Information as a service: A paradigm of services and data

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Abstract: Services which are driven by information and information which is driven by services is an important requirement currently. With Cloud computing entered the picture it is often the availability of resources and amounts of data storage and computing power that is orchestrated without the management of the user. Information as a Service is an integral feature or part of it. It is an innovation shift to increase the utilization of technology and virtualization as well. It's an operational move to transform IT business and its enhancement & service management. Information-as-a-service can be accounted as the combination of users activities and the data generated by them while utilizing the services to support operations, management, and decision-making. Information as a Service (IaaS) could be a incontestable approach to productive service arrangement. Reflecting about data and information as break free from the procedures that utilization them is one key part. This comparatively lowest effort approach can alter departments to maximize service quality and provides price savings. It is additionally a vital advancement if cloud computing is being focused and considered.

Index Terms **- information-as-a-service, cloud computing, IOT, information services, service oriented infrastructure.**

I. INTRODUCTION

Information-as-a-service can be seen as the approach to provide for information to those who call for it. One might think data and information as separate forms of processes, but the key element remains one. Information collection and distribution can be seen as a mere vague approach but it involves in a definitive process of flow. It is also a low cost approach as compared to providing cost effective set of information in a relevant field. It is based on the model of cloud computing as an essential base of service information comes from many varied and diverse features of cloud based service[1].

The flow of an Information-as-a-service can be understood in this manner. The data is sourced from an array of optional data channels flowing in cloud such as context-aware application data, personalised content, interaction based user data, etc[2]. After collection come the tuning of the data that involves on how to classify and model the data with different rules. The rules help perpetuate different strategies on how to use the data. Further this data is sorted and developed into web-pages and other forms of information.

Fig 1.1 Flow of information-as-a-service

Information provisioning involves a segregated, simplified and integrated view of real-time, significant, high in quality data which is modelled with a specific purpose or suitability according to customer or product[3]. This information is majorly processed in the XML, SQL or file hierarchy format[4]. Being an emerging approach it also secures a relevant amount of work share in performing businesses and accessing services online through online APIs, we also have available to us information that can be as easily accessed, also using well-defined APIs[5]. In an IaaS model, a cloud provider hosts the infrastructure components to collect and distribute data. This data can be compromised of different variables including persona data, non-personal data, sensitive data, etc[6]. Information as a service provider later gives this information to other companies or services so that they can make use of it. This could potentially prove better services to Content management where it builds consistent and builds consistent and reusable services for integrated content.

II. RELATED WORK

Technology and applications of information services have come a long way since the introduction of the internet. Earlier information services were only limited to the back-end service providers. Which were confidential and never leaked[5], [6]. But as the advancement of internet services continued, the confidential data and the information started making their ways to the front-end parties, who are called advertising agents. These advertising agents buy user search data and find the low quality or irrelevant advertisements and make internet surfing such trash[7]. In the early era, there was something known as privacy, and to be true, it was. But, now, nothing much can be claimed. This is because our very own search engine Google uses the techniques

which are being used by advertising agents or companies to leak our search data online[5]. Further going deep, machine learning and artificial intelligence have also played a crucial role here with the introduction of crawlers and statistic reporters. Not to deny, Artificial Intelligence has proof of being helpful. But rather than that, they make the data collection autonomous and untroubled. Introduction of Data Mining, Data Warehouse, and Datastore has also contributed to making the Internet less safe. These Data Mines and Warehouses have large quantities of search data algorithms in their databases, which further help to leakage of search data[8].

III. BENEFITS AND USABILITY

Every coin has two sides, and so this. Information as a service can be considered a boon in a lot of ways. Like talking about Youtube, we get better recommendations as the services recognise our viewing pattern. Further talking about custom advertisements also helps[9]. Let's consider an example user trying to find a pair of sunglasses in a limited budget range, but is unable to find such. This time custom advertisements recommend the same type of product the user is expecting and the user purchases. This helps both the user and the service provider. So from the above pattern of recommendations from services can be found much helpful for users[2]. Now, as we discussed above, the benefits the user gets from recommendations. Here we talk about how the service provider is beneficial but in his way. The service provider collects the data using machine learning or search data patterns and matches the content with his warehouse[10]. Here he finds the type of product he is searching for and his interest in other products as well. So when suggesting a pair of sunglasses, the service provider may also recommend a county cap, if the user on the recommendation of the provider buys the product, the service provider earns a commission from the e-commerce as well and also from Google due to the usage of ad-sense. In this way, both parties get equal benefits[11]. And third party Google is also benefitted due to the selling of such data.

