Journal of Physics: Conference Series • *Open Access* • Volume 1823, Issue 1 • 31 March 2021 • Article number 012032 • 2nd UPY International Conference on Applied Science and Education, UPINCASE 2020 • Yogyakarta, Virtual • 3 November 2020 through 4 November 2020 • Code 168191

Document type
Conference Paper • *Bronze Open Access*

Source type
Conference Proceedings

ISSN
17426588

DOI
10.1088/1742-6596/1823/1/012032

View more

The Model Prototype of WebGIS-based for Organizational Asset Management

Sutanta E. , Nurnawati E.K., Iswahyudi C., Kumalasanti R.A.

Save all to author list

[a] Department of Informatics, Institut Sains and Teknologi AKPRIND Yogyakarta, Kalisahak Street #28, Yogyakarta, Indonesia

Abstract

Large organizations generally have assets distributed over separate locations. The problem is, decisions or policies will be easier to make if they are supported by a system that can dynamically visualize the existence of every asset owned by the organization. The WebGIS-based asset management approach is an alternative solution to this problem. This study examines a proposed WebGIS-based organizational asset management model . An application prototype was developed to test the proposed model using PHP, JavaScript, HTML, and CSS software. The Google Maps API is also used to create a base map. On the back end, authorized users can control and perform input, edit, and delete asset data. On the front end, public users can access public information. The test results of the developed prototype can provide various information on organizational assets visually based on digital maps that suit the needs of its users. The developed prototype still needs to be tested further, especially concerning security aspects, browser compatibility, and display design suitability. © Published under licence by IOP Publishing Ltd.

References (15) View in search results format >

All

CSV export Print E-mail Save to PDF Create bibliography

1 Setiawan, E
Kamus Besar Bahasa Indonesia (KBBI). Cited 24 times.
(accessed 01/09/2020)
https://kbbi.web.id/aset

2 Nusantara, P. M.
S Kenali Setiap Jenis Aset yang Anda Miliki untuk Kemudahan Pengelolaannya
(accessed)
https://www.jurnal.id/id/blog/2018-kenali-setiap-jenis-aset-yang-anda-miliki/

3 Setiawan, S
Pengertian Manajemen Aset-Tujuan, Siklus, Identifikasi, Ciri, Prinsip, Sasaran
Para Ahli (accessed 01/09/2020)
https://www.gurupendidikan.co.id/pengertian-manajemen-aset

4 *Linov HR Manajemen Aset: Siklus dan Manfaat untuk Perusahaan*
(accessed 01/09/2020)
https://www.linovhr.com/manajemen-aset/

5 Sejahtera, P. C. P
Pengertian Aset dan Jenisnya dalam Bisnis
(accessed 0/09/2020)
https://accurate.id/akuntansi/pengertian-aset-dan-jenisnya/

6 Nusantara, P. M. S
Chart of Account: Mempelajari Klasifikasi Sistem Kode Akun Akuntansi
(accessed)

7 Nirlaba, K. P. K.
O Penyusunan Chart of Accounts (COA)
(accessed)
https://keuanganlsm.com/penyusunan-chart-of-accounts-coa

8 Hari Ginardi, R.V., Gunawan, W., Wardana, S.R.
WebGIS for Asset Management of Land and Building of Madiun City Government (Open Access)

(2017) *Procedia Computer Science*, 124, pp. 437-443. Cited 7 times.
http://www.sciencedirect.com/science/journal/18770509
doi: 10.1016/j.procs.2017.12.175

View at Publisher

9 Lee, P.-C., Wang, Y., Lo, T.-P., Long, D.
An integrated system framework of building information modelling and geographical information system for utility tunnel maintenance management

(2018) *Tunnelling and Underground Space Technology*, 79, pp. 263-273. Cited 37 times.
www.elsevier.com/inca/publications/store/7/9/9/
doi: 10.1016/j.tust.2018.05.010

View at Publisher

10 Di Salvo, C., Pennica, F., Ciotoli, G., Cavinato, G.P.
A GIS-based procedure for preliminary mapping of pluvial flood risk at metropolitan scale

(2018) *Environmental Modelling and Software*, 107, pp. 64-84. Cited 19 times.
www.elsevier.com/inca/publications/store/4/2/2/9/2/1
doi: 10.1016/j.envsoft.2018.05.020

View at Publisher

11 Ashkezari, A.D., Hosseinzadeh, N., Chebli, A., Albadi, M.
Development of an enterprise Geographic Information System (GIS) integrated with smart grid

(2018) *Sustainable Energy, Grids and Networks*, 14, pp. 25-34. Cited 21 times.
http://www.journals.elsevier.com/sustainable-energy-grids-and-networks/
doi: 10.1016/j.segan.2018.02.001

View at Publisher

12 Sinurat, S. P.
(2013) *Asset Inventory Information System Web-GIS Based On PT PLN (Persero) Sektor Pembangkitan Tarahan (Universitas Lampung)*

13 Sutanta, E., Nurnawati, E.K.
The Design of Relational Database for Multipurpose WebGIS Applications (Open Access)

(2019) *Journal of Physics: Conference Series*, 1413 (1), art. no. 012029. Cited 2 times.
http://iopscience.iop.org/journal/1742-6596
doi: 10.1088/1742-6596/1413/1/012029

View at Publisher

14 Pressman, R. S.
(2010) *Software Engineering*, 7. Cited 4979 times.
(New York: McGraw-Hill)

15 Sommerville, I.
(2011) *Software Engineering*, 9.
(Pearson Education, Inc)

Sutanta, E.; Department of Informatics, Institut Sains and Teknologi AKPRIND Yogyakarta, Kalisahak Street #28, Yogyakarta, Indonesia; email:edhy_sst@akprind.ac.id

About Scopus

What is Scopus
Content coverage
Scopus blog
Scopus API
Privacy matters

Language

日本語に切り替える
切换到简体中文
切換到繁體中文
Русский язык

Customer Service

Help
Tutorials
Contact us

Journal of Physics: Conference Series

COUNTRY

United Kingdom

Universities and research institutions in United Kingdom

SUBJECT AREA AND CATEGORY

Physics and Astronomy
└ Physics and Astronomy (miscellaneous)

PUBLISHER

IOP Publishing Ltd.

H-IND

8

PUBLICATION TYPE

Conferences and Proceedings

ISSN

17426588, 17426596

COVERAGE

2005-2020

INFOR

Hom

How publi this j

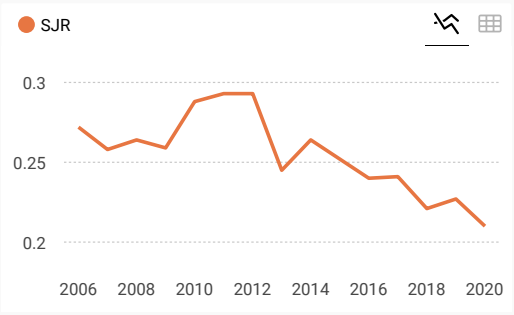
jpcs@ lishin

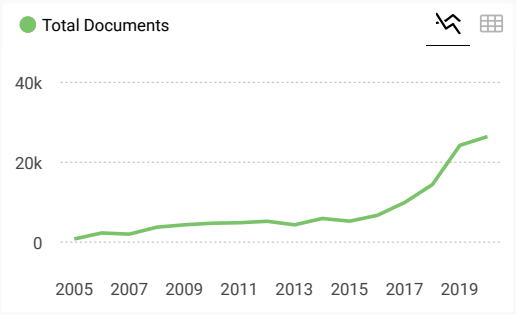
SCOPE

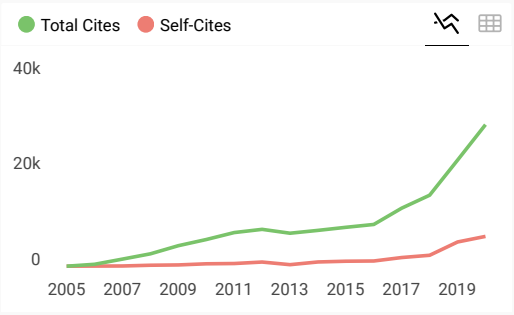
The open access Journal of Physics: Conference Series (JPCS) provides a fast, versatile and cost-effective proceedings publication service.

