VISUALIZATION OF THE SATELLITE IMAGES ON MOBILE DEVICES - MAPSAT MOBILE APPLICATION

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1. INTRODUCTION

This work presents the MapSAT mobile application that was designed for viewing satellite images. The application was developed on the Android platform and it uses the N-tier architecture, available in DSA (Division of Satellites and Environmental Systems). The DSA covers the demand for information from weather satellites and it is subordinated to CPTEC which is subordinated to INPE. The application came after the analysis of several factors: (i) during the months from January to June 2015, 26,769,879 satellite images, available from DSA, were downloaded; (ii) almost all Brazilian citizen has a mobile device. According to ANATEL [1], the National Telecommunications Agency, in 2000 there were 8,155,473 active mobiles in Brazil, while in December 2014, 280 728 796 active mobile devices were registered; (iii) according to Ericsson, the use of mobile devices is done even before you get out of bed until bedtime; (iv) 54% of mobile connections are made using 3rd generation technology (3G) and 4th generation (4G) which facilitates the data traffic; and (v) according to International Data Corporation (IDC), the Android platform has 78% of market share [2].

2. THE MAPSAT

The MapSAT (Figure 1), in the first version, has two main features, namely: (i) the latest image viewing of the GOES satellite in the water vapor, infrared and visible channels; and (ii) "animation" feature that allows the visualization of the N last images of a particular channel, allowing the observation of the evolution of meteorological phenomena. The channel display order was set according to the amount of downloaded images of each channel, considering the first half of 2015. The app is available in Google Play [3].
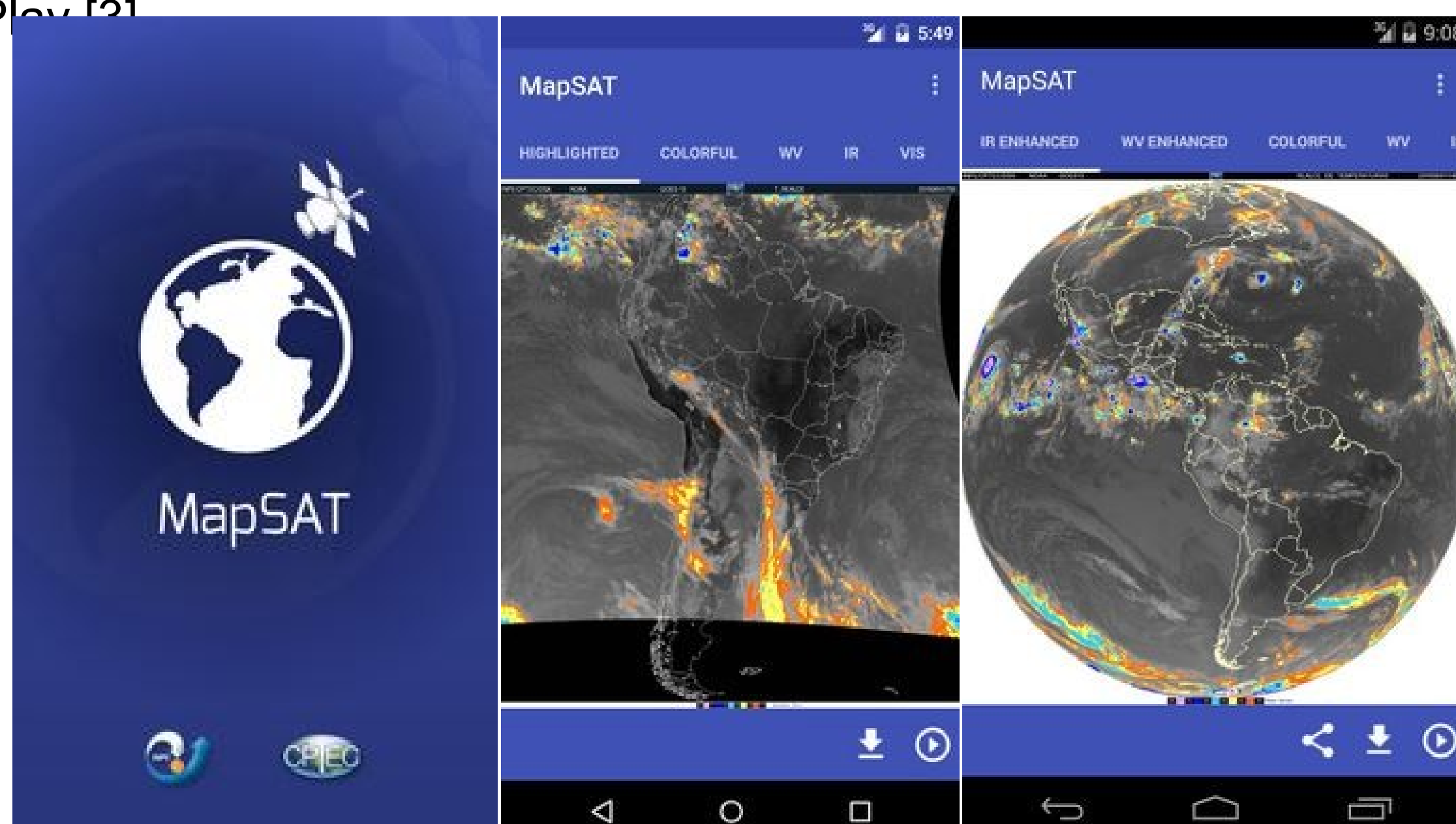

Figure 1 – MapSAT Application

3. ARCHITECTURE

The strategy is built the applications around the N-tier architecture [4, 5], which partitions systems and software to enable a more flexible, building block approach to infrastructure design and growth. To do this, we use web services that provide several technological and business benefits, such as: (i) the inherent interoperability that comes with using vendor, platform, and language independent XML technologies and the ubiquitous HTTP as a transport mean that any application can communicate with any other application using Web services; (ii) versatile by design; (iii) code re-use.

