

CORTANA (Intelligent Assistant)

Abstract: Cortana which is designed as a intelligent assistant and knowledge navigator for the Windows devices(Mobile and OS). Cortana made Microsoft's previous voice technology called TellMe, purchased by Microsoft. Cortana which is a Microsoft personal assistant software which is created by Microsoft for Windows advanced devices. Cortana can be used as areminders, even it can recognize natural voice without the requirement of the keyboard as ainput, and it will answer the question questions using information from the Bing search engine.

Cortana which is available in the languages of English, Italian, etc which will be depended on the software platform and region in which it is used . Cortana mainly provides competition for assistants such as Apple's Siri, Google's Google Assistant and Alexa.

Keywords: COrtana

1. INTRODUCTION

Cortana which is designed as a intelligent assistant and knowledge navigator for the Windows devices(Mobile and OS). , Microsoft Band, Xbox One, iOS and Android. Cortana which was first time demonstrated nat the Microsoft BUILD Developer Conference in San Francisco. It has been launched as a key ingredient of Microsoft's "makeover" as the future OS for Windows Devices . It is named as Cortana, a synthetic intelligence character in

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Microsoft's *Halo* video game franchise originating in Bungie folklore

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HISTORY

Development

The development of Cortana started in 2009 in the Microsoft Speech products team with general manager and Chief Scientist. They established the vision, mission, and long-range plan for Microsoft's digital-personal-assistant and they made a team with the expertise to create it. To develop the Cortana, the team has gone with different process such as they interviewed human personal assistants. After these interviews inspired a number of unique features is to be established in the Cortana, including the assistant's "notebook" feature. Generally *Cortana* means that it is a codename,

2. HARDWARE REQUIRED

Cortana which can be set as a reminders, even it can recognize the natural voice without the requirement of keyboard, and it will answer to the questions from the search engine . If Firefox is the default browser, Cortana uses the Firefox default search engine . Searches will only be made with search engine and all links will open with Microsoft Edge, except when a screen reader such as Narrator is being used, where the links will open in Internet Explorer.

Windows 8.1's universal Bing Smart-search features which were incorporated into the Cortana device, Search app which will be activated as soon as the user presses the "Search" button on it. Cortana as an extra feature which can recognize music service. 'Cortana's "Concert Watch" monitors Bing searches to determine which bands or musicians the user is interested in. It integrates with the Microsoft Band watch band for Windows Phone devices if connected via Bluetooth, it can make reminders and phone notifications.

2.1 Notebook

Cortana stores personal information such as interests, location data, reminders, and contacts in the "Notebook". It can draw upon and add to this data to learn a user's specific patterns and behaviors. Users can view that what information has been collected to allow some control over privacy, said to be "a level of control that goes beyond comparable assistants". Even the users can delete information from the "Notebook".

2.2 Reminders

Cortana has a built in system of reminders which for example when the user want to communicate with some contact person , then by using cortana the user can set reminder to that contact which will remind according to the time set. Originally these reminders were specific to the device Cortana was installed on, but since Windows 10 Microsoft synchronizes reminders across devices.

2.3 Miscellaneous

Cortana has an option "do-not-disturb" mode in which users can specify the time in which it shouldn't disturb "quiet hours", which was available for Windows Phone 8.1 users. In Cortana we have an another feature where users can change the settings so that Cortana can calls the users by their names or nicknames. It also has a library of "Easter Eggs", pre-determined remarks. Cortana can solve mathematical equations, convert the units of measurement, and determine the exchange rates between currencies including Bitcoin.

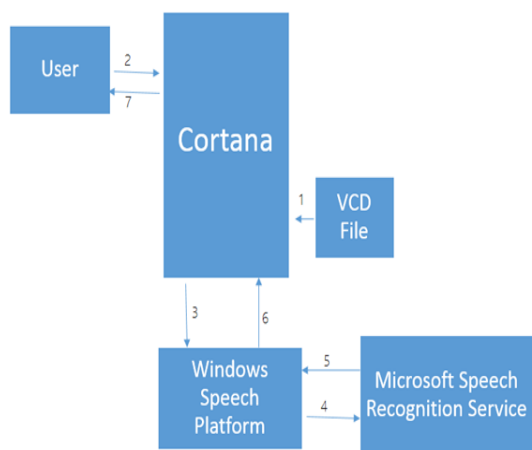
Step 1: VCD (Voice Command Definition) is an XML file which contains all the Commands which is used to activate the app. When the app was run by the user in the foreground, then the VCD file will be get installed into the Cortana.

Step 2: User can use command which has defined in the VCD file to launch the App.

