which are defined in prior step. As a result, software modules will be produced namely:

- a) Proposal registration and advisor decision module.
- b) Proposal oral defense scheduling module.
- c) Thesis supervision and monitoring module.
- d) Final oral defense and revision module.
- e) TA Administration module.
- f) Document management module.

3. Demonstrate

This third phase requires user to check whether the business processes suitable with built modules. It is possible to show each module operation only. Thus, received revisions will be limited to certain module prototypes. Users that will observe the demonstration such as:

- a) Thesis committee.
- b) Advisors.

4. Refine

Refine phase is done to fix module prototypes which have been demonstrated to end-users. One of end-users can be one IT feasibility and thesis process business expert. If there are any mistakes, flaws, extra features exist, and then improvement will be performed shortly. Consequently, an extra iteration will take place.

5. Testing

Used software still needs nourishment since bugs may appear during its lifetime. This aims to clean software from bugs and to adapt new requirements.

There are materials tested in this phase, which are:

a) Black-Box Testing

In this method, developed software will be evaluated by giving a wide range of input types, and checked if produce appropriate output.

b) Feasibility of implemented responsive technology

By using questionnaire filled in by respondents, an overall illustration will be obtained.

6. Implementation

Final software deployment will be performed at Informatics server. Online software will be ready to serve users' request.

B. Designs

Following illustration depicts overview of proposed system:

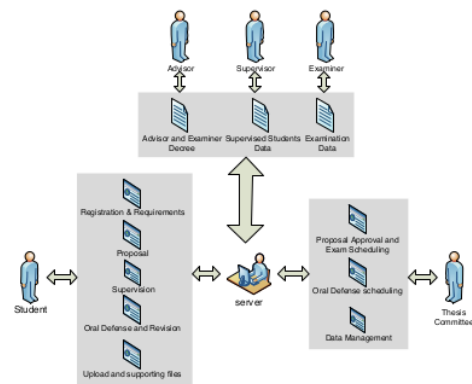


Fig. 2 SIMONTA Overview

To obtain proposed solution there several things designed as output of phase 1 in RAD model. These outputs will be presented accordingly in this sub-chapter. Following models are:

1. Data Flow Diagram (DFD)

A transformation between user business process and software development domain is achieved by creating a detailed DFD. In this diagram, retrieved requirements are listed then modeled using actors who involve in proposed solution. Data movements between actors may be illustrated in different level of DFD. Therefore, following DFD (fig. 3) is constructed

2. Data Models

Database models are composed to further conversion real business process to technical domain. There are types of database models which are constructed sequentially. Those types are Entity Relationship Diagram (ERD), Conceptual Data Model (CDM) and Physical Data Model (PDM).

ERD supplies high-level of technical domain with attributes, entities, and relationship components. This diagram also provides attribute types to inform the system designer how strong or weak an entity is. Yet, this diagram does not include any extra tables as a result of many-to-many relationship. This issue will be fixed in CDM.

CDM delivers conceptual level of technical domain. Not only brings extra tables created in many-to-many relationship, but also defines data types of each entity's attributes. In this model, entity concept has revolutionized into table concept. In addition, CDM can illustrate relationship degree between tables. This concept is called Cardinality. The illustration of overview system can be seen on figure 4.

Finally, PDM provides technical level of data representation in implementation and deployment stage. This model gives exact picture of database-level implementation. Therefore, syntax which is relevant with chosen database exists. SIMONTA uses MySQL as Database Management System. PDM can be automatically generated from CDM. Therefore, PDM has a tight-coupling relationship with CDM. The PDM of SIMONTA is illustrated by figure 5