Web Services could provide responses in XML or JSON. XML and JSON [6] have become the dominant formats for exchanging data on the Internet, and applications frequently need to send and receive data in many different JSON-based or XML-based formats. Figure 2 shows the MapSAT Architecture.
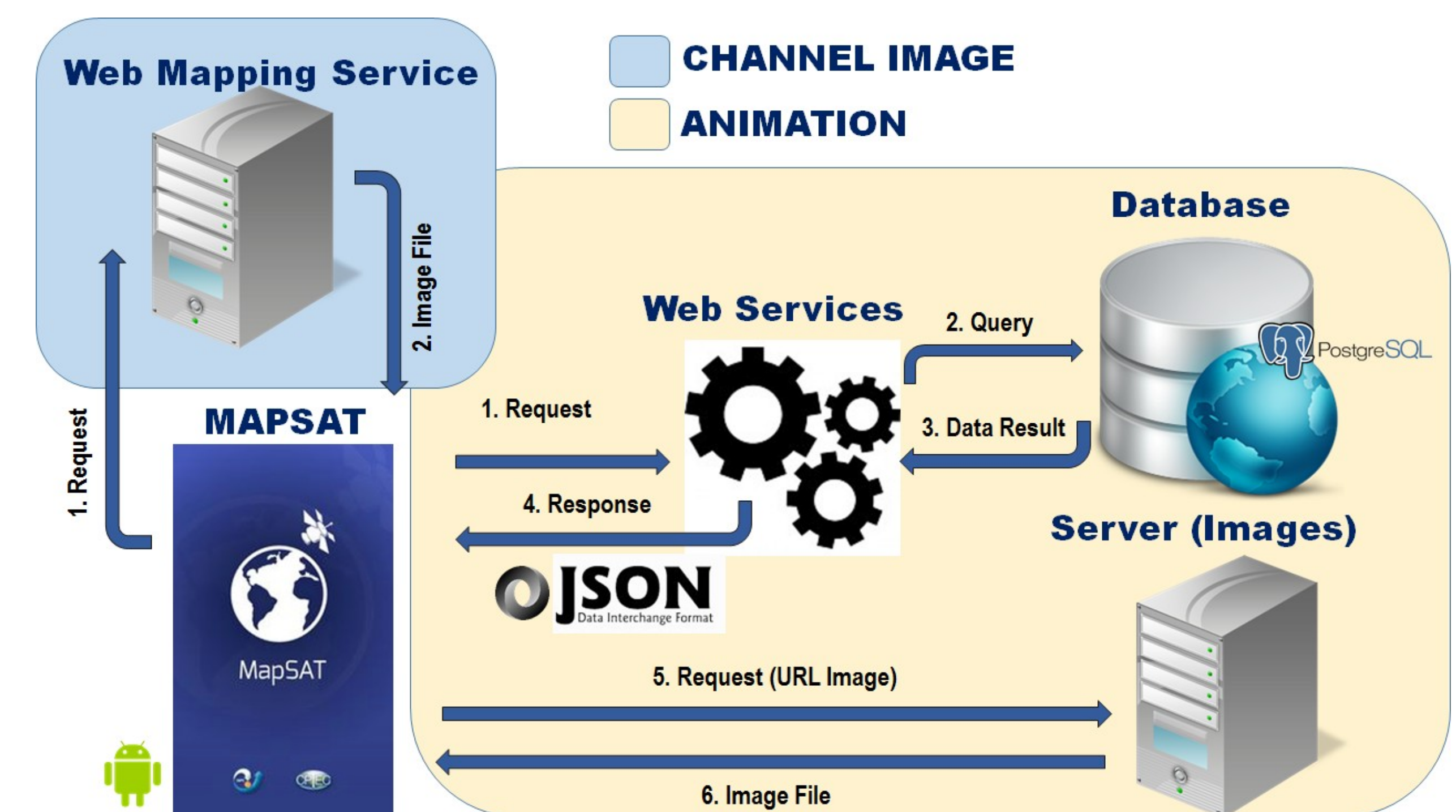

Figure 2 – MapSAT Architecture

4.CONCLUSION

The distribution of information through Web Mapping Service (WMS) and Web Services with responses in *JavaScript* Object Notation (JSON), allows the development of new products and applications more facility and productivity. In MapSAT, to visualize the latest image on each channel, a request is made to the WMS, which provides the processed image to the application. For the "animation" feature, the request can be made to visualize a list of images; to view images from a specific period of time; to visualize the images of a particular region, and so on. These requests are made to the Web Service that provides the information for each image through JSON responses. The MapSAT comes as an option for end users to facilitate the visualization of satellite images.

5.REFERENCES

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