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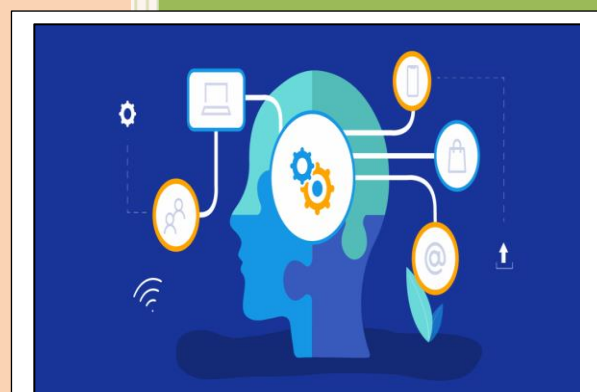
EDGE COMPUTING

HOW WILL IT TRANSFORM OUR WORLD?

Edge computing is a distributed information technology (IT) architecture in which client data is processed at the periphery of the network, as close to the originating source as possible.

Data is the lifeblood of modern business, providing valuable business insight and supporting real-time control over critical business processes and operations. Today's businesses are awash in an ocean of data, and huge amounts of data can be routinely collected from sensors and IoT devices operating in real time from remote locations and inhospitable operating environments almost anywhere in the world.

But this virtual flood of data is also changing the way businesses handle computing. The traditional computing paradigm built on a centralized data center and everyday internet isn't well suited to moving endlessly growing rivers of real-world data. Bandwidth limitations, latency issues and unpredictable network disruptions can all conspire to impair such efforts. Businesses are responding to these data challenges through the use of edge computing architecture.

How does edge computing work?

Edge computing is all a matter of location. In traditional enterprise computing, data is produced at a client endpoint, such as a user's computer. That data is moved across a WAN such as the internet, through the corporate LAN, where the data is stored and worked upon by an enterprise application. Results of that work are then conveyed back to the client endpoint.

This remains a proven and time-tested approach to client-server computing for most typical business applications.

But the number of devices connected to the internet, and the volume of data being produced by those devices and used by businesses, is growing far too quickly for traditional data center infrastructures to accommodate. Gartner predicted that by 2025, 75% of enterprise-generated data will be created outside of centralized data centers. The prospect of moving so much data in situations that can often be time- or disruption-sensitive puts incredible strain on the global internet, which itself is often subject to congestion and disruption.

So, IT architects have shifted focus from the central data center to the logical edge of the infrastructure -- taking storage and computing resources from the data center and moving those resources to the point where the data is generated. The principle is straightforward: If you can't get the data closer to the data center, get the data center closer to the data. The concept of edge computing isn't new, and it is rooted in decades-old ideas of remote computing -- such as remote offices and branch offices -- where it was more reliable and efficient to place computing resources at the desired location rather than rely on a single central location.
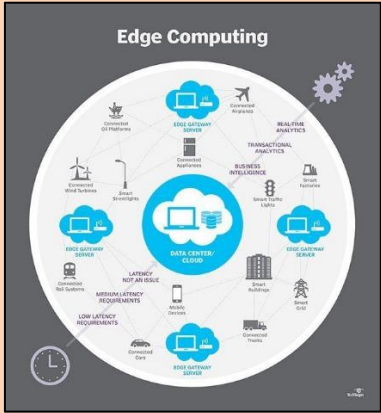
Edge vs. cloud vs. fog computing

All three concepts relate to distributed computing and focus on the physical deployment of compute and storage resources in relation to the data that is being produced. The difference is a matter of where those resources are located.

Edge: Edge computing is the deployment of computing and storage resources at the location where data is produced. This ideally puts compute and storage at the same point as the data source at the network edge. For example, a small enclosure with several servers and some storage might be installed atop a wind turbine to collect and process data produced by sensors within the turbine itself. As another example, a railway station might place a modest amount of compute and storage within the station to collect and process myriad track and rail traffic sensor data. The results of any such processing can then be sent back to another data center for human review, archiving and to be merged with other data results for broader analytics.

