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Feb 24

Success, like happiness, can not be pursued. It comes only as a result of dedication.

- Viktor Frankl

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Editor's Note

Soumika Das

AI systems, powered by specialized chips, stand as both engines of economic growth and scientific progress. However, the potential for misuse, such as mass surveillance, cyberattacks, and the creation of biological weapons, poses significant risks. Recognizing this, researchers are exploring innovative solutions to mitigate the harm caused by advanced AI systems.

Even the most sophisticated AI algorithms are bound by the laws of silicon. The hardware on which they run plays a pivotal role in determining their capabilities. To exploit this connection for the greater good, some researchers propose embedding rules directly into computer chips to govern the training and deployment of AI algorithms.

These on-chip governance mechanisms involve secure physical features integrated into chips or associated hardware, providing a platform for adaptive governance. The potential lies in preventing irresponsible entities from secretly developing hazardous AI, offering a more robust solution than conventional laws or treaties.

In the near term, one promising application is export control enforcement. On-chip mechanisms could restrict unauthorized actors from utilizing export-controlled AI chips, ensuring compliance with regulations. On-chip governance holds the promise of enforcing terms laid out in international agreements or regulations governing the extensive training and deployment of AI models. By providing a trustworthy verification platform, these mechanisms could broaden the scope of possible agreements and policies. Crucially, on-chip governance avoids the need for intrusive monitoring or insecure "back doors" on hardware.

However, developing and deploying hardware controls for AI presents challenges on technical and political fronts. The task requires the creation of new cryptographic software schemes and potentially incorporating new hardware features in future AI chips. Despite these difficulties, the potential benefits in terms of preventing misuse and ensuring responsible AI development make the pursuit of on-chip governance a compelling avenue for the future.

We have some insightful articles in this edition.

Venkatesh Bihani has written, **Micro Capability Center: Your Gate Pass for Innovation & Growth.**

Maryada Kashyap and **Nithesh Kumar** have written, **Transforming Data Management with ZIF in Healthcare.**

Kumaresan Periyasamy has written, **Guarding Your Digital Space: Tips to Protect Your Social Media Accounts.**

Anitha Rajmohan has written, **GRC and Access Governance.**

Team UNBOX has written, **Best Practices for Accessible UX Design and Common Accessibility Mistakes.**

Happy Reading!

What's New in Tech

Twisted ringbots - New soft robots developed

North Carolina State University researchers have developed a new soft robot design that engages in three simultaneous behaviors: rolling forward, spinning like a record, and following a path that orbits around a central point. The device operates without human or computer control and holds promise for developing soft robotic devices that can be used to navigate and map unknown environments.

AI to make the internet more accessible

In an effort to make the internet more accessible for people with disabilities, researchers at The Ohio State University have begun developing an artificial intelligence agent that could complete complex tasks on any website using simple language commands.

Mini-robots modeled on insects developed

Two insect-like robots, a mini-bug and a water strider weighing 8 milligrams and 55 milligrams could someday be used for work in areas such as artificial pollination, search and rescue, environmental monitoring, micro-fabrication or robotic-assisted surgery.

Artificial muscle device produces force 34 times its weight

Scientists developed a soft fluidic switch using an ionic polymer artificial muscle that runs with ultra-low power to lift objects 34 times greater than its weight. Its light weight and small size make it applicable to various industrial fields such as soft electronics, smart textiles, and biomedical devices by controlling fluid flow with high precision, even in narrow spaces.

Source: Science Daily

Micro Capability Center:
Your Gate Pass for Innovation & Growth

Introduction

Global Capability Centers (GCC) aka Captive Centers or Global In-house Centers (GIC) have been in existence for over 20 years. The GCCs originally have been the brainchild of the CxOs to address some of the key issues such as costs, access to talent, etc. For the longest time, India has been the strategic and preferred destination for several G1000 companies. Today the GCC has become an integral part of several leaders in the HiTech, BFSI & Retail space; at the same time some of the GCCs spun have transformed to be a wealth creator for the parent organizations by creating newer revenue streams, monetization of the IPs, etc.

In the current post-pandemic world, the GCCs are at an inflection point and the aspiring global leaders left out from the GCC wave are forced to reconsider their GCC related decisions, as digital transformation has become the most important recipe for growth & financial success.