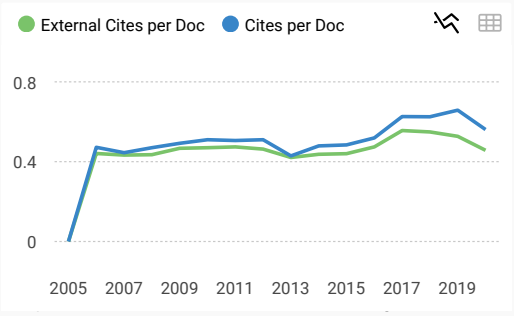
Join the conversation about this journal

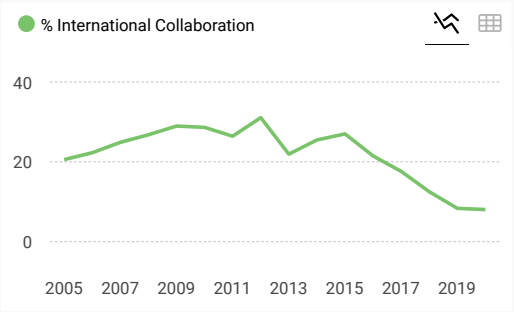
Quartiles

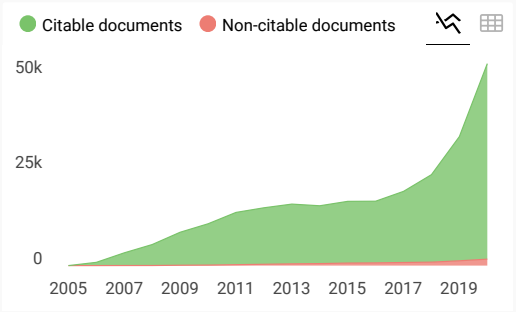


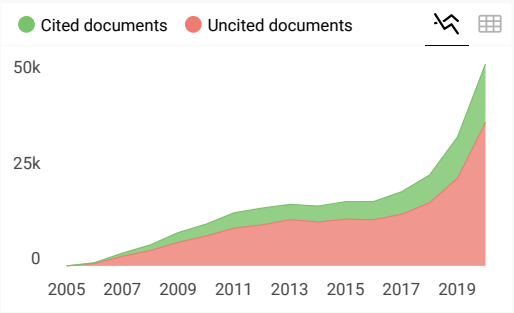












← Show this widget in your own website

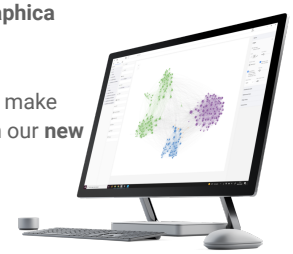
Just copy the code below and paste within your html code:

```
<a href="https://www.scim
```

SCImago Graphica

Explore, visually communicate and make sense of data with our **new free tool**.

Get it

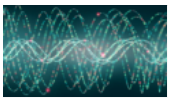


Welcome to IOPscience, the home of scientific content from IOP Publishing and our partners.

Find out more about IOPscience and IOP Publishing.

Latest news from Physics World

RSS feed



07 FEB 2022

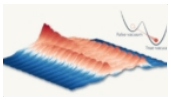
Quantum sensor shrinks dark matter's parameter space

Exposure of xenon atoms to time-varying magnetic field places new limits on axion-like particles

07 FEB 2022

Independent QA: catching, understanding and correcting errors before radiotherapy begins

Independent QA not only ensures delivery of intended therapeutic dose, it drives continuous improvement in patient safety by rooting out systematic machine and workflow errors



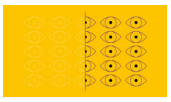
05 FEB 2022

Ultracold atoms move closer to simulating the early universe

Shaken optical lattice undergoes discontinuous phase transition

Latest news and articles

RSS feed



31 JAN 2022

IOP Publishing launches portfolio-wide transparent peer review on its OA journals

IOP Publishing (IOPP) is moving all its open access (OA) journals to transparent peer review, making it the…

25 JAN 2022

IOP Publishing and the TIB – Leibniz Information Centre for Science and Technology announce three-year unlimited OA publishing agreement

Not-for-profit society publisher IOP Publishing (IOPP) and TIB – Leibniz Information Centre for Science and Technology have established…

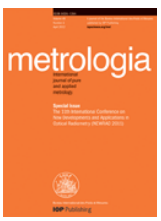
21 JAN 2022

IOP Publishing brings expert scholarly analytics provider The Lens on board

IOP Publishing (IOPP) has partnered with The Lens, a not-for-profit data aggregation and analysis platform for scholarly articles…

Featured journals

More than 70 science journals.



Latest books

Born-digital essential physics books.

Conference series

Specialist proceeding publications.

Customer Services

Please e-mail us at customerservices@ioppublishing.org with your questions, comments or suggestions.

Librarians

Visit librarians.iop.org, our dedicated home for librarians.

Committee of The 2nd UPINCASE 2020

11) Dr. Niken Wahyu Utami, M.Pd (Universitas PGRI Yogyakarta, Indonesia)
12) Dr. Setyo Eko Atmojo, M.Pd (Universitas PGRI Yogyakarta, Indonesia)
13) Banu Santoso, S.T., M.Eng (Universitas AMIKOM Yogyakarta, Indonesia)
14) Dr. Pudjo Suharso, M.Si (Universitas Negeri Jember, Indonesia)
15) Dr. Didi Susanto, M.Pd, M.Kom (Universitas Islam Kalimantan, Indonesia)
16) Dr. M. Noorazalan Abd Aziz (Universiti Pendidikan Sultan Idris, Malaysia)
17) Bintang Wicaksono, M.Pd (Universitas PGRI Yogyakarta, Indonesia)
18) Laela Sagita, M.Sc ((Universitas PGRI Yogyakarta, Indonesia)
19) Theofilus Bayu D, M.Sc (Universitas PGRI Yogyakarta, Indonesia)
20) Rianto, M.Kom (Universitas PGRI Yogyakarta, Indonesia)
21) Ekha Rifki Fauzi, M.P.H (Universitas PGRI Yogyakarta, Indonesia)
22) Ari Kusuma Wardana, M.Cs (Universitas PGRI Yogyakarta, Indonesia)
23) Arip Febrianto, M.Pd.I (Universitas PGRI Yogyakarta, Indonesia)
24) Andi Dian Rahmawan, M.A (Universitas PGRI Yogyakarta, Indonesia)
25) Kintoko, M.Pd (Universitas PGRI Yogyakarta, Indonesia)
26) Juang Kurniawan S, M.Pd (Universitas PGRI Yogyakarta, Indonesia)

Contact Person:

1) Marti Widya Sari
Universitas PGRI Yogyakarta, Indonesia
Email: widya@upy.ac.id

2) Committee of UPINCASE 2020
Universitas PGRI Yogyakarta, Indonesia
Email: upincase@upy.ac.id

PREFACE

Dear distinguished Authors and Guests,

The organizing committee warmly welcome you to The 2nd UPY International Conference on Applied Science and Education (UPINCASE), held on 3 – 4 November 2020 in Yogyakarta, Indonesia virtually. UPINCASE 2020 is implemented virtually, because as we all know, it is currently still in the state of the Covid-19 pandemic, so this limits our space. The topics covered in this conference include Engineering, Information Technology, Technology for Education, Applied Science, and Science Education.

On behalf of The 2nd UPINCASE 2020, we would like to thank all the authors that contributed to this conference. We would like to extend our special gratitude to the Keynote Speakers who support this conference.