Cloud: Cloud computing is a huge, highly scalable deployment of compute and storage resources at one of several distributed global locations (regions). Cloud providers also incorporate an assortment of pre-packaged services for IoT operations, making the cloud a preferred centralized platform for IoT deployments. But even though cloud computing offers far more than enough resources and services to tackle complex analytics, the closest regional cloud facility can still be hundreds of miles from the point where data is collected, and connections rely on the same temperamental internet connectivity that supports traditional data centers. In practice, cloud computing is an alternative -- or sometimes a complement -- to traditional data centers. The cloud can get centralized computing much closer to a data source, but not at the network edge.

Fog: But the choice of compute and storage deployment isn't limited to the cloud or the edge. A cloud data center might be too far away, but the edge deployment might simply be too resource-limited, or physically scattered or distributed, to make strict edge computing practical. In this case, the notion of fog computing can help. Fog computing typically takes a step back and puts compute and storage resources "within" the data, but not necessarily "at" the data.

What are the benefits of edge computing?

1. Autonomy
2. Data sovereignty
3. Edge security.

Challenges of edge computing
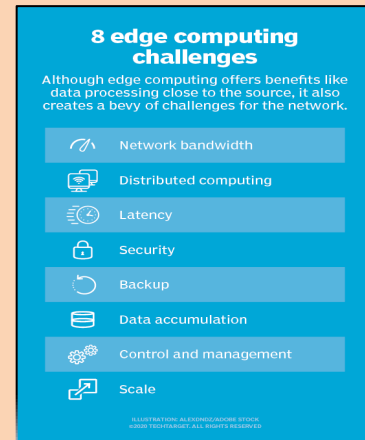
Edge Maintenance

Security: Physical and logical security precautions are vital and should involve tools that emphasize vulnerability management and intrusion detection and prevention. Security must extend to sensor and IoT devices, as every device is a network element that can be accessed or hacked -- presenting a bewildering number of possible attack surfaces.

Connectivity: Connectivity is another issue, and provisions must be made for access to control and reporting even when connectivity for the actual data is unavailable. Some edge deployments use a secondary connection for backup connectivity and control.

Management: The remote and often inhospitable locations of edge deployments make remote provisioning and management essential. IT managers must be able to see what's happening at the edge and be able to control the deployment when necessary.

Physical maintenance: Physical maintenance requirements can't be overlooked. IoT devices often have limited lifespans with routine battery and device replacements. Gear fails and eventually requires maintenance and replacement. Practical site logistics must be included with maintenance.

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Internet of Behavior (IoB)

What is Internet of Behavior (IoB)?

The scope of the Internet of Things (IoT) is constantly expanding and evolving in terms of its complexity, i.e. the way in which devices are interlinked, the computations that can be processed by these devices autonomously, and the data that is stored in the cloud evolve in a more complex way. The shift to mobile devices has ultimately changed the way people communicate and interact with the world around them. The usage data collected by these IoT devices provide valuable information about users' interests, behavior, and preferences. This has been called the Internet of Behavior (IoB).

Let's indulge in details of what the Internet of Behavior (IoB) is, what business value it is, and who can benefit from it. In other words, how to turn all the data collected from users' online activities into something useful which in turn benefits the business. A new concept, the Internet of Behavior (IoB), now provides an answer to this question.

