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Design and Build a Holomatrix-Based Tactical Combat Simulation Application

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ABSTRACT

The application of Holomatrix-based information technology advances in the training process as a form of training technology system innovation model to meet the challenges of future tasks, training systems in the military environment, must be implemented in order to be able to provide realistic training in accordance with the description of the actual operating field. In this study, a Holomatrix-based Tactical Combat Simulation Application has been designed that can be used by every member of the various branches of the military, especially the Indonesian Army. The system built and upgraded will provide troops with an overview of modern Holomatrix-based simulations. By using a computer that is able to evoke a three-dimensional atmosphere so that it can display as if it were a physical 3D image. The modern Holomatrix-based simulation will be used to train Tactical Decision Making Procedures (PPKT) and subordinate commanders to map and model yudha so that they can provide an overview of the actual operating field. After testing, it was found that this simulation application can be used as a tactical training tool, where each military branch involved can coordinate properly as it is done in real combat.

1. Pendahuluan

Today's technological advances are very rapid so that they affect many aspects of human life, both individually and in groups, from general aspects to strategic aspects. In the strategic aspect, especially in the field of defense[1] and security, advances in science and technology have provided the world community with an efficient and accurate integrated multimedia product[13], which in turn has changed the doctrine of defense and war[2]. However, this advantage has had a significant impact on users of defense products, namely personnel of an armed force or soldiers[3].

The Holomatrix-based Simulation Tool is closely related to seeing or sensing an object[12], but the object seen can be simulated in an unreal or virtual form that is close to the same. In the Holomatrix-based simulation, the actor feels an interaction like a real situation[12], environment and sound. To accommodate this, technology has answered the existence of a Hologram table with this system a technology that allows a person or group to perform[4] a simulation of an object, a real environment using a computer that is able to evoke a three-dimensional atmosphere[5] so that it makes the user feels as if he is physically involved in front of the user. Hololens is a visual computing technology that functions much like smart glasses. Microsoft Hololens combines virtual reality and augmented reality to create mixed reality. Mixed reality allows bringing graphical displays in the virtual world into the real world[14]. Interactive displays are an amazing new development in the world of digital technology and display technologies are used to communicate dynamic or interactive content through transparent surfaces. Users can see what is displayed on the screen while still being able to see the surrounding environment. In order to be able to carry out the design of the Holomatrix-based tactical combat simulation application using Hololens media, Interactive Display[7] and tablet PCs so as to produce a simulation tool that is more modern and can accommodate more realistic training needs[6] and the main tasks of the Indonesian Army assigned to Pussimpur Kodiklatad[11]. It is necessary to design a program and software application for a Brigade[6] level multiplayer combat simulation tool that will be adapted to Holomatrix-based devices and systems for training up to the Brigade level using the C# programming language, Unity 3D software and others according to needs. A system built and improved to provide troops with a modern Holomatrix-based simulation. By using a computer that is able to evoke a three-dimensional atmosphere so that it can display[8] as if it were a physical 3D image.

Thus the intent and purpose of this research is to design a Holomatrix-based Tactical Combat Simulation Application so that it can be used as an effort to improve strategic and tactical management[9] of all branches within the Indonesian Army when conducting combat simulation exercises.

2. Research Methods

Furthermore, the concepts developed in the Holomatrix-based Tactical Combat Simulation Application carried out at the Combat Simulation Center (PUSSIMPUR) are described as follows:.

2.1 Conceptual Design

Based on the potential problems and the information extracted[15], Pussimpur Kodiklatad tries to conclude in the form of product design. The design design of the schematic is focused on several components, including the adjustment of the method used. The method used in this program is the rehearsal of the Command Post for computer combat simulations. The following is a hardware concept design during the Posko Simpur practice computer multiplayer system.

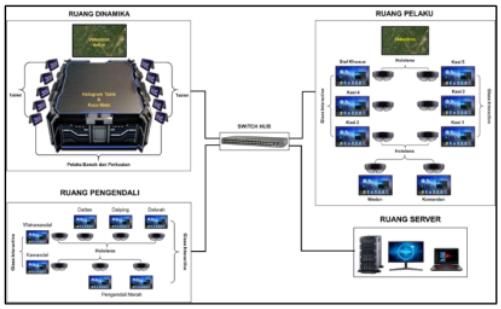


Figure 1. Multiplayer System Concept

Meanwhile, the following is an improvement in the design of the software concept designed to meet the shortcomings or needs of the Holomatrix-based combat simulation tool application program.