1) Prof. Tai-Chien Kao (National Dong Hwa University, Taiwan)
   Theme: Science and Technology for Future Education
2) Prof. Wasino (Universitas Negeri Semarang, Indonesia)
   Theme: Social Transformation in Society 5.0
3) Dr. David Nwanna Dumbiri (University of Benin, Nigeria)
   Theme: Information and Technology for Sustainable Development
4) Prof. Suzuki Takashi (Kobe University, Japan)
   Theme: Business and Services Transformation in Society 5.0
5) Dr. Arman Shah bin Abdullah (Universiti Pendidikan Sultan Idris, Malysia)
   Theme: Innovation of Educational Technology
6) Dr. Paiman (Universitas PGRI Yogyakarta, Indonesia)
   Theme: Technology Development to Increase Crop Production

The conference was held for two days and divided into two parts, Plenary Session and Parallel Session. On the first day, the keynote speaker at the Plenary Session is Prof. Kao (Taiwan), Prof. Wasino (Indonesia) and Dr. Dumbiri (Nigeria), then continued with Parallel Session. On the second day, the keynote speaker at the Plenary Session is Prof. Takashi (Japan), Dr. Arman Shah (Malaysia) and Dr. Paiman (Indonesia), then continued with Parallel Session.

The conference was held online through the Zoom Meeting, and was attended by around 250 participants on the first and second day. The technical problem at this conference was about the unequal conditions of the internet network in each participant's area, so that it was a bit of a hindrance, especially during the Parallel Session.

The number of papers presented at this conference was 172 papers, which was divided into 9 Virtual Room, in two days. After the peer review process, the submitted papers were selected on the basis of originality, significance and clarity for the purpose of the conference. We hope that the conference results constituted significant contribution to the knowledge in these up to date scientific field.

We will be committed ourselves to make this conference more and more professional with fully and enjoyable academic research and discussion platform for authors and attendees. Sincerely as always, we look forward to your attention and support to the next UPINCASE.

With our warmest regards,
Marti Widya Sari

Conference Chair
5 November 2020
Universitas PGRI Yogyakarta, Indonesia

Table of contents

Volume 1823

2021

Previous issue Next issue

Second UPY International Conference on Applied Science and Education (2nd UPINCASE) 2020 3-4 November 2020, Yogyakarta, Indonesia

Accepted papers received: 11 February 2021
Published online: 31 March 2021

Open all abstracts

Preface

Papers

OPEN ACCESS 012009

Experimental Study of Electrode Design and Configuration for Bioimpedance Measurement

Amalia C. Nur'aidha and Dhananjaya Y.H Kumarajati

+ Open abstract View article PDF

OPEN ACCESS 012010

Using PPP Method in the Process of Online Training and Strengthening EFL Teachers' Pedagogic Competence

S Wiyanah, R Irawan and J Kurniawan

+ Open abstract View article PDF

OPEN ACCESS 012011

The international students' perception towards online learning using the tencent meeting during covid-19 outbreak

H Wiranota and T T Wijaya

+ Open abstract View article PDF

OPEN ACCESS 012012

Assistive Technology for the Disabilities in the Mitigation Training

Luqman Hidayat and Yanuar Bagas Arwansyah

+ Open abstract View article PDF

OPEN ACCESS 012013

Mind Mapping Based Mobile Learning System to Increase Student Creativity

Supri Hartanto, Septian Aji Permana and Yitno Pringgowijoyo

+ Open abstract View article PDF

OPEN ACCESS 012014

Greenhouse automation: smart watering system for plants in greenhouse using programmable logic control (PLC)

T B Dwinugroho, Y T Hapsari and Kurniawanti

+ Open abstract View article PDF

OPEN ACCESS 012015

Extrinsic Motivation Influencing Vocational Students' English Achievement on *Hunting Bule* Before and During Pandemic

Y A Pinem

+ Open abstract View article PDF

OPEN ACCESS 012016

Achievement of Pre-Service Teacher's Competency in Educational Technology during SEA-Teacher project: Student's Perception in Online system

Palupi Sri Wijayanti and Juang Kurniawan Syahruzah

+ Open abstract View article PDF

OPEN ACCESS 012017

Improving Students' Mathematical Self-Regulated Learning with Modified Moore Method

Abdul Aziz Saefudin, Koryna Aviory and Gunawan

+ Open abstract View article PDF

OPEN ACCESS 012018

Lost Space Utilization for Public Activities at Railway Crossing in Mejing and Sedayu Village, Yogyakarta

Eka Widyaningsih, Radiaswari and Adinda Rafika Dani

+ Open abstract View article PDF

OPEN ACCESS 012019

Recreational Mathematics Activities to Enhance Students' Mathematics Achievement and Learning Motivation

Ganung Anggraeni and Budiharti

+ Open abstract View article PDF

OPEN ACCESS 012020

The performance of information systems: Empirical research on government organization

D S Budiarto, S W Ningrum, Yennisa, R P Sari and R E Diansari

+ Open abstract View article PDF

OPEN ACCESS 012021

Training Class Action Research, School Action Research and Writing of Scientific Articles for Teachers and Principals of Basic School in Banyuurip Purworejo

Esti Setiawati and Sunarti

+ Open abstract View article PDF

OPEN ACCESS 012022

Weed control technology to increase growth and yield of mungbean (*Vigna radiata* L.) in soils types

Paiman, Sukhemi and Nina Widyaningsih

+ Open abstract View article PDF

OPEN ACCESS 012023

Development of Integrated Online Learning Content Distribution Module Based on Social Media for Beginners Online Teachers in Creating Learning Content Due to The Covid-19 Pandemic

M. P. Permana, R. Didik, G. P. Bayu, M. Amiruddin and Y. V. Yoanita

+ Open abstract View article PDF

OPEN ACCESS 012024

Improve ability and skills of beginning reading without spelling by using andriod-based macromedia flash media application

Wibawa and M W Titik

+ Open abstract View article PDF

OPEN ACCESS 012025

Improvement of Social Manufacturing Data Performance on Industry 4.0 Era

Tri Siwi Nugrahani, Harlina Safitri, Sulkhanul Umam and Evi Grediani

+ Open abstract View article PDF

OPEN ACCESS 012026

Adoption of innovations online tutoring apps on high school students

M Badri

+ Open abstract View article PDF

OPEN ACCESS 012027

Implementation of Internet of Thing Technology for Infrared Therapy Device Design

Ekha Rifki Fauzi

+ Open abstract View article PDF

OPEN ACCESS 012028

Response Of Soybean Growth In Sandy Coastal Soil To Seaweed Compost And Biochar Application

Okti Purwaningsih, Puguh Bintang Pamungkas, Dede Beny and Melinda Oktavia

+ Open abstract View article PDF

OPEN ACCESS 012029

Black Box Testing on ukmbantul.com Page with Boundary Value Analysis and Equivalence Partitioning Methods

Muhammad Sholeh, Irmah Gisfas, Cahiman and Muhammad Anwar Fauzi

+ Open abstract View article PDF

OPEN ACCESS 012030

Unlocking digital literacy practices of EFL teachers

Utami Soifah, Padrul Jana and Bambang Widi Pratolo

+ Open abstract View article PDF

OPEN ACCESS 012031

RDBMS dan Google Maps Integration Model for WebGIS Based Land Ownerships Data Visualization

E Sutanta, RA Kumalasanti, EK Nurnawati, C Iswahyudi and T A Putra

+ Open abstract View article PDF

OPEN ACCESS 012032

The Model Prototype of WebGIS-based for Organizational Asset Management

E Sutanta, EK Nurnawati, C Iswahyudi and RA Kumalasanti

+ Open abstract View article PDF

OPEN ACCESS 012033

The study of addition variety of vegetable flour on physical characteristics of tortilla chips

A N Syarifah and D Amrih

+ Open abstract View article PDF

OPEN ACCESS 012034

Analysis of the Wood Production Machine Process for the Application of Wayang Klitik Technology

N Fajrie, I Purbasari and D Setiawan

+ Open abstract View article PDF

OPEN ACCESS 012035

A study on awareness of bibliographic management software for the academic writing activity in higher education

N Setiani, B R Aditya, I Wijayanto and A Wijaya

+ Open abstract View article PDF

OPEN ACCESS 012036

Student Awareness of Digital Payment Services (Case Study in Indonesia)