What is the Internet of Behavior and How does it work?
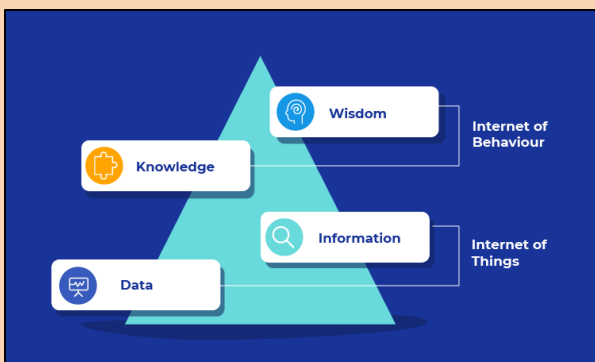
Internet of Behavior, also known as IoB, can be defined as the collection and use of data to drive behaviors. Wearable technologies, individual online activities, and household electrical devices collect this data, which can provide valuable information about user behavior and interests. It is based on human psychology perspectives such as purchasing or following a specific online brand to track and interpret those behaviors using emerging technological innovations and developments in machine learning algorithms.

IoB is the combination of 3 fields:

1. Technology
2. Data Analytics
3. Behavior Science

In theory, IoB could provide organizations with critical insights that enable them to increase productivity, monitor compliance with COVID-19 safety protocols, and more. As an example, consider Uber and its IoT application. It's used to keep track of drivers and passengers. A survey is conducted at the end of each journey to evaluate the passenger experience. They can go even further by using IoB instead of IoT to collect data without the need for a survey to evaluate the experience. To automatically work on feedback, it is possible to track the driver's behavior and then interpret the passenger experience.

The Benefits of IoB in Digital Marketing

1. Market products more effectively to customers

Many digital marketing agencies are already using analytics tools to uncover insights into common consumer behaviors. Marketers can use the IoB to analyze customer purchasing habits across platforms, gain access to previously unobtainable data, redefine the value chain, and even provide real-time point-of-sale notifications and targeted ads.

2. Improve user experience

ux design services is a crucial part of sales. Organizations can have a better understanding of people's attitudes toward specific products or services thanks to the knowledge provided by IoB, making it even easier to resolve customer concerns.

3. Enhance public health

Companies in the manufacturing industry are already using sensors and RFID tags to determine whether or not on-site employees wash their hands regularly. Furthermore, computer vision can determine whether or not employees are following mask protocol or social distancing directives. In the health industry, providers can track patients' activation and engagement efforts.

4. Improve public safety

Monitoring public safety is opening up exciting new opportunities in a variety of industries. Vehicle telematics is used in one application to track driver behavior and flag erratic or dangerous behavior.

What does the future hold for IoB?

However, the collection of behavioral events data can be problematic. The IoB raises concerns about how businesses gather, navigate, and use data, particularly as more of it is collected. Whatever perspectives are on IoT and IoB, experts predict that they will continue to grow and influence in the near future.

According to Gartner, by the end of 2025, more than half of the world's population will be subject to at least one IoB program, whether from a commercial or governmental source. IoB, like other technology trends such as AI and machine learning, is likely to spark significant debate about the ethics vs. positive applications of this technology. According to these experts, by 2023, the individual activities of 40% of the global population will be tracked digitally to influence their behavior through the IoB concept. In 2023, that percentage will represent more than 3 billion people worldwide (Gartner 2020).

Article By
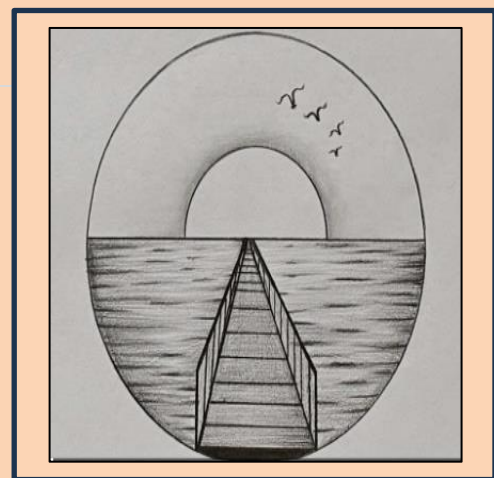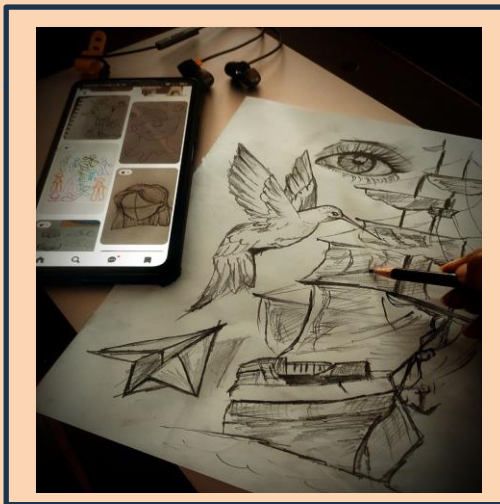**17BQ1A05D3**
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SHAIK
SHAKEERUDDIN**