Global giants like Deutsche Bank, Citi Group who sold their captives in the wake of global financial crisis of 2008 are looking again to tap into the GCC story and entering India to establish a strategic talent hub. GCCs are not only supporting the organization's US/Europe headquarters but also helping them in managing and securing local partnerships to expand into local emerging markets. Organizations view GCCs not only as a cost saving tool but also as a breeding ground for unlocking new digital potential across the value chain using Data & analytics, AI & Cybersecurity.

SAP Labs India, which began as a small organization of 100 developers, is now a global R&D center for the German company with over 15,000 employees. Leveraging this growth, the company has doubled its cloud customers in India over the last 2 years. India is rising as a global GCC destination because of its digitally enabled population, and a deepening innovation ecosystem, all of which creates a deep talent pool.

India – The GCC Capital

Global Capability Centers (GCCs) in India transformed from a back-office hub to a thriving nerve center for innovation and global operations. MNCs of all sizes, from Fortune 500 giants to startups are increasingly setting up GCCs in India drawn by its abundant & unmatched talent pool, lower operating costs and robust IT Infrastructure and maturity. India has evolved from a single function, labor arbitrage and cost saving center to a multi-function, regional ability globally integrated center of excellence. India holds a lion's share of over 50 percent of world's operational GCC centers. A leading example would be Dun & Bradstreet's $10M India project, later Cognizant, achieved a $2B+ Nasdaq valuation in a decade. It was subsequently spun off and now stands as a major IT player with a current market cap of $38B.

"For us, India GCC is not about cost arbitrage now. It is about capabilities, innovation, and access to talent that we cannot have anywhere else in the world." - Sowmyanarayan Sampath, CEO, Verizon Consumer Group

In the post pandemic world, the role of GCC is evolving from a portfolio hub to a transformational hub as CIOs are expected to align the technology spend with organization's overall growth trajectory and driving enterprise-wide digital transformation. CIOs continuously are focusing to build Center of Excellences (CoEs) internally to drive product development and innovation in areas such as cloud, data analytics & cybersecurity. Existing GCCs are looking to move from 'cost' to 'profit' center with an emphasis to create additional revenue streams for the organization as well as expand functions in areas such as legal, marketing & procurement.

Key Challenges for existing GCCs and organizations looking to ride the GCC wave

Existing GCCs have delivered cost effective services but failed to support the cause of digital transformation and have been exposed to be brittle, inflexible, and out of date as the processes set look pre-digital and does not serve the overall digital strategy of the organization. According to Everest Group, only 5% of the total GCCs are focused on innovation, driving digital agenda and global ownership. A major rethinking is brewing in boardrooms around the world regarding the future of their sourcing strategy as a fixation on cost reduction around these captives has an unintended consequence of leaving them blind to the need to invest in the future. Building next generation digital technologies is only possible by moving agile and eliminating process silos which are an integral part of any GCC.

Organizations exploring to establish a GCC need to take in some critical considerations before jumping the ship as CFOs want to predict these costs before making a move from external service providers. Before these centers would yield any results, organizations would need to align these centers with their vision, culture, and strategy, have to establish a significant presence to attract top talent, enable the centers with streamlined operations, setting up processes and long-term vision on the deliverables. Organizations must strategically plan their establishment process, taking into account these crucial factors, to

To address the elephants in the GCC – Cost-focus, driving new technology and digital strategy and scale, organizations can turn to Micro Capability Centers.

Micro Capability Centers (MCC)

Micro Capability Centers are provider managed cost effective, zero capex solution for companies exploring new digital initiatives and testing waters to establish a GCC. These centers are of fewer than 100 employees and can meet the needs of any fast-paced enterprises. A blend of innovation and scalability, these initiatives are not comprehensive solutions or multi-billion-dollar products, but pilot projects that will guide the broader strategy for solutions and products. Therefore, it makes sense for companies to explore this model without committing extensive resources & capital upfront. By partnering with a provider, who already possesses necessary skills, resources, infrastructure and lay of the land, a company can mitigate risks and save upfront costs. Once the initiative achieves specific targets and milestones, it can decide to transition in a separate GCC for the company. Rather than losing the time and institutional knowledge to start building the capability internally, the micro center is transitioned from the provider to the company, allowing the scaling to continue without disruption.

Why MCC?

- To enable critical elements of innovation: agility, scalability, cost-efficiency, and versatility.
- Organizations can put greater emphasis on Employee Value Proposition (EVP) to supplement key areas of focus such as organizational culture, nature of work, rewards, and compensation.
- A core dedicated team for the MCC can be deployed in no time with numerous individuals who have experience to deliver top strategic business critical capabilities and operationalize on the partner's vision.
- Access to top talent with modest capital outlay, firms will not be burdened with any capex related costs but only transparent and predictable OpEx. The team can be scaled up with time and new digital initiatives and transferred from the vendor.