A Iradianty and B R Aditya

+ Open abstract View article PDF

OPEN ACCESS 012037

A web based e-archives information system design in Universitas PGRI Yogyakarta

S Oyama, A Wahana and R Widagsa

+ Open abstract View article PDF

OPEN ACCESS 012038

Effects Of Sucrose Addition To Lactic Acid Concentrations And Lactic Acid Bacteria Population Of Butterfly Pea (*Clitoria Ternatea* L.) Yogurt

Suharman, A Sutakwa and L S Nadia

+ Open abstract View article PDF

OPEN ACCESS 012039

Media information technology games based on local cultural content

Septian Aji Permana, Ari Retno Purwanti, Supri Hartanto and Muhamad Maulana Magiman

+ Open abstract View article PDF

OPEN ACCESS 012040

Webinar Technology-Based Science Article Writing Training

Septian Aji Permana, Supri Hartanto, Ayuningrum Lia and Muhamad Maulana Magiman

+ Open abstract View article PDF

OPEN ACCESS 012041

Developing Mathematics HOTS Test Items in Essay

M.M. Endang Susetyawati and Christina Eva Nuryani

+ Open abstract View article PDF

OPEN ACCESS 012042

Problem-Based Learning vs Student Teams Achievement Divisions Assessed from Student's Mathematics Problem Solving Ability

Danuri, Vita Dewi Prastiwi Jati and Padrul Jana

+ Open abstract View article PDF

OPEN ACCESS 012043

Spherical K-Means method to determine earthquake clusters

D S Rini, I Sriliana, P Novianti, S Nugroho and P Jana

+ Open abstract View article PDF

OPEN ACCESS 012044

An Entrepreneurial Capacity Highlight In Feather Duster SMEs, Karanglo Village, Klaten Selatan District

Arista Natia Afriany, Faizal Ardiyanto, Ahsan Sumantika and Adhi Prakosa

+ Open abstract View article PDF

OPEN ACCESS 012045

An alternative to a butterfly pea flowers and spices dip as a creative endeavour in the village of Bawuran

D Amrih and A Sutakwa

+ Open abstract View article PDF

OPEN ACCESS 012046

PPT-Audio; The Alternative Audio-Visual Media for Online Learning during the Corona Pandemic

E P E Syafril and W Kurniawati

+ Open abstract View article PDF

OPEN ACCESS 012047

Analysis of The Effect of A Catalyst Hydrocarbon Crack System Spiral Pipe Against The 4-Stroke Motorcycle Engine Power

Didik Rohmantoro, Bayu Gilang Purnomo, Muhamad Amiruddin and Sena Mahendra

+ Open abstract View article PDF

OPEN ACCESS 012048

Markov Regime Switching-Garch Modeling On World Oil Prices

N M S Dwipa and B Wicaksono

+ Open abstract View article PDF

OPEN ACCESS 012049

Mathematics Teachers' Perceptions of Using the Internet for Online Learning

Azhumna Hafidzatulistya and Padrul Jana

+ Open abstract View article PDF

OPEN ACCESS 012050

Internet of Things Design on Chili Plants

R. Hafid Hardyanto, Prahenusa Wahyu Ciptadi and Nurdin Mukhayat

+ Open abstract View article PDF

OPEN ACCESS 012051

Utilization of NON B3 Waste as Learning Media in Online Class during the Pandemic

Ramdhan Harjana, Dwi Putri Fatmawati, Yulian Agus Suminar, Faiz Noormiyanto, Dwi Setianingsih and Luqman Hidayat

+ Open abstract View article PDF

OPEN ACCESS 012052

Pl/sql design to determine the training data pattern on the Adaline neural network

Tri Hastono and Firdiyan Syah

+ Open abstract View article PDF

OPEN ACCESS 012053

Development of a Multirepresentation-Based Learning Model to Increase the Emotional Intelligence of 5 - 6 Years Old Children

Novianti Retno Utami, Windi Wulandari Utama Iman and Herdi Handoko

+ Open abstract View article PDF

OPEN ACCESS 012054

Training of Frozen Cassava *(Manihot esculenta)* Processing to Increase Selling Value

L S Nadia, A Sutakwa, Suharman, D Amrih and A N Syarifah

+ Open abstract View article PDF

OPEN ACCESS 012055

Geofencing technology implementation for pet tracker using Arduino based on Android

Deni Setiawan, Marti Widya Sari and R.Hafid Hardyanto

+ Open abstract View article PDF

OPEN ACCESS 012056

Developing parking queue monitoring system using Wireless Sensor Network and RFID technology

Banu Santoso and Marti Widya Sari

+ Open abstract View article PDF

OPEN ACCESS 012057

Applying information and communication technology on learning model innovation of character education

Rosalia Indriyati Saptatiningsih, Setia Wardani and Sari Marti Widya

+ Open abstract View article PDF

OPEN ACCESS 012058

The Development of Web-Based Correspondence Information Systems in University Using Scrum

Nurirwan Saputra, Meilany Nonsi Tentua and Ratna Purnama Sari

+ Open abstract View article PDF

OPEN ACCESS 012059

Prediction of Banking Stock Prices Using Naïve Bayes Method

Ida Setiani, Meilany Nonsi Tentua and Sunggito Oyama

+ Open abstract View article PDF

OPEN ACCESS 012060

The Use of Augmented Reality to Build *Occupational Health and Safety* (OHS) Learning Media

Aditya Wahana and Hasti Hasanati Marfuah

+ Open abstract View article PDF

OPEN ACCESS 012061

Awareness Implementation of Ihe Prevention of Health Protocol of Covid-19

Bayu Gilang Purnomo, Didik Rohmantoro, Yulia Venti Yoanita, Muhammad Priya Permana and Muhamad Amiruddin

+ Open abstract View article PDF

OPEN ACCESS 012062

OpenCV and Machine Learning Implementation for the Vehicles Classification and Calculation in the Parking Tax Monitoring System at the Bantul Regency Regional Financial and Asset Agency (BKAD)

D Agustiani, S Wardani and A Riyadi

+ Open abstract View article PDF

OPEN ACCESS 012063

Application of Data Mining Using the K-Means Algorithm in Rural and Urban Land and Building Tax (PBB-P2) Receivables Data in Bantul Regency

H D Aprilia and D Agustiani

+ Open abstract View article PDF

OPEN ACCESS 012064

The influence of gurney flap to the stability of formula car rear wing with simulation

Y Venti Yoanita, S T Pinindriya, E Kumolosari, Bayu Gilang P and R Didik

+ Open abstract View article PDF

OPEN ACCESS 012065

Subsurface Identification of Campus I Universitas PGRI Yogyakarta using The Microtremor Wave Method

D Widyawarman

+ Open abstract View article PDF

OPEN ACCESS 012066

Utilization of Information Technology in Improving Teacher's Performance

Kaswi, Suad and Gunawan Setiadi

+ Open abstract View article PDF

OPEN ACCESS 012067

Planting Self-Confident Characters Assisted by Technology and Science Through Reading Activities

Silvia Indriani, Sri Utaminingsih and Mohammad Kanzunnudin

+ Open abstract View article PDF

OPEN ACCESS 012068

Double Speed Electric Rotary Machine As Technology In Making Remitan Crafts

Jayanti Putri Purwaningrum, Imaniar Purbasari, Gilang Puspita Rini and Nur Fajrie

+ Open abstract View article PDF

OPEN ACCESS 012069

Development Of Social Science Teaching Materials By Using A Scientific Approach Based On The Surrounding Environment In Grade IV Students Of SD 1 Jati Kulon

Nur Khabib, Hilal Majdi and Su'ad

+ Open abstract View article PDF

OPEN ACCESS 012070

Flipped Classroom Learning Based on Android Smart Apps Creator (SAC) in Elementary Schools

Oktri Suhartati

+ Open abstract View article PDF

OPEN ACCESS 012071

Development of Ethno-mathematics based Mathematics Teaching Material Technology: A Needs Analysis