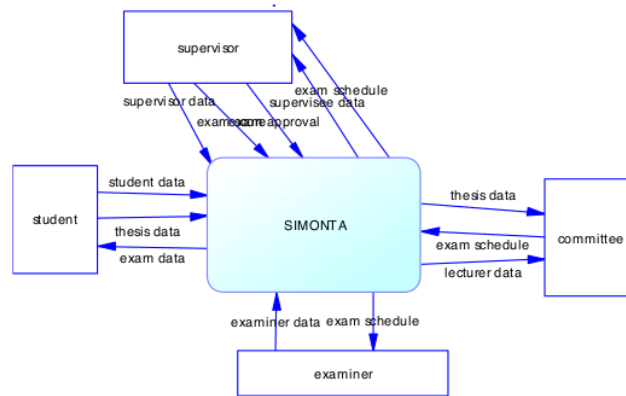


Fig. 3 SIMONTA DFD

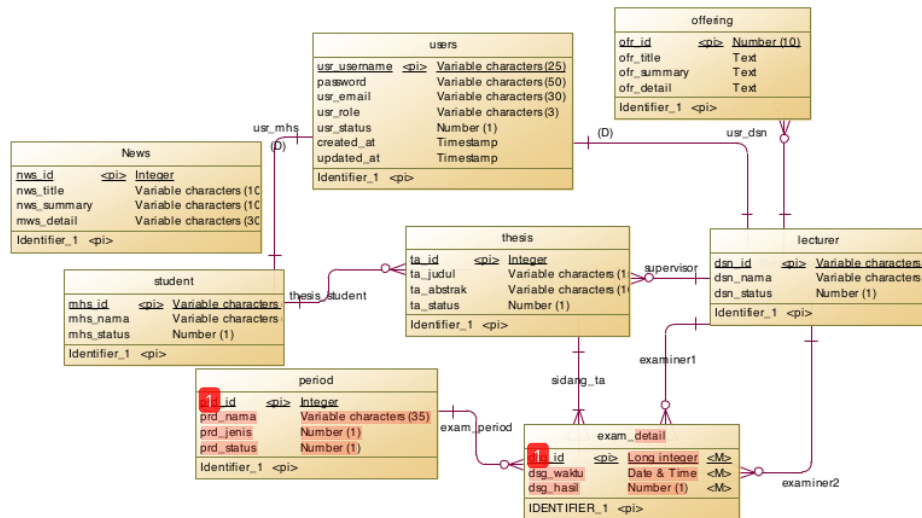


Fig. 4 SIMONTA CDM

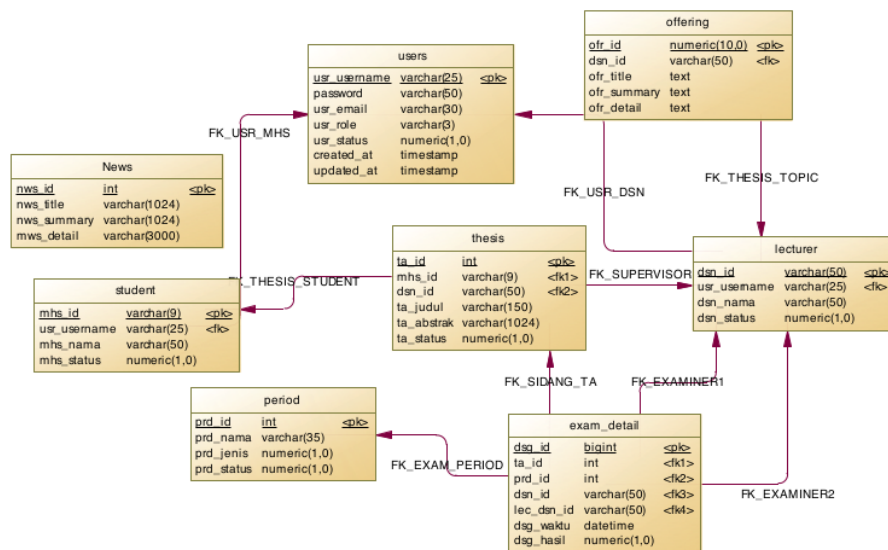


Fig 5. SIMONTA PDM

IV. RESULTS

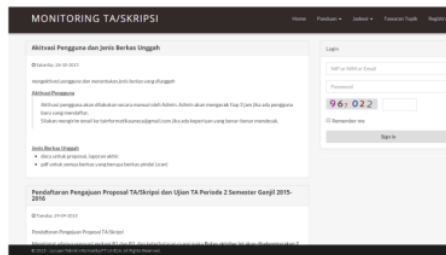


Fig. 6 SIMONTA Front Page View

Figure 6 shows the main page of SIMONTA which is themed white and black. On the right side of screen there is a login section with Captcha feature to give extra security. Moreover, figure 7 and figure 8 depict the main page in resized monitor view. This figure clearly shows that proposed responsive aspect has been achieved.



Fig. 7 Front Page (Resized Monitor View)

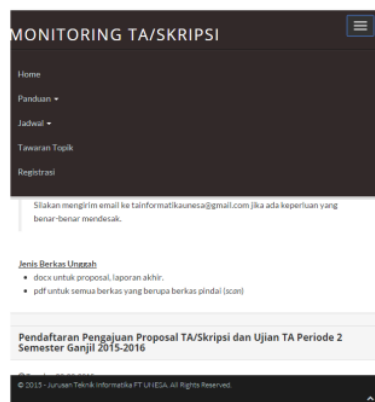


Fig. 8 Menu Collapsed