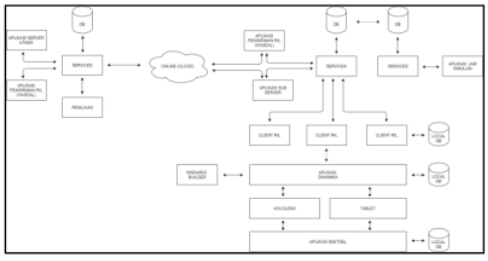


Figure 2. Software Concept

These design requirements and targets are the fulfillment of hardware and software requirements so that they can run the Holomatrix-based combat simulation tool application program in order to support the implementation of the Simpur Command Post, TNI AD Training Center and support the activities of the School Command Post Training Center in the Indonesian Army's Educational Institutions.

2.2 Preliminary Design

Hardware: The use of hardware in the improvement of the Holomatrix-based Simpur application program with hologram table media, Hololens, Interactive Display and tablet PCs with Brigade/Ancab level multiplayer systems that are planned to be adapted to the current and latest technological advances are as follows:

Table 1. Hardware Requirements

No.	Hardware	Qty.
1	LED Screen/Videotron Indoor	1 Set
2	Display 86”	1 Unit
3	Hololens	2 Unit
4	Router Indoor Wifi Access Point	4 Unit
5	Hardisk Internal NAS 14TB	3 Unit
6	Printer	1 Unit
7	Modem Wifi Portable	1 Unit
8	Universal Power Supply	1 Unit

Software: The Holomatrix-based Tactical Combat Simulation application is planned to adapt to the needs of users of the Pussimpur Kodiklatad unit in order to support the TNI AD strength development program and training and education. The application is designed to be operational on several types of audio-visual display media and three-dimensional display images, both from the object side or the battle area. The following is an overview of the building/software infrastructure.

a. The characteristics of the software used in the Holomatrix-based combat simulation tool is software that is considered more flexible, easy in the installation process, large data storage capacity, multi-platform, can be operated on different types of media and updates in terms of information system technology development and virtual technology.
b. Game engine (Unity) for applications that use maps, especially dynamics applications, which can be installed into audio-visual and virtual/hologram-based media, is the right software to use.
c. The database uses mysql, where the process of building the structure uses the Navicat editor application, to accommodate text, numeric, font, image, and object data types, with the following capabilities.
   - Asset Library application for personnel identity. Specifications for weapons, vehicles,

munitions, Alkap and Alkapsus units as well as unit and individual supplies at the Brigade level and 11 branches (Inf, Kav, Arm, Arh, Zi, Pnb, Hub, Pal, Bekang, Pom and Kes);

- Allows for automatic data entry or conversion of data in the form of text files including: Training Information Plan (RIL), personnel data, basic supplies, weapons, munitions and vehicles into the database (Export/Import application);
- Management of weather data (Temperature, Wind, Light and Sediment) for Terrain, time and its effect on objects in the scenario which is accumulated into the calculation results of combat casualties;
- Combat readiness data management and unit quality that affect the outcome of combat casualties;
- Editor management to determine the Posko training mechanism assessment scenario.

d. The digital map as an exercise map with topographic and satellite types based on the Digital Terrain Model (DTM) which includes the Gerokgak, Sintang and Singkawang maps which have been equipped with coordinates and altitude data (UTM, Latitude/Longitude and Altitude), is software that becomes input for in the application. Map visualization is equipped with the following capabilities.

- Coordinates of the location according to the cursor;
- Zoom in and zoom out map and tactical markings;
- Able to visualize weather conditions in the morning, afternoon, evening, night, rain, sunny, cloudy/fog; and
- Move the map.

Get a 3D map in a specific location that can be applied to the terrain in Unity 3D, here are the steps taken using the Real World Terrain unitypackage.