R Sulistiyoningsih Astriani, Sri Utaminingsih and Sri Surachmi

+ Open abstract View article PDF

OPEN ACCESS 012072

Development Design Technology Comic Literacy Android Based *E-book*

Ahmad Syukri Endiawan, Irfai Fathurohman and Santoso

+ Open abstract View article PDF

OPEN ACCESS 012073

Ethno-Edutainment Digital Module to Increase Students' Concept Understanding

Sekar Dwi Ardianti and Savitri Wanabuliandari

+ Open abstract View article PDF

OPEN ACCESS 012074

Analysis Creative Thinking Ability and Scientific Communication in HOTS Learning Using Whatsapp Media

Deni Nasir Ahmad, Abdul Karim, Ihwan Zulkarnain, Aster Pujaning Ati and Diah Oga Nusantari

+ Open abstract View article PDF

OPEN ACCESS 012075

Development of Pocket Book Based on Science Literacy

Nur Laila Afifah, Murtono, Santoso and Sekar Dwi Ardianti

+ Open abstract View article PDF

OPEN ACCESS 012076

The Correlations Between Academic Supervision Using Zoom Meeting Technology with Teacher Job Satisfaction

Suripah, Sukirman and Sri Surachmi W

+ Open abstract View article PDF

OPEN ACCESS 012077

Implementation problem based learning model using zoom meeting application

Ary Kustiyani, Sri Surachmi W and Suad

+ Open abstract View article PDF

OPEN ACCESS 012078

A Need Assessment of Integrated Science Teaching Material Based Higher Order Thinking Skills (HOTS)

S Hartik, Sri Utaminingsih and Ahmad Hilal Madjdi

+ Open abstract View article PDF

OPEN ACCESS 012079

The Effectiveness of the Development of Problem Based Learning Model Based on Bakiak Game Technology in Mathematics Learning in Elementary Schools

N Imama, S Utaminingsih and A H Madjdi

+ Open abstract View article PDF

OPEN ACCESS 012080

Development of Learning Media Technology Based on Natural Science Local Wisdom Materials

Ahmad Shofa, Su'ad and Murtono

+ Open abstract View article PDF

OPEN ACCESS 012081

Development of Science Teaching Materials Based on STEM: A Needs Analysis

Sustiningsih, Sri Utaminingsih and Santoso

+ Open abstract View article PDF

OPEN ACCESS 012082

Education and Training Technology Increases Teacher Competence

Handayani Redjeki, Sukirman and Santoso

+ Open abstract View article PDF

OPEN ACCESS 012083

Needs analysis of picture story book using augmented reality technology

Yulita Ayu Suryani, Sri Utaminingsih and Achmad Hilal Madjdi

+ Open abstract View article PDF

OPEN ACCESS 012084

The Use of Technology in Online Learning to Improve Discipline

Roikatus Sa'diyah, Su'ad and Gunawan Setiadi

+ Open abstract View article PDF

OPEN ACCESS 012085

Science-Based Quantum Learning Models In Elementary School

Indah Ariftian, Ahmad Hilal Madjdi and Murtono

+ Open abstract View article PDF

OPEN ACCESS 012086

Social Science Learning In Covid 19 Pandemic By Using Internet Media

Sunoto, Su'ad and Erik Aditia Ismaya

+ Open abstract View article PDF

OPEN ACCESS 012087

Determinant factors of extraordinary elementary school teacher professionalism

Wahyu Kurniawan, Su'ad and Sukirman

+ Open abstract View article PDF

OPEN ACCESS 012088

Constraints in Implementing Online Learning during the Covid-19 Pandemic

Suci, Wiji Lestari Candra, Murtono, Suryani and Fitri Budi

+ Open abstract View article PDF

OPEN ACCESS 012089

The Influence of Student Motivation, School Environment, on Student Learning Achievement

Yoga Heri Supratno, Murtono and Widjanarko Mochamad

+ Open abstract View article PDF

OPEN ACCESS 012090

Media Technology Takontikasi Games Based of Realistic Mathematics

Siti Zaenap, Sri Utaminingsih and Santoso

+ Open abstract View article PDF

OPEN ACCESS 012091

Android-based math learning to improve critical thinking

A Widiyatmoko, S Utaminingsih and Santoso

+ Open abstract View article PDF

OPEN ACCESS 012092

HOTS - based scientific learning to increase the comprehension concept and science students skill

Dewi Widyaningrum, Sri Utaminingsih and Santoso

+ Open abstract View article PDF

OPEN ACCESS 012093

The influence of think pair share model and crossword puzzle to increase primary school students' mathematical learning interest

Taufiqur Rohman, Sri Surachmi and Murtono

+ Open abstract View article PDF

OPEN ACCESS 012094

Content validity of android-assisted Problem Based Learning-oriented illustrated stories teaching materials

Siti Zulifah, Murtono, Santoso and S Masfuah

+ Open abstract View article PDF

OPEN ACCESS 012095

Effectiveness of Blended Learning to Improve Critical Thinking Skills and Student Science Learning Outcomes

Prihadi, Murtono and Gunawan Setiadi

+ Open abstract View article PDF

OPEN ACCESS 012096

Manipulative Media Technology for Addition and Subtraction of Integers in Elementary Schools

Anna Yuliwijayanti, Santoso and Achmad Hilal Madjdi

+ Open abstract View article PDF

OPEN ACCESS 012097

Design of Invention-Based Student Activity Sheets Technology to Improve Learning Outcomes of Cube and Block Volume

Budi Sayekti, Murtono and A. Hilal Madjdi

+ Open abstract View article PDF

OPEN ACCESS 012098

Science-Based Character Building

Muhammad Imam Suwiji, Murtono and Su'ad

+ Open abstract View article PDF

OPEN ACCESS 012099

Analysis of TBLA (Transcript Based Lesson Analysis) SainsMastery of Mathematical Concepts

Hariyanto, Sri Utaminingsih and Santoso

+ Open abstract View article PDF

Laeli Nur Hasanah and Rosmauli Jerimia Fitriani

+ Open abstract View article PDF

OPEN ACCESS 012114

Developing Culture-Based Mathematics Learning Media with Adobe Flash for JHS Students

Wahyu Budi Saputra, Niken Wahyu Utami and Ibrohim Aji Kusuma

+ Open abstract View article PDF

OPEN ACCESS 012115

Systematic Literature Review of Profiling Analysis Personality from Social Media

Idris, E Utami, A D Hartanto and S Raharjo

+ Open abstract View article PDF

OPEN ACCESS 012116

Analysis of Enterprise Resource Planning (ERP) system implementation for manufacturing in Indonesia

Marti Wdya Sari and Banu Santoso

+ Open abstract View article PDF

OPEN ACCESS 012117

Applying an integrated production system based on social manufacturing to develop a medical device

Marti Widya Sari, Herianto, IGB Budi Dharma and Alva Edy Tontowi

+ Open abstract View article PDF

OPEN ACCESS 012118

Science and Technology for Future Education

Tai-Chien Kao

+ Open abstract View article PDF

OPEN ACCESS 012119

Information Technology for Sustainable Development In Vocational Education

David Nwanna Dumbiri and Septian Aji Permana

+ Open abstract View article PDF

JOURNAL LINKS

The Model Prototype of WebGIS-based for Organizational Asset Management

The Model Prototype of WebGIS-based for Organizational Asset Management

E Sutanta[1], EK Nurnawati[1], C Iswahyudi[1], and RA Kumalasanti[1]

[1]Department of Informatics, Institut Sains & Teknologi AKPRIND Yogyakarta, Kalisahak Street #28, Yogyakarta, Indonesia

edhy_sst@akprind.ac.id

Abstract. Large organizations generally have assets distributed over separate locations. The problem is, decisions or policies will be easier to make if they are supported by a system that can dynamically visualize the existence of every asset owned by the organization. The WebGIS-based asset management approach is an alternative solution to this problem. This study examines a proposed WebGIS-based organizational asset management model. An application prototype was developed to test the proposed model using PHP, JavaScript, HTML, and CSS software. The Google Maps API is also used to create a base map. On the back end, authorized users can control and perform input, edit, and delete asset data. On the front end, public users can access public information. The test results of the developed prototype can provide various information on organizational assets visually based on digital maps that suit the needs of its users. The developed prototype still needs to be tested further, especially concerning security aspects, browser compatibility, and display design suitability.

