



Geospatial Services as SAAS: Trends and Drivers

– Wg Cdr Anand Vikram Pethia
Flying Branch, Indian Air Force

<https://orcid.org/0000-0003-1406-3267> anandpethia@gmail.com

Article History

Paper Nomenclature:

Argument Based Credentials (ABC)

Paper Code: CYBNMV1N4SEP2019ABC2

Submission Online: 01-Sep-2019

Manuscript Acknowledged: 03-Sep-2019

Originality Check: 05-Sep-2019

Originality Test Ratio: 4%

Peer Reviewers Comment: 19-Sep-2019

Blind Reviewers Remarks: 22-Sep-2019

Author Revert: 23-Sep-2019

Camera-Ready-Copy: 25-Sep-2019

Editorial Board Citation: 27-Sep-2019

Published Online First: 09-Dec-2019

Software As A Service (SAAS) is a way/means of delivering the functionality of a software over the internet as a service. SaaS applications run on a SaaS provider's servers. The provider manages access to the application, including security, availability, and performance.¹ Important aspects such as security, stability and scalability are addressed by the SAAS provider. The concept was fostered by two major developments: (a) Higher bandwidth, greater accessibility and falling rates of internet usage and (b) Open source software movement. Hence SAAS users save on the initial costs, efforts in upscaling and get the service they want at a nominal fee.

Keywords: Geospatial Services | SAAS | Artificial intelligence

Introduction

Today a number of SAAS have proliferated. Developers have integrated multiple functionalities and built in flexibility tools such as coding environments to customise the multiple SAAS across a platform. Functionalities on these platforms are restricted only by imagination. These range from ERP software with functionality similar to that being offered by SAP, to GIS software offering functionality similar to products being offered by ESRI ArcGIS, Hexagon Geospatial ERDAS, PCI Geomatica, ENVI, etc. As an exponent of the latter class, I will dwell on it in this write up.

GIS is a collection of people, procedures (rules defined by users), hardware, software and DATA to solve real world problems with geospatial connotations.

Why GIS? Managing resources has gone global. We have to often add the question or dimension "Where" to our considerations owing to a lot of factors such as ease of doing business, cost of labor, resource localisation and much more. It is therefore logical that "Where" be seamlessly integrated into our ability to collate, analyse and disseminate data on the cloud. Other factors bringing GIS to the fore today are increased availability of low cost

data sets from an increased number of sources such as more number of satellites, UAVs and our desire to use the paradigm of convergence of evidence to analyse imagery data using non picto graphical data on a GIS platform; after all "a picture is worth a thousand words". Cloud computing platforms would do well to bring Geospatial analytics as a SAAS with functionalities and intuitiveness offered by specialist software. This will allow for mature GIS analytics capability built into cloud computing platforms.

Why GIS as SAAS? There are a multitude of reasons why traditional GIS has moved onto SAAS platforms.

(a) Growing awareness about things geo spatial has attracted sectors which were hitherto using indirect means to study location based aspects of issues.

(b) Large volumes of data have resulted in decreasing cost in acquisition of data.

(c) Flexible GIS data gathering platforms such as UAVs offer the ability to users to generate data when and where they want (Reference is made to PWC report "Clarity From Above" which brings out that that the UAV industry would be in the region

of USD 127 Bn without factoring into it the *raison d'etre* of UAVs i.e. producing geo spatial data).

Capability to analyse geospatial data is the bottleneck today. The need is to make analysed data available to the end user in the desired format, when and where he wants it with the highest possible confidence levels at costs proportional to the functionality demanded.

Emergent users in this field include academia, start-ups, NGOs, solution providers and a host of independent users. They bring to the table factor diversity, innovativeness and sharing of seemingly unrelated data sets. **Stakeholder analysis will dictate trends, developments and drivers of this movement.**

(a) Users: A variety and more number of users will migrate onto these platforms thereby adding diversity and greater insights will emerge. **New entrants** will include NGOs, Academia and start-ups – essentially cost conscious users. This will place demands on the software capability for example, integration of geospatial with non-structured social media data. A new concept called **geo-social data** will emerge. Or consider **Geo-medical data** guiding health programs.

(b) Standalone Geospatial Software Developers: The dinosaur staring back from the mirror will advise them to evolve, devolve and decentralise. Increased **modular structures** with **specialised processing** capability will have to be developed which will be R & D driven besides having greater connect with emergent users (again academia, marginal users and collaborative platforms). Better APIs for integration using NLPs will be the norm. Software will need to become platform agnostic.