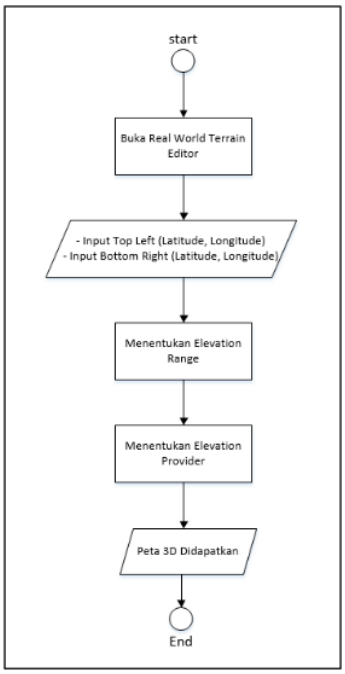


Figure 3. Conversion Flow to 3D Map

e. Programming kanguage using C# dan python

f. The form of Holomatrix-based tactical combat simulation applications that are desired and operationalized in one-level or two-level computer Simpur Command Post exercises are as follows:

- **RIL Application**. In general, it is an application that will be designed to be used as a means of information/communication transfer in the Simpur Post practice, equipped with several features/ability. The use of network infrastructure can be implemented with two network system options, namely Local Area Network (LAN) or Wide Area Network (WAN). This application program consists of the following features.

Table 2. RIL Features List

No.	RIL (Workout Information Plan) Features
1	Data traffic made simpler
2	Scoring value is available in server settings
3	Missed RIL answer feature
4	RIL principal and copy are made separately
5	The attachment feature in the chat feature

6	Voice feature, at least voice note
7	Improved connection protocol
8	The tactical mark feature is removed
9	Improved client folder features
10	Automatic RIL delivery feature
11	Detachable or additional RIL features
12	Adding client grouping to the server view
13	Added notification on client display when finished answering RIL

- **Dinamika Application**. This is an application that will be used as a test medium for RO or Tactical Floor Game (TFG) in Posko 1 training and as a media for the Yudha unit under the perpetrators in computer training Posko Simpur. This application consists of several features as follows.

Table 3. Dynamic Feature List

No.	Dynamics App Features
1	Improved streaming assets stability
2	Improved tactical mark scaling and camera view
3	Addition of 3 maps of the training area in 3D
4	Improved touchscreen features
5	Explosion animation improvement
6	Saving features
7	The contact feature (combat victims) can be manually or automatically contact
8	Hololens contains maps according to Renlakgiat as desired in training activities
9	Integration between Hololens, tablet PC and Crystal Liquid Display
10	Improved area calculation feature
11	Dynamics management is already in the map app
12	Addition of thumbnails to streaming assets
13	Added battle area drawing feature

- **Sketsel Application**. An application as a substitute for sketches is often used in the TNI AD Command Post training. This application presents a digital display of various features that represent the completeness of the Command Post data, saving features, drawing features, unit logo attachment features, additional plotting of tactical markings for sketch topographic maps, integrated between all staff using a choice of network systems, either LAN or WAN and every The sketch is equipped with a design drawing according to the trainees from the commander to the entire staff. Although later using the same application, the application features can be distinguished according to the needs/tasks of each unit level and element/staff of actors by using a parameter system as a differentiator.

- **Simulation Clock Application**. It is a stand-alone application that can later display the actual time/hour and the assumed hour in a Posko exercise, which can be set according to the needs of the training scenario. The features of this simulation clock application are the increase in time device settings in the application, unit logo attachments, minimize/maximize, running text in the RIL column.

- **Product Rating Application**. In improving the application of the Holomatrix-based Simpur tool this year, one new application was added to assess products, especially the main products of actors in the PPKT process at the Computer Simpur Command Post exercise. The purpose of this application is to make it easier for organizers to evaluate the perpetrator's products electronically in the form of documents/files. Pussimpur Kodiklatad realizes that current technology, especially in the field of machine learning, has not been able to fully accommodate the need to measure the quality or substance of a collection of sentence descriptions in a document. So if we are currently looking for a solution that approaches the need to evaluate a document, then the most appropriate choice is the Plagiarism and Paraphrasing software approach, but related to the needs in the field, the most appropriate concept as a reference is Plagiarism. This application is certainly not fully a reference for organizers, but with this application, it will help organizers a lot to assess the product of the perpetrators effectively and efficiently.

- **Supporting Application**. The supporting applications prepared are operational support for the main applications, including increasing the RIL entry database upload application and product assessment application.

- The program created later must be able to integrate or support Hololens 2 media, Crystal

Liquid Display and Tablet PCs which are required as follows: integration between Hololens, connected sketch applications.

2.3 Database Design

The database design carried out is quite complex, here are the table relations on the member scope and the unit of each branch of military[10].