VVIT determined the day I joined that this would be my everlasting home. First and primary, Infrastructure stole my heart. It took me a little time to modify, however as soon as I began going to Friday clubs' equipment, the entirety have become 2nd nature to me.

The lectures at VVIT are absolutely career-orientated, which aided me in achieving my aim of touchdown a role on Amazon. Technical occasions substantially aided me in honing my programming skills. I'd truthfully propose this institute to my friends and family as a great institution.

The workforce has a outstanding deal of experience. they're quite on hand and willing to deal with my issues! the placement ratio in the college is remarkable, with over 90% of students being located in MNCs with at the least one offer. I was given positioned within the three-2 semester. the everyday package deal size is round 3.5L. My interview went pretty nicely. I felt a little fearful, but my professor encourages anyone to be confident. It creates an environment wherein you may flourish each academically and in my opinion. it is all about seizing a possibility.

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The day I joined in VVIT determined that is going to be my place forever. firstly, Infrastructure took my heart. It took me little time to settle however once I commenced participating in Friday clubs' equipment it changed into easy to me.

Lectures in VVIT are absolutely career centered which helped me to chase my goals to place in mnc's. Technical activities helped me lot to enhance my talents in coding. I'd truly advocate this institute to my pals and circle of relatives as a splendid institute.

The fine part about 'y university is annual fest which held within the month of December every year. I invited my pals from different schools they took apart in VVIT events. SAC will contend with the whole thing, and pupil voice is continually taken into opinion. The doors are usually open to participate in any events. i have had a lot amusing with my friends. We used to have film promotions where we enjoyed out of field.

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I'm gratefully thanks to my institute for their steering and support all of the manner. And right here I am and not using a regret to be apart in our college. This extraordinary enjoy strikes a chord in my memory forever.

Department Vision:

Providing quality education to enable the generation of socially conscious software engineers who can contribute to the advancement in the field of computer science and engineering.

Department Mission:

1. To equip the graduates with the knowledge and skills required to enable them to be industry ready.
2. To train socially responsible, disciplined engineers who work with good leadership skills and can contribute for nation building.
3. To make our graduates proficient in cutting edge technologies through student centric teaching-learning process and empower them to contribute significantly to the software industry
4. To shape the department into a Centre of academic and research excellence

Program Educational Objectives (PEO'S):

PEO-1:

To provide the graduates with solid foundation in Computer Science and Engineering along with the fundamentals of Mathematics and Sciences with a view to impart in them high quality technical skills like modeling, analyzing, designing, programming and implementation with global competence and helps the graduates for life-long learning.

PEO-2:

To prepare and motivate graduates with recent technological developments related to core subjects like Programming, Databases, Design of Compilers and Network Security aspects and future technologies so as to contribute effectively for Research & Development by participating in professional activities like publishing and seeking copy rights.

PEO-3:

To train graduates to choose a decent career option either in high degree of employability/Entrepreneur or, in higher education by empowering students with ethical administrative acumen, ability to handle critical situations and training to excel in competitive examinations

PEO-4:

To train the graduates to have basic interpersonal skills and sense of social responsibility that paves them a way to become good team members and leaders.