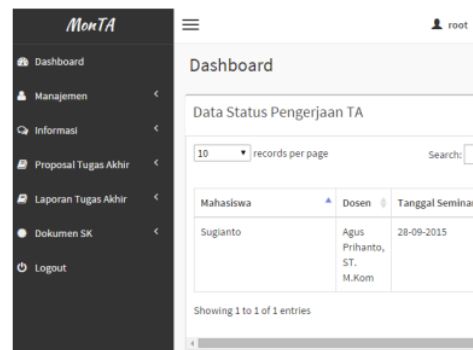


Fig. 9 SIMONTA Backend Page (Resized Monitor View)

Administration page is located at backend segment of SIMONTA. Figure 9 shows the dashboard of administrator in resized monitor view. There are 6 menus available in this page such as Management (Student, Lecturer, and Thesis), Information (News, and Thesis topic offering), Thesis Proposal (Schedule, Exam), Examination (Schedule), and Document Management.

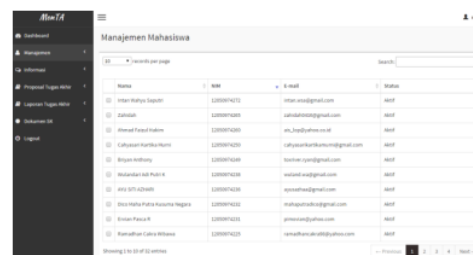


Fig.10 Student Mangement Page

Figure 10 and 11 demonstrate thesis document upload process in student's perspective. In this page, student can choose which document they want to upload and the result is provided at lower part of the page.