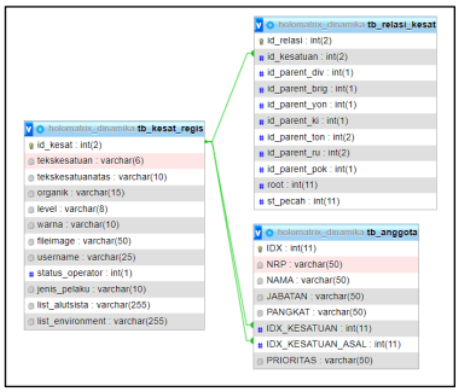


Figure 4. Relationship of Members and Unit

Then in the dynamics application, there is a feature that can show a simulation of the calculation of combat casualties. The formulation of the calculation logic as well as some weights were carried out by involving several PUSSIMPUR staff from the SISTA section. The scheme of the results of the weighting of several variables that affect the calculation of combat casualties can be seen from the following tables:

Figure 5. Relation of Combat Casualty Calculation

Based on the picture, it can be seen the results of the formulation of several tables related to the features of calculating combat victims, namely defense equipment, combat readiness, weather, shooting range, maneuvers, type of area, type of munitions.

3. Results and Discussion

The following describes the results that have been obtained from the design and development of tactical combat simulation applications based on holomatrix, especially from the software side.

3.1 3D Model

One of the challenges of this holomatrix-based simulation application is to display the realism of every object in this application, especially in dynamics and hololens applications. The 3D objects created include 3D maps of the training areas commonly used by branches in the Indonesian Army, apart from that the 3D objects themselves must be able to represent the actual appearance. Here are some 3D practice maps that have been developed.

3D Map of Makalisung: In contour, the training in the Makalisung area is a tough area as a ground infiltration combat training ground, and is located in Minahasa, North Sulawesi. Here is a 3D map of Makalisung.

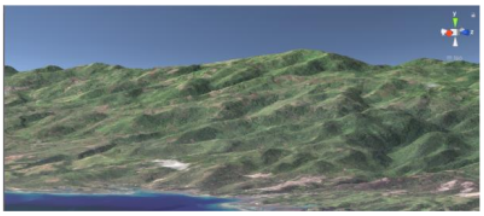


Figure 6. 3D Map of Makalisung

3D Map of Baturaja: Located in the Martapura area, South Sumatra. The Baturaja area is a large area with relatively flat contours, so it is an area commonly used for TNI AD training. Here is a 3D map with the Batujajar area.

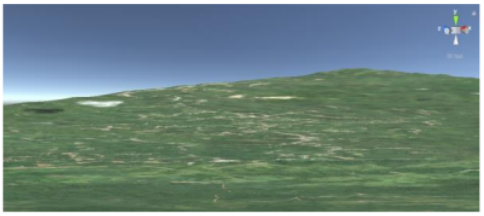


Figure 7. 3D Map of Baturaja

3D objects used in dynamics applications are own assets. The scope of 3D objects needed is for all branches within the TNI AD structure, such as Arhanud (Air Defense Artillery), Penerbad (Army Pilots), Cavalry, Infantry, and others. Here are some 3D assets that have been developed.

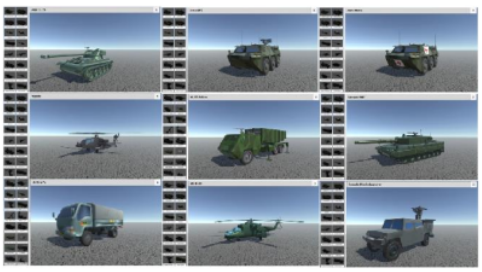


Figure 8. 3D Model of Combat Assets

This 3D asset that has been created uses the Blender software, with reference to the real units in the list of combat units and supporters of the Indonesian Army.

3.2 RIL Delivery Application

Workout Information Plan (RIL), has become a common activity when conducting POSKO exercises from each branch involved to improve the response of each officer in making tactical decisions using manual facilities and infrastructure, such as blank paper. In the development of this tactical combat simulation application, the RIL application can be developed into a digital media which is expected to be more practical to use but does not rule out the function of RIL as it should be. In network architecture, this RIL application has a main server that is the Host/Server for the RIL Client application that is connected to one area. Here is the display of the RIL Server application.

