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SYLLABUS. : Cloud Networking - Internet of Things - Business process Re - engineering [BPR] - Business Analytics - Meaning and features of Internet of Things - Business process of engineering and Business Analytics.

Introduction to Cloud Computing

The Internet of Things (IoT) involves the internet-connected devices we use to perform the processes and services that support our way of life. Another component set to help IoT succeed is cloud computing, which acts as a sort of front end.

Cloud computing is an increasingly popular service that offers several advantages to IOT, and is based on the concept of allowing users to perform normal computing tasks using services delivered entirely over the internet.

A worker may need to finish a major project that must be submitted to a manager, but perhaps they encounter problems with memory or space constraints on their computing device

Memory and space constraints can be minimized if an application is instead hosted on the internet. The worker can use a cloud computing service to finish their work because the data is managed remotely by a server.

Another example: you have a problem with your mobile device and you need to reformat it or reinstall the operating system. Concept In truth, cloud computing and IoT are tightly coupled. The growth of IoT and the rapid development of associated technologies create a widespread connection of —things.

|| This has led to the production of large amounts of data, which needs to be stored, processed and accessed. Cloud computing as a paradigm for big data storage and analytics.

While IoT is exciting on its own, the real innovation will come from combining it with cloud computing.

The combination of cloud computing and IoT will enable new monitoring services and powerful processing of sensory data streams.

For example, sensory data can be uploaded and stored with cloud computing, later to be used intelligently for smart monitoring and actuation with other smart devices.

Ultimately, the goal is to be able to transform data to insight and drive productive, cost-effective action from those insights.

The cloud effectively serves as the brain to improved decision-making and optimized internet-based interactions. However, when IoT meets cloud, new challenges arise. There is an urgent need for novel network architectures that seamlessly integrate them.

The critical concerns during integration are quality of service (QoS) and quality of experience (QoE), as well as data security, privacy and reliability.

The virtual infrastructure for practical mobile computing and interfacing includes integrating applications, storage devices, monitoring devices, visualization platforms, analytics tools and client delivery.

Cloud computing offers a practical utility-based model that will enable businesses and users to access applications on demand anytime and from anywhere.

Characteristics

First, the cloud computing of IoT is an on-demand self service, meaning it's there when you need it. Cloud computing is a web-based service that can be accessed without any special assistance or permission from other people;

however, you need at minimum some sort of internet access.

Second, the cloud computing of IoT involves broad network access, meaning it offers several connectivity options.

Cloud computing resources can be accessed through a wide variety of internet-connected devices such as tablets, mobile devices and laptops.

This level of convenience means users can access those resources in a wide variety of manners, even from older devices. Again, though, this emphasizes the need for network access points. **Third**, cloud computing allows for resource pooling, meaning information can be shared with those who know where and how (have permission) to access the resource, anytime and anywhere. This lends to broader collaboration or closer connections with other users. From an IoT perspective, just as we can easily assign an IP address to every "thing" on the planet, we can share the "address" of the cloud-based protected and stored information with others and pool resources.

Fourth, cloud computing features rapid elasticity, meaning users can readily scale the service to their needs. You can easily and quickly edit your software setup, add or remove users, increase storage space, etc. This characteristic will further empower IoT by providing elastic computing power, storage and networking.

Finally, the cloud computing of IoT is a measured service, meaning you get what you pay for. Providers can easily measure usage statistics such as storage, processing, bandwidth and active user accounts inside your cloud instance.

This pay per use (PPU) model means your costs scale with your usage. In IoT terms, it's comparable to the ever-growing network of physical objects that feature an IP address for internet connectivity, and the communication that occurs between these objects and other internet-enabled devices and systems

What is Business Process Reengineering

“Business Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed” – Michael Hammer and James Champy

Business process reengineering is an approach used to improve organizational performance by increasing the efficiency and effectiveness of processes that exist across the organization. In addition to the redesigning of business processes, it also involves the redesigning of associated systems and organizational structures.

Usually, reasons like new market opportunities, increasing competition, poor financial performance, and decreasing market share trigger the need for a business process transformation.

BPR involves the analysis and transformation of several **major components** of a business.

These include,

Strategy

Organization

Process

Technology

Culture

BPR includes three phases; analysis phase, design phase, and implementation phase. It is also referred to as business process redesign, business process change management, and business transformation.

Three Phase BPR Model Proposed by Cross Feather and Lynch (Click on the template to edit it online)

Benefits of Business Process Reengineering

BPR plays a major role in organizational performance improvement in terms of cost, quality, delivery, employee productivity, etc.

It also helps Streamline business processes and systems

Companies easily adapt to changing times and reduce operating expenses

Improve company profitability and sustain competitive advantage

Boost employee productivity

Increase customer satisfaction by improving the quality of products and services

Step 1: Set the vision and business goals

This is where the senior management needs to identify the business situation; customer expectations, competition, opportunities, etc.

This will make it easier to understand the need for change and create a clear vision of where the company needs to be in the future. Then clarify the objectives in both qualitative and quantitative terms.

Step 2: Establish a competent team

The team you select needs to be cross-functional because expertise and perceptions from all levels of the organization are necessary to minimize the chances of failure.