(c) SAAS Providers: They will need to provide more intuitive interface and products besides integrating functionality such as AI & ML through emergent programming languages.

These platforms must facilitate big data analytics inclusive of geospatial data.

Trends. Inclusive and insightful data will drive geospatial decisions. Academia, NGOs and the marginalised will have a greater say in decision making which will be modelled and hence likely to be more accurate. Greater emphasis on security of data, privacy and network security will be seen. Black box type geospatial solution providers will develop increasingly modular and customised solutions in order to remain relevant.

Given these considerations, it would make business and indeed functional sense to developing intuitive geo

spatial modules that replicate and replace existing geospatial tools to address needs of semi aware users and attract non-traditional users through differentiators like seamless availability, cost arbitrage and integration of non-structured and non-geospatial data for value enhancement. This added functionality will enable SAAS providers of the cloud computing sector to move users from "Where?" to "AWHERE" or is it aware?

<https://www.salesforce.com/in/saas/>
Write up by Wg Cdr (Retd) Anand Vikram Pethia. <https://www.linkedin.com/in/anandpethia/>
Blogs at <https://anandpethia.wordpress.com>



Wg Cdr Anand Vikram Pethia was commissioned into the flying branch of the Indian Air Force on 21 Dec 1996. After initial few years of flying, the officer changed over to the domain of imagery intelligence as a UAV mission specialist, satellite imagery analyst and instructor and mission specialist on other aerial platforms. He has done an instructional tenure in Kenya where he setup the PI training faculty in that country. Exposed to training courses at the NRSA and German Air Force and currently pursuing education in the fields of AI, he is devoted at integrating AI and Geospatial technology and increasing awareness of its applications in diverse fields. He took premature separation from the IAF on 30 April 2019.

I am a retired (took premature separation) Air Force Officer with experience in aviation, UAV operations, imaging and imagery intelligence. I aim to leverage my experience and skills in making geo spatial technology accessible to all and more importantly relevant to all. Anand can be reached out at <https://www.linkedin.com/in/anandpethia/>

anandpethia@gmail.com

Annexure I

Submission Date	Submission Id	Word Count	Character Count
05-Sep-2019	1172230268 (turnitin)	949	5302
ORIGINALITY REPORT <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>4%</p> <p><small>SIMILARITY INDEX</small></p> </div> <div style="text-align: center;"> <p>4%</p> <p><small>INTERNET SOURCES</small></p> </div> <div style="text-align: center;"> <p>0%</p> <p><small>PUBLICATIONS</small></p> </div> <div style="text-align: center;"> <p>4%</p> <p><small>STUDENT PAPERS</small></p> </div> </div>		PRIMARY SOURCES <div style="display: flex; justify-content: space-between;"> <div style="width: 80%;"> <p>1 Submitted to Kaplan University <small>Student Paper</small></p> <p>2 www.salesforce.com <small>Internet Source</small></p> </div> <div style="width: 15%; text-align: right;"> <p>3%</p> <p>1%</p> </div> </div>	

Note: www.Cybernomics.in Uses a "Turnitin" <https://www.turnitin.com> which is an American commercial, Internet-based plagiarism detection service, a subsidiary of Advance and also offers plagiarism-detection service for newspaper editors and book and magazine publishers called iThenticate..

Reviewers Comment

Review 1: This study presents an in-depth analysis of the market along with the current & future trends to elucidate imminent investment pockets.

Review 2: Information about key drivers, restraints, and opportunities and their impact analysis on the market is provided in this study.

Review 3: Artificial Intelligence empowers Robotics and Automation bringing in new opportunities and new ways of being and working.

Editorial Excerpt

Initially at the time of submission, this paper had 4% of plagiarism which is accepted percentage for the publication. The finding related to this manuscript "**Geospatial Services as SAAS**" is of great importance in the present scenario. In this paper it has been observed that the use of SAAS and its impact on initial cost and effort in upscaling the service would be of great use when its application comes into picture. Considering the growing proliferation of number of SAAS the manuscript explains geospatial service (GIS), GIS as SAAS and its trends and devices. Hence the article is earmarked and finalized to be published under category of "**Argument Based Credentials**"

Citation

Wg Cdr Anand Vikram Pethia
"Geospatial Services as SAAS: Trends and Drivers"
Volume-1, Issue-4, Sep 2019. (www.cybernomics.in)



Scholastic Seed Inc.

www.scholasticseed.in

Frequency: Monthly, Published: 2019
Conflict of Interest: Author of a Paper had no conflict neither financially nor academically.