Development of web based application for Intelligent Preparation Of The Battle Field

by

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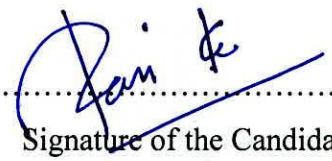
DECLARATION OF THE CANDIDATE

The work described in this thesis was carried out by me under the supervision of Ven. Dr. Pinnawala Sangasumana and Mr Prabath Malavige and a report on this not been submitted in whole or in part to any university or any other institution for anther Degree/Diploma.



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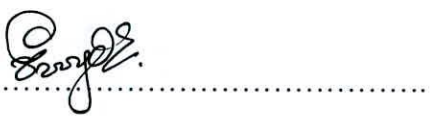

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List of Abbreviation

GIS	-	Geographic Information System
GPS	-	Global Position System
RS	-	Remote Sensing
VPN	-	Virtual Private Network
UAC	-	User Account Control
IPB	-	Intelligence Preparation of Battlefield
IT	-	information technology
recce	-	Map reconnaissance
WebGIS	-	web-based GIS
carto	-	Cartography
CAD	-	Computer-aided design
GSM	-	Global System for Mobile communications
GPRS	-	General Packet Radio Service
WWW	-	World Wide Web
QGIS	-	Quantum Gis
PHP	-	Hypertext Preprocessor
MOD	-	Ministry of Defense
NGCCS	-	Next Generation Command and Control System
CTC	-	Concurrent Technologies Corporation
CTP	-	Integrated Common Tactical Picture
COP	-	Common Operational Picture
BFAs	-	Battlefield Functional Assets
BTRA's	-	Battle space Terrain Reasoning and Awareness
PDA	-	Personal Digital Assistant
IRNSS	-	Indian Regional Naval Satellite System
OPS	-	Operational
INT	-	Intelligent
LOG	-	Logistic
AOI	-	Area of Interest
Div	-	Division
Bde	-	Brigade
HQs	-	Headquarters
DMOS	-	Digital Map Overlay System
DTS	-	Decision Support Template
NATO	-	North Atlantic Treaty Organization
STF	-	Special Task Force

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Abstract

The application of this web-based Geographic Information System (GIS) technology greatly contributes at both ground and command level. The purpose of the research is to develop qualitative research and apply it to enhancing capacity building and to developing a decision-making tool. This application is indispensable because it allows the user to visualize, integrate and analyze all available data to obtain an accurate, direct picture of the ground. A different approach to ground data analysis was necessary due to the lack of up-to-date information on the ground hindering military missions. This web-based GIS (WebGIS) system enables users to process and generate information from the ground to the map.

Cartography (carto) is the most used and known traditional system of mapmaking. GIS is basically carto on a computer (information system). Therefore, GIS is an application of carto. In carto, technology has continually changed to meet the demands of new generations of mapmakers and map users. Advancements in electronic technology in the 20th century ushered in another revolution in carto. Ready availability of computers and peripherals such as monitors, plotters, printers, scanners and analytic stereo plotters, along with computer programs for visualization, image processing, spatial analysis, and database management, have democratized and greatly expanded the making of maps.

This study is a bridge to military planners on both a strategic and tactical level, it is crucial to have both the locations and attributes of a location in a GIS to facilitate military planning and operations. Most commercial quality maps are made using software that falls into one of three main types: Computer-aided design (CAD), GIS and specialized illustration software. Spatial information can be stored in a database, from which it can be extracted on demand. These tools lead to increasingly dynamic, interactive maps that can be manipulated digitally.

Fleet management systems have been around for a while, at least since Global Positioning System (GPS) became commercially available in the early 80s, yet many applications still do without them. This system incorporates two types of GIS and GPS applications one is situational reporting system and other one is human tracking system. This system is a new product based on the Global System for Mobile communications (GSM), General Packet Radio Service (GPRS)

network and GPS satellite positioning system. It provides multiple functions, such as security, positioning, surveillance, emergency and so on. Location information sent in code can be checked immediately in Google Maps.

This research is to connect various platforms required in military planning to one platform. The ArcGIS Server 10.1, mobile application development tools and web development tools were used to design the application. This application allows more definition, security and speed when it comes to planning and monitoring military missions. Since this application more user friendly, end users may not hesitate to use it frequently. This application is just the beginning for security forces to step into the latest technology era that will enhance existing service and activities of military.

Some software requires technical expertise and training for handling and to get the required output as required. High-end computers were imperative to run those applications. It is practically difficult to have such computers and skilled operators in each and every base. This system was mainly developed to address this issue. Most military personnel lack proper information technology (IT) literacy. The aim, therefore, is to develop an application that everyone can use without much IT background. Map reconnaissance (map recce) is a vital area for military personal. This system has developed web-based mapmaking and analysis systems for users.

Keywords WebGIS, web-based GIS, internet technology, mapping platform, Web application, Hi Tech Solider, tracking devices, map recce, situational report