It should be the responsibility of the top management to have a clear vision of the activities that need to be carried out and provide strategic direction. You also need to have an operational manager who knows the ins and outs of the processes. It is equally important to have the right engineers with different expertise from various fields to make the team complete.

At this stage, it is important to have the goals and strategies outlined properly. You can also carry out surveys and benchmarking activities to identify customer needs and analyze the competition.

In this step, it's also necessary to communicate the business case for change and the objectives of the project to the rest of the employees. This will encourage their feedback as well and help them get ready for what's to come.

Step 3: Understand the current process

In this step, you need to select the process(es) that you will be redesigning. Such processes that are broken, cross-functional, value-adding, have bottlenecks or have high-impact on the organization, etc. can be prioritized.

Merging Data Analytics and IoT will Positively Impact Businesses

Data Analytics has a **significant role** to play in the growth and success of IoT applications and investments. Analytics tools will allow the business units to make effective use of their datasets as explained in the points listed below.

Volume: There are huge clusters of data sets that IoT applications make use of. The business organizations need to manage these large volumes of data and need to analyze the same for extracting relevant patterns. These datasets along with real-time data can be analyzed easily and efficiently with data analytics software.

Structure: IoT applications involve data sets that may have a varied structure as unstructured, semi-structured and structured data sets. There may also be a significant difference in the data formats and types. Data analytics will allow the business executive to analyze all of these varying sets of data using automated tools and software.

Driving Revenue: The use of data analytics in IoT investments will allow the business units to gain an insight into customer preferences and choices. This would lead to the development of services and offers as per the customer demands and expectations. This, in turn, will improve the revenues and profits earned by the organizations.

Related Reading

Discover how IoT can turn beneficial for your organization and identify areas of deployment to foster innovation and growth.

Competitive Edge: IoT is a buzzword in the current era of technology and there are numerous IoT application developers and providers present in the market. The use of data analytics in IoT investments will provide a business unit to offer better services and will, therefore, provide the ability to gain a competitive edge in the market.

Optimize your Processes with Data

Fingent's proficiency in data analytics helps you get the most out of your IoT systems. Get in touch with us today to deploy the right IoT data strategy for your business.

There are different types of data analytics that can be used and applied in the IoT investments to gain advantages. Some of these types have been listed and described below.

Streaming Analytics: This form of data analytics is also referred as event stream processing and it analyzes huge in-motion data sets. Real-time data streams are analyzed in this process to detect urgent situations and immediate actions. IoT applications based on financial transactions, air fleet tracking, traffic analysis etc. can benefit from this method.

Spatial Analytics: This is the data analytics method that is used to analyze geographic patterns to determine the spatial relationship between the physical objects. Location-based IoT applications, such as smart parking applications can benefit from this form of data analytics.

Time Series Analytics: As the name suggests, this form of data analytics is based upon the time-based data which is analyzed to reveal associated trends and patterns. IoT applications, such as weather forecasting applications and health monitoring systems can benefit from this form of data analytics method.

Prescriptive Analysis: This form of data analytics is the combination of descriptive and predictive analysis. It is applied to understand the best steps of action that can be taken in a particular situation. Commercial IoT applications can make use of this form of data analytics to gain better conclusions.

What are Business Analytics Tools?

Business Analytics Tools consist of a set of solutions, methods, skills and best practices used to gain insights for understanding current business realities and business planning. The primary use of business analytics is to drive decision making. Business analytics is heavily statistically focused and uses analysis techniques such as descriptive, predictive, and prescriptive analytics.

Descriptive Analytics gains insights from historical data. This is where business intelligence (BI) falls with enterprise reporting solutions such as Logi Report.

Predictive Analytics employs forecasting models through methods like machine learning, artificial intelligence, and statistics.

Prescriptive Analytics recommends decisions using optimizations and simulation techniques.

In recent years, many business intelligence solutions provide features for both predictive and prescriptive analytics. This is a growing market for BI tools and explains why many business persons use the terms business analytics and business intelligence interchangeably.

5 Modern Tools for Business Analytics

These are five of the most frequently used analytical tools many industries use for reporting and analysis.

There are many analytical tools that are not listed here that enterprises use such as forecasting models and simulations, but data mining is included since it is used by a wide range of businesses for data discovery.

Many analytic tools are in high growth markets and are expected to be used in tandem with other analytical tools in the future.

OLAP (online analytical processing) is a technology that processes data which allows for users to view data from multiple perspectives. The core of OLAP is that it stores data in multiple dimensions rather than tabular relations found in relational databases. This enables users to analyze data in any point of view.

Data mining is the process of analyzing large datasets to find actionable information through the identification of patterns in your data. Modern data mining uses computational processing to streamline analysis through methods from various disciplines such as machine learning, artificial intelligence, and statistics.

Visualizations graphically depict data used for analytical purposes. The goal of any visualization is accuracy, ease of use, and the presentation of information in a digestible format.

A reporting tool allows you to present data in charts, tables, and other visualizations so users can gain useful information. Modern reporting tools are highly interactive for in-depth analysis of data, allowing users to navigate data to gain insights.

A dashboard is a user interface that provides pre-defined key performance indicators used to monitor business processes and objectives. Dashboards provide all of these metrics on a single screen for an at-a-glance view of corporate data. They are often customized for users or user groups to display the most pertinent information that is critical to the business function.

Business Analytics vs. Business Intelligence

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