1. Introduction

Asset management is very important for any organization or company. The term asset management consists of 2-word elements, namely asset, and management. Management is the effective use of resources to achieve goals, while assets have the meaning of something that has exchange value or capital or wealth [1]. More generally, assets are all property owned by companies or individuals that have potential economic benefits in the future [2]. Thus, asset management in an organization or company is the effective use of all property owned by a company or individual that has potential future economic benefits achieving its goals. There are at least 6 reasons why an organization or company needs asset management, namely maintaining asset value, monitoring asset depreciation, making budgeting easier, avoiding excess purchases, creating risk management, and increasing security [2].

Asset management is needed by decision-makers within the organization to make the right decisions so that assets can be more useful. With good asset management, companies can reduce expenses and increase cash income [1]. Good asset management is needed to support the achievement of organizational or company goals. Asset management is more than just recording and managing asset lists. Asset management is a series of stages that must be carried out, namely planning, acquisition, inventory, legal audit, appraisal, operation and maintenance, deletion (including removal and deletion), and renewal/rejuvenation [2, 3]. To support good asset management, organizations generally implement a Computerized Maintenance Management System (CMMS) [2].

The types of assets in the organization or company include current assets and non-current assets. Current assets have the characteristics of the fastest and easiest way to convert into cash, have short cycles and benefits, and their benefits are quickly used up and will be replaced with other assets. Meanwhile, non-current assets have a cycle and a useful life of more than one year. Non-current assets consist of fixed assets, intangible assets, and long-term investments [4]. In the accounting system records, each asset will be coded by type using the Chart of Accounts (CoA) [5, 6]. CoA is marked with a numeric symbol as a sign that there are differences in each type. For reasons of ease of code management, a CoA can be three to four numeric digits long. The CoA structure is the first digit encoding the major account, the second digit encoding the sub-accounts, and the third digit encoding the sub-accounts. The standard form of CoA that has been applied in most organizations is that the grouping of account codes always starts with assets, followed by debt, equity, income, and expenses. Current assets in the CoA are arranged in order of liquidity levels. Whereas for fixed assets, the arrangement always starts with the tangible fixed assets that have the longest useful life. Even though the structure and form of the CoA are the same, the meaning of the code used can be different for different types of organizations or companies, both in the public and private sectors.

Large organizations or companies generally have assets distributed in different locations. In this situation, the process in the asset management system becomes more complex. The asset management system must support a less structured and standardized asset inventory, periodic reporting on asset conditions, analysis of asset data for policy-making needs, and oversight of asset distribution. To provide support in policy-making for these distributed assets, an asset management system can be developed by combining a CMMS with a GIS-based system. An example of this case found in the WebGIS application for asset management of land and building of the Madiun city government [4]. Another example can also be found in integrating building information systems and GIS in the maintenance management of tunnel facilities [5]. A GIS-based procedure for preliminary mapping of pluvial flood risk at a metropolitan scale [6] is another example of the use of GIS in helping to prioritize the emergency management and the planning of mitigation actions. Research on the use of GIS for asset management has also been carried out by developing an enterprise GIS that is integrated with a smart grid [7]. This system functions to monitor, control, manage demand and assets for electric utilities in an intelligent network. PT. PLN (Persero) has also developed an application called a Web-Based GIS Asset Inventory which displays location and asset information [8]. Some of these examples show that GIS can be applied in various fields, including to support asset management. The benefits of GIS-based asset management are mainly to support macro planning, policymaking, and good governance in the organization.

This paper reviews a proposed CMMS integration model and Web-GIS based asset mapping to support distributed asset management. The structure of the discussion in this paper starts from the background of the need for an asset management model that combines CMMS and WebGIS-based asset mapping. The second part discusses the material and research method. Furthermore, in the third part, the proposed model is discussed, including functional requirements, scenario models, and architecture models. The fourth section reviews the tests and results using a prototype. The final section of this paper contains the conclusions and further research.

2. Materials and Method

The model proposed in this study utilizes a relational database as the main material for the development of an organizational asset management model. The database structure is arranged according to the following business model. The model is designed for a private company running a non-profit venture. The company has several branches spread across several locations. Each branch company has the same type of business. Each branch owns and manages assets independently as well. The size of the branch companies can be different but have the same organizational structure. Asset codes are arranged according to the standard structure of the CoA [1, 2]. Each unit of organizational assets, in addition to recording detailed data, is also equipped with geographic data in the form of latitude and longitude coordinate points where the asset is located. For this reason, the database used in the proposed model is also an extension of the database design for multipurpose WebGIS [3].

As a proof of concept of the proposed model, a system prototype is developed using a prototyping approach. The prototyping stage refers to Robert S Pressman [4] and Sommerville [5]. This approach is used with the consideration that the user has defined the general purpose of the system required but does not specifically identify the system's input, processing, or output requirements. Prototypes are built in stages, including requirements gathering and analysis, quick design, build a prototype, initial user evaluation, refining prototypes, also implement product and maintain.

At an early stage, system requirements are defined. At this stage, interviews are conducted with users to find out their expectations of the system to be built. In the second stage, a preliminary quick design is made. At this stage, a simple system design is compiled using a use case diagram. In the build of a prototype phase, an actual prototype designed based on the information gathered from the quick design stage. In the initial user evaluation stage, the model is presented to the user. Suggestions and comments are collected from the user and provided to the developer. Next, in the refining prototype stage, we need to refine the prototype according to the user's feedback whether it doesn't fit the current prototype. This phase will not pass until met the user requirements. Then, a final system is developed based on the approved final prototype. The last stage is to implement products and maintain them. Once the final system is developed based on the final prototype, it is thoroughly tested and deployed to production. We have conducted prototype testing on two things, namely component testing (including unit testing and module testing) and integration testing (sub-system testing and system testing). Model testing is done using simulation data. This is because asset data is confidential to the public. Simulation data are arranged in such a way that the data item values are close to the real conditions.

3. Proposed Model

The proposed model involves 4 groups of users, namely super admin, leader, operator, and guest. Super admin is the personnel that has the highest authority to manage the system. The leaders include the heads of the head office and heads of branch offices, and heads of departments (including the asset department), divisions and sub-divisions at the head office and branches. Operators consist of operators at head office and operators at branch offices. Guests are users who can access public information without logging in. Figure 1 represents the basic components and workflow for the proposed model.

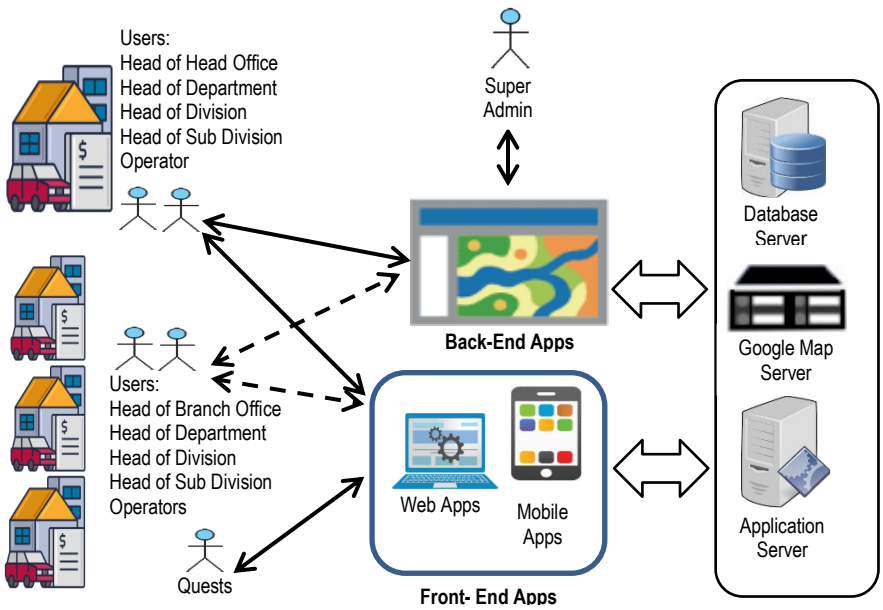


Figure 1. WebGIS-based model for Organizational Asset Management

In the proposed asset management system there are 4 main processes, as follows:

- User data settings. In this initial process, users who can access the system are determined. All user data is inputted through the settings menu.
- Master data management. In this process, master data related to the existing department, division, sub-division, branch location, asset category, asset sub-category, asset sub-category, brand, vendor, room, and responsible personnel are inputted.
- Asset management. After processes 1 and 2 as described above are completed, then the system runs according to daily operations at the head office and branches. In this section, there are 8 asset management features provided according to the cycle in asset management [1, 2].
- Presentation of information and reports. In this process, information and reports in various forms are displayed according to the needs and authority of the users.