Figure 9. RIL Server Dashboard Display

The RIL Server application consists of several display sections which are tasked with monitoring data. There is an area showing which clients are connected in one area. After that, there is a section that displays client LOG data, and the last section displays Connection LOGs for all clients. The appearance of the RIL Client is as follows.

Figure 10. RIL Client Main Page

This RIL Client application is used as a medium for exchanging information, where there are problems that are submitted until finally they can be directly answered by the relevant branch in the RIL Client application.

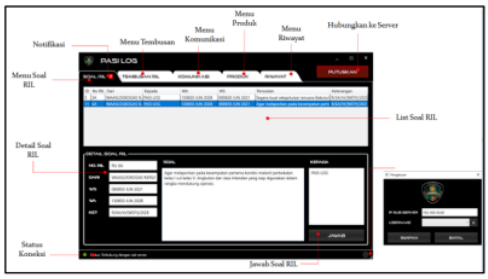


Figure 11. RIL Client Main Page

In the display on the main page of this RIL Client, there is a list of issues raised from the server. The previous problem has been inputted first by the operator on the RIL Server, then at a certain time that has been set by the question, the RIL problem is automatically sent to each sub server and received by the RIL Client. In one RIL question, there is some information, namely No. RIL Question, Origin of Problem, Actual Time, Assumption Time, Information, Question, To. When the client answers the given problem, the file that supports the answer can be embedded.

In its function, RIL Client is used to answer all the problems given. The assessment is carried out by means of the operator uploading the answer key on the RIL Server. For each answer sent from the RIL Client, the answers to the RIL questions are checked by comparing the answers. Thus, an assessment can be carried out directly for each client who has answered. Here is what the values page looks like on the RIL Server.

Figure 12. Rating Page Display on RIL Server

3.3 SKETSEL Application

This application replaces the Sketch Map which is usually used for training by the Indonesian Army, but still uses conventional media such as cloth or paper with a size large enough, so it can be seen from every corner of a large room. This SKETSEL application has been developed by taking into account all the functionality that students usually do when doing

group exercises. This application presents a digital display of various features that represent the completeness of the Command Post data, saving features, drawing features, unit logo attachment features, additional plotting of tactical markings for sketch topographic maps, integrated between all staff using a choice of network systems, either LAN or WAN and every The sketch is equipped with a design drawing according to the trainees from the commander to the entire staff. The following is a display of the SKETSEL application that has been developed.

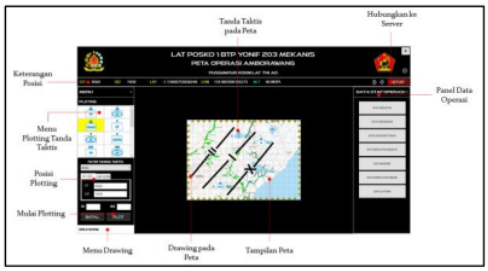


Figure 13. The main page of the SKETSEL Client

In computer network architecture, this sketch application is connected client-server. Therefore, the Sketsel application which has a role as a server is started before the SKETSEL Client is connected. The selection of the area or map for the exercise is done first by the SKETSEL server. This application can real-time display what clients are doing on a single SKETSEL server application, so in a role that SKETSEL server is an application used by commanders to view all reports from staff through the SKETSEL client, such as intel staff, operations staff, territorial staff, logistics staff, personnel staff, and administrative maps owned by press staff and logs. The commander simply selects a map from whichever staff is shown to the commander's screen. Here is the view of the SKETSEL commander.

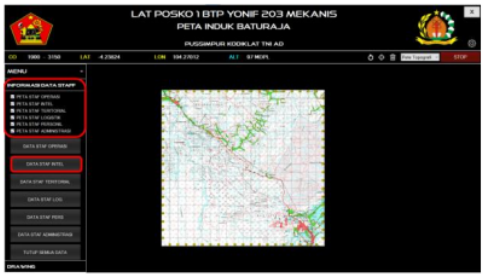


Figure 14. Main Page of Commander's SKETSEL

In functionality, the SKETSEL application can already be used in military education and training activities of the Indonesian Army. Some of the features that have been developed in the SKETSEL application include the drawing feature (needed to describe the battle area), the tactical mark plotting feature (needed to mark the location of each existing branch), plotting based on the coordinates used such as Longitude-Latitude or UTM (Universal Transverse). Mecator), selection of topographic maps, and the most important thing is the integration between the SKETSEL server and client applications. The following is the SKETSEL application that was tested by military staff when drawing on the application.