- Building quick & top notch CoEs which will take the Center Stage to drive product development and innovation in areas, such as AI, cloud, engineering, data analytics and cybersecurity.

Whom are the MCCs for?

Any business that demands do more for less, innovation and agility, with minimal risks shall be the ultimate beneficiaries of the MCC. Irrespective of the business size/scale, structure, growth-stages i.e., Business/Enterprises/GCCs/Start-ups, MCC is the platform for growth and innovation.

Though MCCs are perceived to be an offshoot of GCC, the key lies in choosing the right partner having the relevant business and domain technology knowhows, ecosystems for scale, solution models with commitment to co-innovate, as one or the other is typically missed or ignored in a GCC.

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About
the Author

Venkatesh Bihani is an Aerospace Engineer with previous experience in sales and marketing while working for the CEO's office. Currently, he is a member of the pre-sales team focusing on the Hi-tech vertical at GS Lab | GAVS.

Venkatesh Bihani

Transforming Data Management with ZIF in Healthcare

Healthcare organizations, especially payers and providers, struggle with an enormous amount of IT data in today's fast-paced environment. Effective data management is essential for delivering high-quality healthcare services as well as for maintaining compliance with strict data security and privacy laws. Here comes ZIF, a state-of-the-art AIOps platform ready to revolutionize the way healthcare organizations manage their IT data. In this article, we will examine the value of ZIF as a data lake for IT data in healthcare, consider how it transforms data management, and offer insights into optimal implementation practices.

Redefining Healthcare Information Management with IT Data Lakes

IT data lakes are dependable repositories created to store large volumes of IT data, both organized and unstructured, at scale. These data lakes serve as central hubs for the storage of a wide range of data on IT operations, infrastructure, and performance in the healthcare industry. IT data lakes excel at managing massive amounts of data, unlike traditional databases, which makes them the perfect fit for the data-intensive environment of healthcare.

IT data lakes have a variety of benefits:

- **Consolidation of Data:** These repositories enable healthcare organizations to consolidate IT data from various sources, providing a unified view of their IT infrastructure. This holistic perspective proves invaluable for IT professionals in efficiently managing and optimizing IT operations.

- **Scalability:** In the ever-evolving digital landscape, IT data continuously grows. IT data lakes are purpose-built to scale effortlessly, accommodating the ever-increasing volume of IT data generated by healthcare systems.

- **Data Variety:** IT data lakes possess the remarkable ability to store structured data (e.g., server logs, network traffic) and unstructured data (e.g., application logs, error messages) in their raw form. This versatility makes them exceptionally suitable for handling diverse IT data types.

- **Advanced Analytics:** Beyond storage, IT data lakes provide the foundational infrastructure for advanced analytics, including machine learning and predictive modelling. These capabilities translate into improved IT performance, reduced downtime, high service availability, and heightened security.

Healthcare with ZIF: Connecting Systems and Boosting Insights

In the dynamically evolving realm of healthcare, two pivotal innovations are reshaping the industry: Medical Interoperability and Machine Learning (ML). Medical Interoperability revolves around the seamless sharing of healthcare information across diverse systems and platforms.

To harness the immense potential of these advancements, GS Lab | GAVS unveiled one of the industry's Best AIOps tools based on big data for healthcare services, known as Zero Incident Framework (ZIF). This ground-breaking service empowers healthcare providers, payers, and life sciences companies to securely store, transact, analyze, and exchange health data at an unprecedented

The Effectiveness of FHIR: A Healthcare Data Exchange Standard

At the heart of ZIF Data Lake's capabilities lies its robust support for Fast Healthcare Interoperability Resources (FHIR). FHIR, a universally standardized format for healthcare data exchange, has gained widespread acceptance within the industry. It streamlines the exchange of structured medical data, making it readily accessible to clinical researchers, informaticians, and machine learning tools. FHIR introduces a designated resource for capturing documents, such as physician's notes or summaries of lab reports. However, to fully unleash the potential of this data, it must undergo extraction and transformation into a more user-friendly format.

As FHIR-formatted medical data finds its way into ZIF Data Lake, a transformational process ensues. ZIF employs advanced natural language processing (NLP) techniques, meticulously trained to comprehend medical terminology. These techniques enrich unstructured data with standardized labels, a crucial step that involves identifying medications, conditions, diagnoses, procedures, and more. Through standardization and tagging, ZIF ensures that all data becomes

Using ZIF and FHIR Standards for Processing EHR Data

Healthcare organizations must effectively manage EHR data, and Fast Healthcare Interoperability Resources (FHIR) standards are essential to this effort.