3.1. Functional Requirements

The functional requirements of the WebGIS-based asset management model are as follows:

- The model can be set up for use in the head office and all branches in distributed locations.
- The model can manage both user and master data.
- The model can manage data at every stage of asset management, including planning, acquisition, inventory, legal audit, appraisal, operation and maintenance, deletion (including removal and deletion), and renewal/rejuvenation.
- The model can receive data input coordinates the location of the asset.
- The model can display information and asset reports in form of summary and detail.
- Models can display information and asset reports in text, table, and graphic formats.
- The model can display information and asset reports in a filtered manner. Examples of data filtering are based on department, division, sub-division, location, category, sub-category, brand, vendor, room, time, condition, and responsible personnel. Authorized users can access detailed information and / or reports, while guests can only view public information.
- The model can display information and report numbers 5, 6, and 7 on an online map.

3.2. Model Scenario

Referring to Figure 1, then the scenario for the proposed model is designed as follows:

- Super Admin has the privilege to manage both the system and user master data, branch offices, and coding of organizational assets.
- The leaders, which includes the head of the head office, the heads of branch offices, the heads of the asset department, has the privilege to determine the operators and assets in their respective offices or departments.
- Operators have the privilege to manage asset data in their respective offices (head office or branch offices).
- All report modules are equipped with options, which include a form (summarized or detailed), format (text, table, or graphic), type (department, division, sub-division, location, category, sub-category, brand, vendor, room, time, condition, or person in charge), and type of output (print, export to MS Excel or pdf format).
- All information can be displayed on the map online.
- Guests can only view basic information published on the front-end page, by selecting a symbol on the map, so that a window containing information on the selected asset appears.
- Each user can display information or reports according to the desired criteria by utilizing search filters.
- Guests can only access asset information published on the front-end page. Guests can access information without logging in. This type of user can come from internal or external to the organization

To support this scenario, the proposed prototype model is equipped with a user interface (UI). UI consists of 2 sides, namely back-end and front-end. The back-end UI is the pages that are used to manage (input, edit, and delete) data according to the authority of each user. Meanwhile, the Front-end UI is a page prepared for guests.

3.3. Model Architecture

According to Figure 1, the model architecture is composed of 2 parts, namely back-end apps and front-end apps. Back-end apps are developed using Android Studio tools, SQLite / Firebase, Google Maps API, and GPS / Location-Based Service. Meanwhile, the front-end apps consist of 2 parts, namely the web application and the mobile application. A web application (or web app) is application software that runs on a web server and access by the user through a web browser with an active internet connection. These applications are programmed using a client-server modeled structure. The user ("client") is provided services through an off-site server that is hosted by a third-party. Web apps are built using the Web Application Framework (Bootstrap) tools, Web API, PHP, HTML, XML, Javascript, Google Maps API, MySQL, and PostGIS. Mobile apps are built using Android Studio tools, Google Maps API, GeoServer, and WMS (Web Map Service). Google Maps is used as a base map. Considering that asset data is generally confidential to public users, the test data in this study was conducted using simulation data. The simulation data has been structured in such a way that the data item values are close to the real conditions in the asset management system.

4. Result and Discussion

We have built a prototype WebGIS-based CMMS model to support organizational asset management. The prototype was tested in an online environment. In testing, the proposed model is tested on each type of operation on each appropriate user. The test results on 4 processes (described in 3.1) involving 8 scenarios (described in 3.2) on the proposed model are compared with the output produced by the prototype. In summary, the results are shown in Table 1.

Table 1. Actual result for the forty-one test case scenario

Test Case	Scenario	Expected Result	Actual Result
Super Admin (SA)	1. SA must log in to access the back-end page	If Login is successful, UI for SA appears, if that fails, an error message appears	Success
	2. SA manages user data at the head office	SA can manage user account data and save it into a database	Success
	3. SA manages data of the branch office	SA can manage data of the branch office and save it into a database	Success
	4. SA manages the coding of assets according to the COA structure	SA can manage asset code data (major account, sub-account, and sub-sub account) and stored in a database	Success
Head of Head Office (HHO)	5. HHO can change his password	HHO can change his password	Success
	6. HHO must be logged in to access the back-end page	If successful the UI for HHO appears, if that fails, an error message appears	Success
	7. HHO has the privilege to manage HHOO	HHO has the privilege to manage HdeHO, HDiHO, HSDiHO, and HOO, and stored in a database	Success
	8. HHO can access asset information at the head office and branch offices according to its authority	HHO according to its authority can access asset information at the head office and branch offices based on the desired criteria (form, format, type, and type of output)	Success
	9. HHO can change his password	HHO can change his password	Success
Head of Department at Head Office (HDeHO)	10. HDeHO must be logged in to access the back-end page	If successful the UI for HDeHO appears, if that fails, an error message appears	Success
	11. HDeHO can access asset information at the head office and branch offices according to its authority	HDeHO according to its authority can access asset information at the head office and branch offices based on the desired criteria (form, format, type, and type of output)	Success
	12. HDeHO can change his password	HDeHO can change his password	Success
Head of Division at	13. HDiHO must be logged in to access the back-end page	If successful the UI for HDiHO appears, if that fails, an error message appears	Success