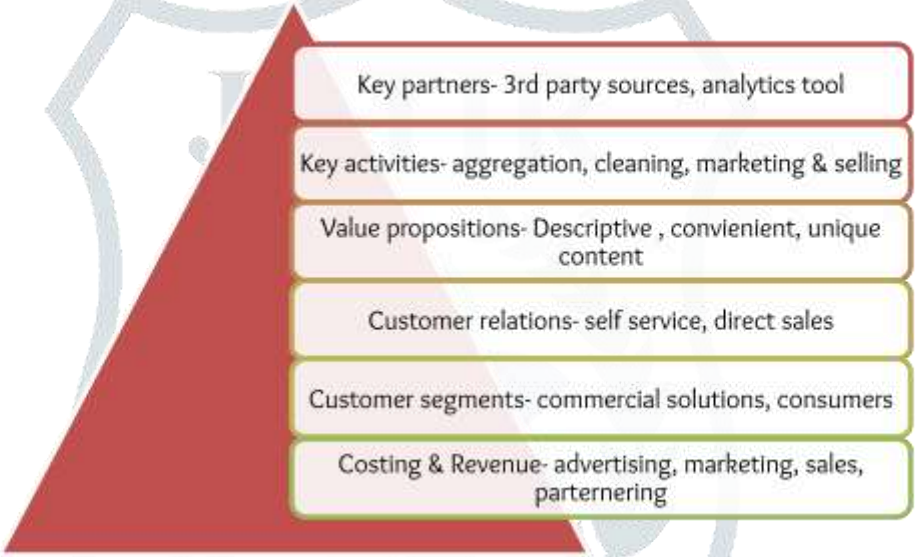

Fig 3.1 Establishing methods in information-as-a-service

IV. REAL-LIFE APPLICATIONS

There are many Real-Life applications of Information as a service, firstly we have discussed a case of a pair of sunglasses. And also a county cap can be recommended. Google ads are one of them. Google has strong crawlers which capture the search words to deliver the most accurate results, but these crawlers also contribute to a large database. That database can be accessed by pro-consumers who are at a level above. Internet of Things is another major part that has concepts of information as a service[12]. IoT gathers all the data from the connected device and sends it to the database and optimizes the overall algorithm of user experience

Talking about Real-Life applications, we all know Amazon shopping, and it also has sharp artificial intelligence which caters the need of the users who search for products. Suppose that you search for a pair of shoe, it will instantly recommend socks. This is due to the fact that all the collected data is in the data warehouse[4]. Further, if you're searching something on Google, you will find advertisements relate to the same product[5]. YouTube also has strong information service and database. The things you are searching on Google will appear in the next advertisement before playing a video. All the e-commerce sites have these algorithms inbuilt for mutual gains.

V. IMPORTANCE

This section demonstrates the real life applications of information-as-a-service concept

5.1 Customer control for assent

Users control their personality and must agree to the utilization of their information. Like - The hamlet Forum, a global free gathering of data security leaders, has supplemental their contribution on the way to collaborate information as a Service safely within the clouds to facilitate the needs of customers[1], [5].

5.2 Minimal Disclosure

The minimal amount of information should be uncovered for a planned use. An information-as-a-service strategy is about making data or information easier to eat up all through the organization.

5.3 Justifiable access

Only entity who have an upheld utilization of the information contained in a digital personality and have a trusted in character relationship with the owner of the information may be offered access to that information.

5.3.1 Content management:

Accumulating set of reusable and predictable set of substantial services.

5.3.2 Business Intelligence:

Visualising and predicting the analytics involved in order to decide for the services for provisioning.

5.3.3 Database services:

Managing, sharing, concluding different relational set of services while developing varied referential frameworks.

5.3.4 Information integration:

Inclusive of coagulating real-time data and integrating it to access business capabilities to semantically align information across disparate sources

VI. DISADVANTAGEOUS DROP

As we discussed above the benefits, both the user and the service provider is getting. We also need to discuss the disadvantages of this service. As said earlier, a coin has two sides; this is the later one. Using the services of information user gets the recommendation. But to get this, the user has to sacrifice his privacy and is more vulnerable to sometimes vulnerable advertisements. Sometimes the advertisements without going to the original page as described, take the user somewhere else[3]. Which might lead to phishing. As all the time, the service providers are not as genuine as they seem. Some may also steal some confidential data by taking to a never heard site that might ask for online payments as well. This type of phishing work is generally exhibited throughout every website nowadays[6]. They also steal other vital information as they sometimes also ask to allow for notification or even storage permissions. The use of such artificial intelligence leads to cyber-attack and crimes. So now we know the ill-effects of information services. To keep ourselves protected, we must use a firewall or internet security software for protection from such threats.

VII. CONCLUSION

Everything we have discussed here has some positives and negatives. As information services and technologies have brought a revolution. It has also added to some online threats and disturbances. But owing to the usability features it offers we can take this information service applications as revolutionary as they have so much to provide. This being said it is a beneficial provisioning of set of services to those who make it an advantageous venture. Reflecting about data and information as break free from the procedures that utilization them is one key part. This comparatively lowest effort approach can alter departments to maximize service quality and provides price savings. It is additionally a vital advancement if cloud computing is being focused and considered.

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