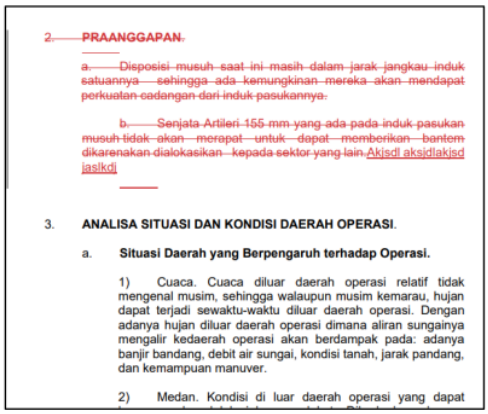
Figure 15. Field Imaging Test by TNI AD

3.4 Product Rating Application

The product in this application sense is a report in the form of an electronic document in the form of a file. There is an exercise that requires staff to report an activity in the form of a report with a certain format, which is then assessed on the product. The product assessment process uses a plagiarism approach, where if the product that has been made by the staff is close to the content of the product which is the answer key, then the product of the staff is said to be good. However, normative assessment is still carried out by humans compared to the plagiarism approach. Here is the main page of the Product Assessment Application.

Figure 16. Main Page of Product Assessment Application

By mechanism, the staff uploads each of these products. The system reads and checks with the product answer key. After that, a score appears in the form of a percentage of the similarity of the answers to the key. In the following image, the results of the product assessment are displayed.



2. ~~PRAANGGAPAN.~~

~~a. Disposisi musuh saat ini masih dalam jarak jangkau induk satuannya sehingga ada kemungkinan mereka akan mendapat perkuatan cadangan dari induk pasukannya.~~

~~b. Senjata Artileri 155 mm yang ada pada induk pasukan musuh tidak akan merapat untuk dapat memberikan bantem dikarenakan dialokasikan kepada sektor yang lain.~~ Akjsdl aksjdlakjsd jaslkdj

3. **ANALISA SITUASI DAN KONDISI DAERAH OPERASI.**

a. **Situasi Daerah yang Berpengaruh terhadap Operasi.**

1) Cuaca. Cuaca diluar daerah operasi relatif tidak mengenal musim, sehingga walaupun musim kemarau, hujan dapat terjadi sewaktu-waktu diluar daerah operasi. Dengan adanya hujan diluar daerah operasi dimana aliran sungainya mengalir kedaerah operasi akan berdampak pada: adanya banjir bandang, debit air sungai, kondisi tanah, jarak pandang, dan kemampuan manuver.

2) Medan. Kondisi di luar daerah operasi yang dapat

Figure 17. Product Assessment Results

In the picture, it can be seen that there are sentences or entries that are marked automatically by the system if the answer is different when compared to the answer.

3.5 Dynamic Application

The results of the development of this dynamics application have been completed. The dynamics application presents a 3D atmosphere compared to the Sketsel application, either from the map side or from the 3D objects in it. In terms of functionality, this dynamics application has been justified and has been tested by internal parties from PUSSIMPUR as the user of this dynamics application. The Dynamics application is used by the user on a client-server basis. The server must create a room from this application, by selecting a map for the implementation of training activities, after that the client can join the room. Several features have been achieved including drawing. This feature is used to describe the battle area that is usually carried out during training by the Indonesian Army. The following is a display of the drawing feature in the dynamics application.

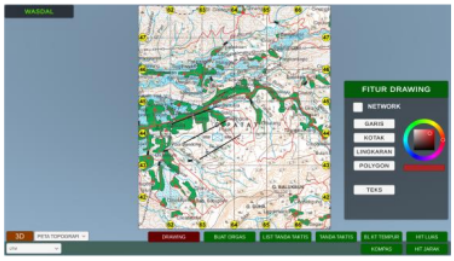


Figure 18. Drawing Features on 2D Maps

In carrying out activities using dynamic applications, each actor or staff involved holds RIL activities. Thus, every movement or action must be based on RIL issues that have been prepared. An important feature to use is plotting troops at predetermined coordinates, which can be in the form of a longitude-latitude system, or UTM coordinates. The following is a display of infantry unit selection for battalion level with unit number is 328 and top unit number is 1/K at certain coordinates.