Head Office (HDiHO)	14. HDiHO can access asset information at the head office and branch offices according to its authority	HDiHO according to its authority can access asset information at the head office and branch offices based on the desired criteria (form, format, type, and type of output)	Success
Head of Sub Division at Head Office (HSDiHO)	15. HSDiHO must be logged in to access the back-end page	If successful the UI for HSDiHO appears, if that fails, an error message appears	Success
	16. HSDiHO can access asset information at the head office and branch offices according to its authority	HSDiHO according to its authority can access asset information at the head office and branch offices based on the desired criteria (form, format, type, and type of output)	Success
	17. HSDiHO can change his password	HSDiHO can change his password	Success
Head Office Operator (HOO)	18. HOO must be logged in to access the back-end page	If successful the UI for HOO appears, if that fails, an error message appears	Success
	19. HOO has the privilege to manage master data	HOO can manage master data: department, division, sub division	Success
	20. HOO has the privilege to manage master data at the head office	HOO can manage asset data at the head office, and the results are stored in a database	Success
	21. HOO can access asset information at the head office and branch offices according to its authority	HOO according to its authority can access asset information at the head office and branch offices based on the desired criteria (form, format, type, and type of output)	Success
	22. HOO can change his password	HOO can change his password	Success
Head of Branch Office (HBO)	23. HBO must be logged in to access the back-end page	If successful the UI for HBO appears, if that fails, an error message appears	Success
	24. HOO has the privilege to manage users data at the branch office	HBO can manage HDBO, HDBO, HSDBO, and BOO data, the results are stored in a database	Success
	25. HBO can access asset information at the branch offices according to its authority	HOO according to its authority can access asset information at the branch offices based on the desired criteria (form, format, type, and type of output)	Success
	26. HBO can change his password	HBO can change his password	Success
Head of Department of Assets at Branch Office (HDABO)	27. HDABO must be logged in to access the back-end page	If successful the UI for HDABO appears, if that fails, an error message appears	Success
	28. HDABO can access asset information at the branch offices according to its authority	HDABO according to its authority can access asset information at the branch offices based on the desired criteria (form, format, type, and type of output)	Success
	29. HDABO can change his password	HDABO can change his password	Success
Head of Division at Branch Office (HDBO)	30. HDBO must be logged in to access the back-end page	If successful the UI for HDBO appears, if that fails, an error message appears	Success
	31. HDBO can access asset information at the branch offices according to its authority	HDBO according to its authority can access asset information at the branch offices based on the desired criteria (form, format, type, and type of output)	Success
	32. HDBO can change his password	HDBO can change his password	Success
Head of Sub Division at Branch Office (HSDBO)	33. HSDBO must be logged in to access the back-end page	If successful the UI for HSDBO appears, if that fails, an error message appears	Success
	34. HSDBO can access asset information at the branch offices according to its authority	HSDBO according to its authority can access asset information at the branch offices based on the desired criteria (form, format, type, and type of output)	Success
	35. HSDBO can change his password	HSDBO can change his password	Success
Branch Office Operator (BOO)	36. BOO must be logged in to access the back-end page	If successful the UI for BOO appears, if that fails, an error message appears	Success
	37. HOO has the privilege to manage master data	BOO can manage master data: department, division, sub division branch office	Success
	38. BOO has the privilege to manage asset data at branch offices under HBO and HDABO policies	BOO can manage asset data and its location at the branch office, and the results are stored in a database	Success
	39. HOO can access asset information at the head office and branch offices according to its authority	HOO according to its authority can access asset information at the branch offices based on the desired criteria (form, format, type, and type of output)	Success
	40. BOO can change his password	BOO can change his password	Success
Quest (Q)	41. Guest can access asset information at the head office and branch offices according to its authority	Guest according to its authority can access asset information at the branch offices based on the desired criteria (form, format, type, and type of output)	Success

Based on the test results in Table 1, from the 4 main processes and 8 scenarios, the proposed model has produced 41 test case scenarios. The test results in all test case scenarios show that the prototype can meet all the expected scenarios. All functions in the prototype of the proposed model have been running well. The output produced is also fit with the input.

Although it cannot be compared on an apple to apple basis, we also compared our model with similar previous studies. First, we compare our proposed model with Ginardi et. al. [1]. Some of the differences can be explained here. Our research uses a prototyping approach during model development, whereas in Ginardi et. al using the waterfall approach. Object data that is processed and displayed on the map is also different. Our model is used to manage asset data which can be anything, while the previous research focused on managing data on buildings and land belonging to the Madiun City Government. The base map used is also different, we use Google Map, whereas in previous studies the map was built using ArcGIS. Another difference is also in the user, wherein our model there are variations in the types of users on the system. Similar differences are also found in our study with the results of Sinurat's study [2], wherein this study the focus of mapping is used to display item objects in the inventory. We have something in common with Sinurat's research in displaying data on a map. The difference is that we use the base map from the Google Map, while in the Sinurat study the base map was made using ArcGIS, the same as in the research of Ginardi et. al. [1]. Even though we both utilize GIS, our study has a focus that is relatively far different from the research conducted by Lee et. al. [3], Di Salvo et. al. [4], and Ashkezari [5], so it is somewhat difficult to compare. The test results on the prototype model also found no problems related to the compatibility of the browser used by the user. In general, the results of this study support the concept which states that a prototype is an initial version of a software system that is used to model models, try out design options, and find out more about the problem and its possible solutions [6].

This research will still be continued by implementing a prototype in real conditions, so that the level of user acceptance through user acceptance testing can be determined, to determine the level of system security, to determine potential failures in the system, and to determine the system response time.

5. Conclusion

A WebGIS-based asset management system model was developed and tested using a prototype run online. The test results show that all functions can run according to the designed scenario. The advantage of the proposed model is that it is possible to apply to organizations that have distributed branches without the need to change databases or applications. Even so, further research is still needed to determine the level of user acceptance, system security level, potential failure, and response time.

6. Acknowledgment

The authors would like to thanks to Institut Sains & Teknologi AKPRIND Yogyakarta Indonesia that was supported for this research and The Ministry of Research and Technology / National Research and Innovation Agency (Kemenristek/BRIN) of the Republic of Indonesia that was supported for this publication through the Fundamental Research Grant with a reference letter No. number: B/87/E3/RA.00/2020.

7. References

[1] E. Setiawan. "Kamus Besar Bahasa Indonesia (KBBI)." https://kbbi.web.id/aset (accessed 01/09/2020.

[2] P. M. S. Nusantara. "Kenali Setiap Jenis Aset yang Anda Miliki untuk Kemudahan Pengelolaannya." https://www.jurnal.id/id/blog/2018-kenali-setiap-jenis-aset-yang-anda-miliki/ (accessed.

[3] S. Setiawan. "Pengertian Manajemen Aset-Tujuan, Siklus, Identifikasi, Ciri, Prinsip, Sasaran, Para Ahli." https://www.gurupendidikan.co.id/pengertian-manajemen-aset/ (accessed 01/09/2020.

[4] LinovHR. "Manajemen Aset: Siklus dan Manfaat untuk Perusahaan." https://www.linovhr.com/manajemen-aset/ (accessed 01/09/2020.

[5] P. C. P. Sejahtera. "Pengertian Aset dan Jenisnya dalam Bisnis." https://accurate.id/akuntansi/pengertian-aset-dan-jenisnya/ (accessed 0/09/2020.

[6] P. M. S. Nusantara. "Chart of Account: Mempelajari Klasifikasi Sistem Kode Akun Akuntansi." (accessed.
[7] K. P. K. O. Nirlaba. "Penyusunan Chart of Accounts (COA)." https://keuanganlsm.com/penyusunan-chart-of-accounts-coa/ (accessed.
[8] R. V. H. Ginardi, W. Gunawan, and S. R. Wardana, "WebGIS for Asset Management of Land and Building of Madiun City Government," *Procedia Computer Science,* vol. **124**, pp. 437-443, 2017/01/01/ 2017, DOI: https://doi.org/10.1016/j.procs.2017.12.175.
[9] P.-C. Lee, Y. Wang, T.-P. Lo, and D. Long, "An Integrated System Framework of Building Information Modelling and Geographical Information System for Utility Tunnel Maintenance Management," *Tunnelling and Underground Space Technology,* vol. **79**, pp. 263-273, 2018/09/01/ 2018, DOI: https://doi.org/10.1016/j.tust.2018.05.010.
[10] C. Di Salvo, F. Pennica, G. Ciotoli, and G. P. Cavinato, "A GIS-based Procedure for Preliminary Mapping of Pluvial Flood Risk at Metropolitan Scale," *Environmental Modelling & Software,* vol. **107**, pp. 64-84, 2018/09/01/ 2018, DOI: https://doi.org/10.1016/j.envsoft.2018.05.020.
[11] A. D. Ashkezari, N. Hosseinzadeh, A. Chebli, and M. Albadi, "Development of An Enterprise Geographic Information System (GIS) Integrated with Smart Grid," *Sustainable Energy, Grids and Networks,* vol. **14**, pp. 25-34, 2018/06/01/ 2018, DOI: https://doi.org/10.1016/j.segan.2018.02.001.
[12] S. P. Sinurat, "Asset Inventory Information System Web-GIS Based On PT PLN (Persero) Sektor Pembangkitan Tarahan," Universitas Lampung, 2013.
[13] E. Sutanta and E. Nurnawati, "The Design of Relational Database for Multipurpose WebGIS Applications," *Journal of Physics: Conference Series,* vol. **1413**, p. 012029, 11/01 2019, DOI: 10.1088/1742-6596/1413/1/012029.
[14] R. S. Pressman, *Software Engineering*, 7 ed. New York: McGraw-Hill, 2010.
[15] I. Sommerville, *Software Engineering*, 9 ed. Pearson Education, Inc., 2011.