The following ways can explain how EHR data is processed by ZIF and the role of FHIR in it:

Data Ingestion:

1. EHR systems generate a massive amount of data, including patient demographics, medical history, treatment plans, diagnoses, lab results, and more. This data is typically stored in structured formats.

2. ZIF is responsible for ingesting this data. They can connect to EHR databases and other healthcare systems to collect real-time data streams.

3. FHIR comes into play during data ingestion. FHIR is a standardized format for exchanging healthcare information electronically. It provides a common framework for representing and sharing EHR data. ZIF can use FHIR to ingest EHR data in a consistent and interoperable manner.

Data Transformation:

1. EHR data often contains a mix of structured and unstructured information. Structured data includes coded information like diagnoses, while unstructured data may include physician notes or narrative descriptions.

2. ZIF uses various techniques, including natural language processing (NLP), to transform unstructured data into structured formats. FHIR provides guidelines for standardizing this transformation.

3. During this transformation, ZIF can extract relevant information such as patient demographics, diagnoses, medications, and procedures. This structured data is easier to analyze and can be used for decision-making.

Data Storage:

1. After transformation, the processed EHR data is stored in data lakes or databases. These storage solutions are designed to handle the large volume of healthcare data generated daily.

2. FHIR's standardized format ensures that the data remains consistent and can be easily accessed by different healthcare systems and applications.

Real-time Monitoring and Analysis:

1. ZIF excels in real-time monitoring of IT infrastructure, including EHR systems thus ensuring service availability. They continuously collect data streams from EHR databases and other healthcare IT components.

2. By applying AI and machine learning algorithms, ZIF can analyze EHR data in real-time. For example, they can detect anomalies in vital equipment's, predict potential issues, or identify patterns related to patient outcomes.

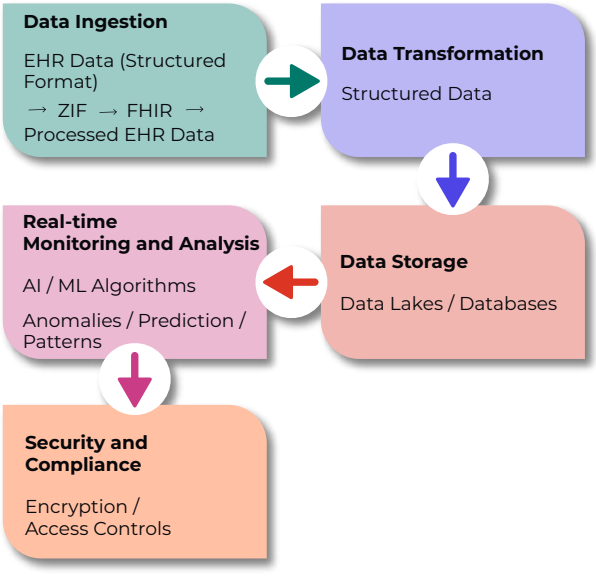
3. The use of FHIR ensures that ZIF tools can seamlessly interact with EHR systems and access the most up-to-date patient information.

Security and Compliance:

1. Healthcare data, including EHRs, is highly sensitive, and ensuring its security and compliance with regulations like HIPAA is paramount.

2. ZIF incorporates encryption mechanisms and access controls to protect EHR data during transmission and storage.

3. FHIR also plays a role in data security by providing standardized guidelines for securely exchanging healthcare information.



ZIF Implementation Best Practices for the Healthcare IT Sector

It takes careful planning and execution to adopt ZIF in a healthcare IT system effectively. Here are some recommendations for best practices:

- **Data Governance:** Establish robust data governance practices to guarantee data quality, integrity, and security for IT data. Define data ownership, delineate data stewardship roles, and establish policies for data lifecycle management.
- **Data Strategy:** Formulate a clear IT data strategy that impeccably aligns with organizational goals. Identify key data sources, prioritize data integration efforts, and outline data retention policies.
- **Data Pipelines:** Design streamlined data pipelines that automate IT data ingestion, transformation, and loading processes. Consider the adoption of real-time data streaming for critical IT data.
- **IT Security:** Make judicious use of ZIF's comprehensive security features to fortify IT data against unauthorized access and potential cyber threats. Regularly audit and monitor IT data access to ensure both compliance and security objectives are met.