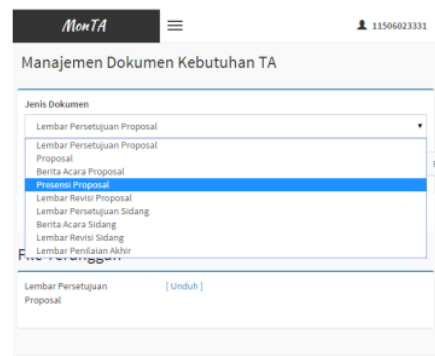


Fig. 11 Student Document Management Page

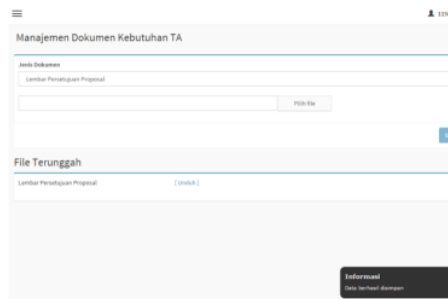


Fig.12 Upload File Succeed

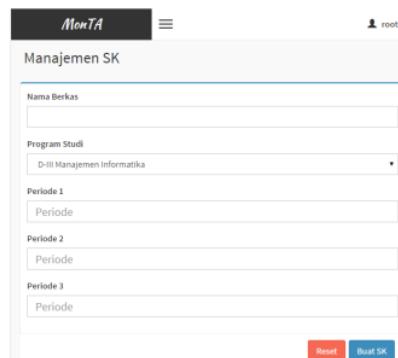


Fig.13 Supervisor Decree Letter Management Page (Resized Monitor View)

To monitor all student theses working time, a section at dashboard provides list of student and the duration.

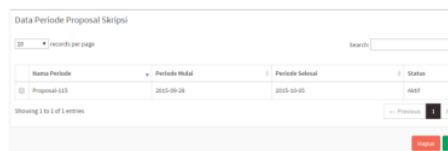


Fig.14 Exam Period Management Page

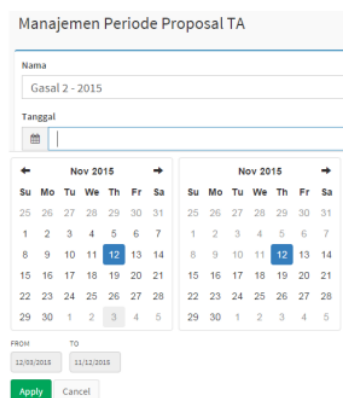


Fig.15 Create New Exam Period

Finally, exam period management pages are shown in figure 14 and 15. These figures show how to create a new exam period. The created period will determine how long examination takes place and manage report accordingly.

CONCLUSION

The proposed solution has successfully delivered integrated service which is able to administer thesis arrangement and to monitor thesis work time. Those achievements are based on defined business processes.

FUTURE WORK

Despite vast modules achieved by SIMONTA, there are still other improvement can be done. First, student filtering feature can be enhanced. Current version of SIMONTA shows all students' current status, and thesis lifetime. This can be improved by giving an extra tool to filter which students to be showed. Secondly, examiners' document management. Due to growing administration requirement, lecturer who also does examination phase need to provide letter as a proof. This module can be added into future version.

ACKNOWLEDGMENT

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REFERENCES

- [1] Boronczyk, Tim, *PHP and MySQL Create-Modify-Reuse*, Wiley Publishing, Inc: 2008.
- [2] Darie, Cristian, *Ajax and PHP, Building Modern Web Application - Second Edition*, Packt Publishing: 2009.
- [3] Doyle, Matt, *Beginning PHP 5.3, Programmer to Programmer*, Wrox, 2010.Sommerville, Ian, *Software Engineering, Ninth Edition*, Pearson Education: 2011.
- [4] Ibrahim, Ali, 2011, *Pengembangan Sistem Informasi Monitoring Tugas Akhir berbasis SMS Gateway di Fasilkom Unsri*, Jurnal Ilmiah JUSI Vol.1, No 2. September 2011, ISSN: 2087-8737.
- [5] L. Bass, P. Clements, R.Kazman, "Software Architecture in Practice (3rd Edition) (SEI Series in Software Engineering)", United States: 2012
- [6] Marcotte, Ethan, *Responsive Web Design*, CSS, Layout & Grids, Mobile/Multidevice, Responsive Design, Interaction Design: 2010.
- [7] Otwell, Taylor, *Laravel: From Apprentice to Artisan*, Leanpub, 2014.
- [8] Tim, *Panduan Skripsi Universitas Negeri Surabaya*, UNESA Press: 2006.
- [9] Vemon, D, *Year 5 Software Enginnering 2 (Modul 514)*, Khalifa University, 2008.

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