Figure 19. Plotting Forces By Coordinates

In addition to using coordinates to plot the unit, it can also be done by dragging and dropping for the placement of the unit. The selection of units is adjusted to each existing branch. Here is a 3D unit model display in the form of ANOA in camera view mode.

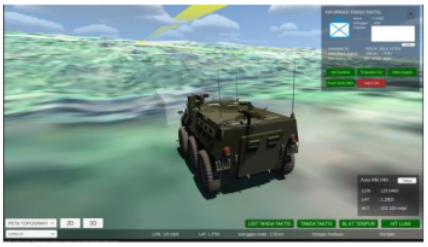


Figure 20. Camera View Unit Display

The resulting 3D map can clearly depict the actual area, so the application of this dynamics can make the user's own experience appear real. It is hoped that the contours of the training area can be considered so that actors or staff can objectively make a tactical decision. Tactical marks in dynamic applications, indicating units of a particular branch. The pictures of the tactical marks that are owned are from the TNI AD Manual which are redrawn and then uploaded to the dynamics application database. The composition of one branching unit, which consists of Tactical Sign Images, Unity Text, Unitary Text Above, and 3D Objects. The following is a complete image of the tactical markings in the dynamics application for the Cavalry Company, with the unitary text being KIKAV 8, and the top unitary text being YONKAV 8/17, a 3D object in the form of a tank.

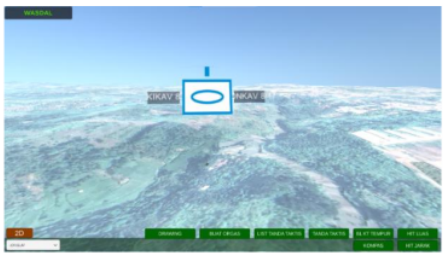


Figure 21. Tactical Marks on a 3D Map

Basically, all selected units have several features, including making moves, viewing member lists, breaking or joining tactical marks, informing position coordinates, taking actions from units, and shooting (for combat units, such as tanks, infantry, astros, apache, and the like).

Figure 22. Selected Unit Menu in Dynamics Application

The movement of units can be done in two ways, namely by sliding using drag & drop, and the second way is to add routes for the direction of unit movement. There are features that better adapt to regional conditions, such as time settings (morning, afternoon, evening, night) and weather (sunny, cloudy, foggy rain). Here's a look at the features that are displayed more about weather changes.

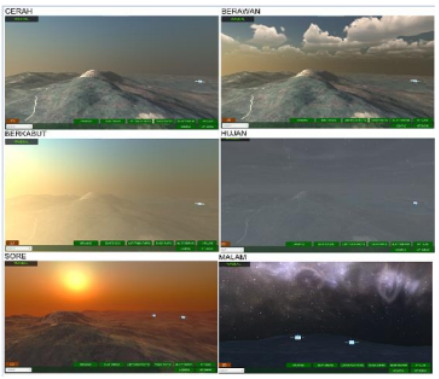


Figure 23. Weather Change Features

The use of the Enviro Sky unitypackage makes it easy to make changes to the weather and time, so that the 3D impression of the actors or staff who are practicing using this dynamic application is very easy to get. The implementation that has been done from this dynamics application when used in training is on the Tablet and Videotron. The following are the results of testing the dynamics application to be displayed on videotron, which aims for all participants in large numbers to see.

Figure 24. Application of Dynamics on Videotron

This dynamics application has been tested by the end of the application, used in a comprehensive functionality of all its features. The training mechanisms that are commonly used can also be displayed in this dynamics application.

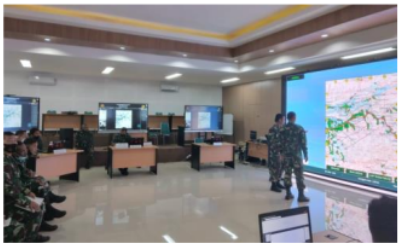


Figure 25. Final Testing of Application Dynamics

3.6 Combat Casualty Calculation Features

The challenge faced by dynamics applications is to make everything in it close to the real thing, both from the side of the map, 3D objects, the activities of the perpetrators, and most importantly, modeling the battle from the side of calculating combat casualties. Here is the main page of the calculation of combat casualties in the dynamics application.