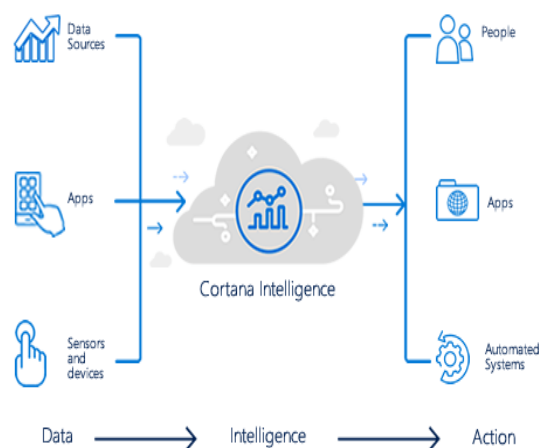
Step 3, 4 ,5 6 : Whenever the user speaks then the speech is sent to search in Windows Speech platform and Microsoft Speech Recognition service in cloud, together they identify what the user has tried to said.

Step 7: Now Cortana receives the text which was said by the user and decides which application has to be launched .

3. WORKING PRINCIPLE USED in CORTANA



Cortana Intelligence which is based on the Microsoft Azure Cloud, which is used to transform the data into Intelligent Actions. The following is a high level diagram which shows where exactly Cortana Intelligence works in the overall Data Analytics Ecosystem.



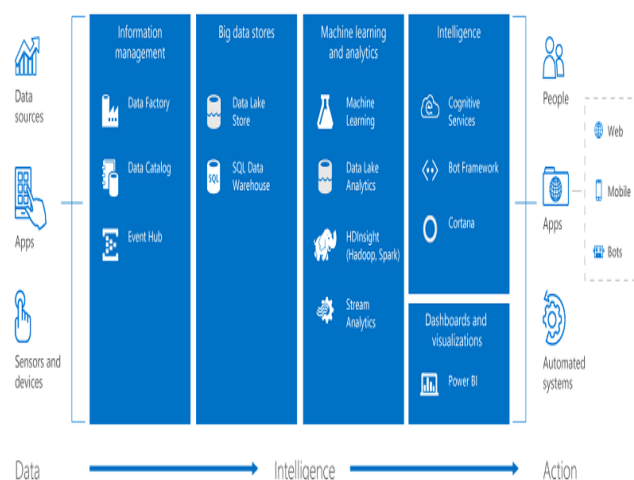
Cortana Intelligence allows us to process the given data from a variety of different data sources, transform the data, apply advanced analytical techniques (Data Mining, Machine Learning etc.), and extract actionable insights which enables

the business to take intelligent and timely actions.

Data can be extracted from the variety of data sources which may include the applications, files, logs, devices and sensors, and a wide variety of Big Data and Internet of Things (IoT) systems and extracts all those valuable insights and data from the sources and deliver them to decision makers, and which helps them to take intelligent actions

4. Architecture of Cortana Intelligence Suite:

Now let's take a look at the architecture of Cortana Intelligence Suite. The below architecture diagram shows the various Azure offerings which the Cortana Intelligence Suite is comprised of.



As we can see from the above architecture diagram, following are the key pillars of Cortana Intelligence Suite:

- **Information Management:** Cortana which helps to capture the incoming data from various sources including the streaming data from sensors, devices, and other IoT systems. And manages the various data sources which are part of the data analytics; and orchestrate and build end-to-end flows to perform various activities and data processing and data preparation operations.
- **Big Data Stores:** Cortana which enable us to store and manage large scale data.

These services offer high degree of elasticity, high processing power, and high throughput with great performance.

- **Machine Learning and Analytics:** Cortana provides the services which enable us to perform advanced analytics, build predictive models, and apply machine learning algorithms on large scale data. Allows us to perform data analysis on large scale data by using different programming languages like Python.
- **Dashboards and Visualizations:** Cortana provides the services which enable us to prepare the reports and dashboards to view the insights. It mainly consists of Power BI which allows us to build highly interactive visually appealing reports and dashboards. Apart from this, other tools like SQL Server Reporting Services (SSRS), Excel, etc. can also be used to connect to data .
- **Intelligence:** Consists of advanced intelligence services which enable us to build smart interactive services using advanced text, speech, and other recognition systems.

5. RESULT

As a result the cortana can be implemented anywhere by using different languages according to the region . because cortana can work with different languages .

6. CONCLUSION

TECHNOLOGY

The general language and processing capabilities of the Cortana are derived from Tellme Networks and are combined with a Semantic search database called Satori which is very much used in searching the data .

UPGRADING

Cortana updates are delivered independently to the main Windows Phone OS . Not all the Cortana-

related features can't be updated in this manner as some of the features such as "Hey Cortana" require the Windows Phone update service and the Qualcomm Snapdragon Sensor-core Technology.

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