Figure 26. Calculation of Combat Casualties

The process for simulating combat victims is manual, the settings for the blue and red teams through the WASDAL actors fill in all the available information. Activities, consisting of Circle, Blocking, Assault, PUNGDAHMAH, and SERKIM. Maneuver, consists of several formations. Weather, consisting of Sunny Dark, Sunny Bright, Rain Dark, Rain Light. Terrain, consisting of Open Low, Open High, Closed Low, Closed High. Then add any units involved in the

battle. After all the information for the blue and red teams is completed, the next is the execution of the victim count. The following are the results of the calculation of combat casualties on the application:

Figure 27. Calculation of Combat Casualties

In the picture it can be seen that there is information on the total number of victims from the blue and red teams, as well as detailed data on the dead and injured victims.

3.7 Simulation Clock Application

This application stands alone, the system is not connected client-server with other applications. The application only displays a few things, namely the actual time and the assumption time used in the Posko exercise. The assumed time can be set for training needs, for example, how many times faster than the actual time. There are also RIL questions that appear, according to the time specified in the questions. Here's what the Simulation Clock app looks like.

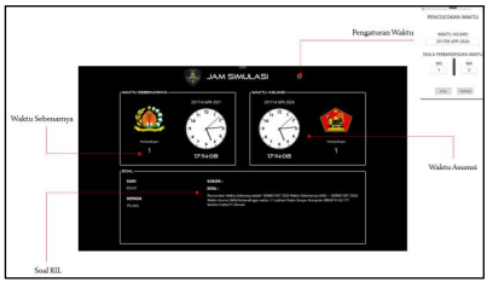


Figure 28. The Main Page of the Simulation Clock Application

This application has been tested in terms of functionality by the Indonesian Army. The following is a picture of the simulation clock application used in a series of testing or training activities:

Figure 29. Using the Simulation Clock Application

3.8 Hololens Application

Hololens and Dynamics applications are separate usage. This application is used by top officers to better organize battle strategy and tactics. In terms of function, it still tends to be the same as dynamic applications. Basic features such as placing troops (Plotting), then troop movement, and shooting can already be done in this Hololens application.

Figure 30. Plotting Tactical Marks on Hololens

In the picture, it can be seen that before placing troops, one must first select which unit to choose. This is done by every Hololens user. With the multiplayer concept that has been implemented, each Hololens user can see the plotting done by other Hololens users.

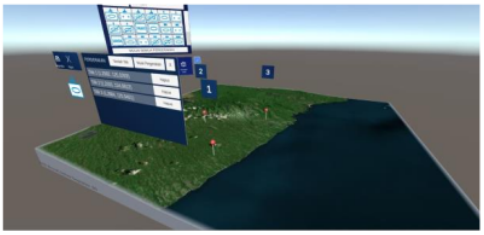


Figure 31. Hololens Tactical Sign Movement

Hololens users, in this case TNI AD officers, are expected to be given a more real atmosphere and added the impression of high technology on these hololens to be able to provide more creativity in carrying out battle management. Here are some 3D objects that have been selected using hololens.

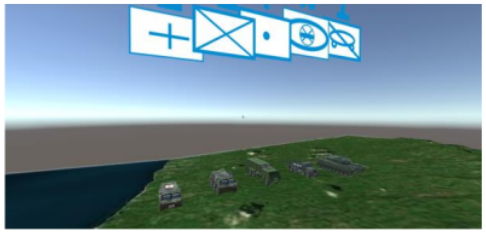


Figure 32. 3D Object Display Hololens Tactical Mark

The use of this hololens application, should be done in a fairly large area. This is intended so that Hololens can map the area first around the Hololens user, after that Hololens displays images. The following is an image when the Hololens application was tested, with the image seen by Hololens users displayed on videotron.

Figure 33. Hololens Application Testing

In this holomatrix-based simulation application, the Hololens 2 device is used for the Hololens application, as shown in the following picture.

Figure 34. Hololens 2 Device

4. Conclusion and Suggestions

This simulation application was developed in collaboration with the military who better understand the need for use and functions, in this case PUSSIMPUR. The test results are obtained as follows.

a. This research and development activity has proceeded according to plan, and is still being refined.
b. Improvement of Human Resources (HR) for the ranks of TNI AD soldiers, especially elements of operational unit commanders.
c. This simulation application has met the needs and completeness of the training of soldiers in the ranks of the Indonesian Army before facing the actual task of operations.

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