Effective IT data management goes beyond best practices in the healthcare industry; it is a strategic need. An AIOps platform like ZIF may be used to boost IT Data Lakes and pave the way for more efficient IT operations, less downtime, more security, and uncompromising adherence to data rules.

The implementation of modern IT data management solutions like ZIF becomes not just advantageous but essential as healthcare organizations depend more on digital technology to supply essential healthcare services. The use of these technologies prepares healthcare IT infrastructure for the future and makes it possible for patient care to be delivered continuously.

About
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Maryada Kashyap is part of the ZIF product marketing team as a lead consultant at GS Lab | GAVS. She has a passion for developing and executing strategic marketing plans that drive growth and engage target audiences, with a focus on digital technologies and delivering user-centric solutions. She always looks for innovative ways to drive business success through effective product marketing. She believes that acquiring knowledge about emerging technological trends is instrumental in fostering a holistic view, thus facilitating preparedness for future changes.

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About
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Nithesh Kumar works as a Lead Consultant at GS Lab | GAVS and is a part of the ZIF Product Marketing team. He has a keen eye for detail and a deep understanding of emerging technologies, which enables him to design and execute successful marketing campaigns that deliver results. He is a lifelong learner who is always seeking out new opportunities to expand his skill set and stay up-to-date with the latest industry trends and best practices.

Nithesh Kumar

Guarding Your Digital Space

Tips to Protect Your Social Media Accounts

Social media is a significant part of our daily lives, connecting us with friends and family. However, it's also a playground for cybercriminals. Understanding the risks and how to protect yourself is crucial, especially if you're not a tech expert. Here's a straightforward guide tailored for a non-technical Indian audience.

Common Cyber Threats to Social Media Accounts

- **Account Hacking:** Unauthorized access to your social media accounts, often to send spam or malicious links.
- **Phishing Attacks:** Fake messages or emails pretending to be from social media platforms, asking you to provide login details.
- **Impersonation:** Someone could create a fake account using your name and photos, misleading your friends and family.
- **Information Leakage:** Sharing too much personal information can expose you to identity theft.
- **Scams and Frauds:** Posts or messages offering fake prizes, lottery wins, or investment opportunities.

How to Protect Your Social Media Accounts?

- **Strong Passwords:** Use complex and unique passwords for each social media account. Avoid common words or easy-to-guess numbers like your birthdate.
- **Two-Factor Authentication (2FA):** Activate 2FA on all social media platforms. This adds an extra layer of security by requiring a code from your phone in addition to your password.
- **Be Skeptical of Messages Asking for Information:** Legitimate companies will never ask for your password or OTP (One Time Password) over a message or email.
- **Regularly Update Your Privacy Settings:** Review who can see your posts and personal information. Limit your audience to people you trust.
- **Be Cautious with Friend Requests:** Accept requests only from people you know. Imposters can use fake profiles to gather information about you.
- **Avoid Clicking on Suspicious Links:** Even if a link in a message or post looks genuine, it could lead to a phishing site or download malware onto your device.
- **Educate Yourself About Common Scams:** Awareness is key. The Indian Cyber Crime Coordination Centre often releases advisories on new types of online scams.
- **Secure Your Email Account:** Your email is often linked to your social media accounts. Securing it with a strong password and 2FA is equally important.
- **Check for Secure Logins:** Look for HTTPS in the web address when logging into social media. It indicates a secure connection.
- **Be Mindful of What you Share:** Think twice before posting personal details like your phone number, address, location, or financial information.

- **Check what apps are connected to your social media:** Check if you use Facebook or Google to sign in for any other/third-party apps. If yes, please check if this type of access is necessary and remove any unnecessary or outdated apps to minimize risk of unauthorized access.
- **Close the accounts that you're not using or don't plan to use:** It is likely that the forgotten social media accounts may be compromised without being noticed. Hackers can leverage these accounts to access other accounts linked to it, like your email.
- **Keep your mobile apps updated:** Make sure you update the apps to the latest version of the platform you're using. Besides adding new features in the app, the security patches will protect you from the newest known threats.
- **Monitor account activity regularly:** It is recommended to regularly check your social media accounts for any suspicious activity. Some platforms allow you to enable notifications for account logins, password changes or any other account activity to detect potential security breaches.

If Your Account is Compromised:

- **Reset Your Password:** Do this immediately if you suspect unauthorized access.
- **Report to the Platform:** Use the 'Report' feature on social media platforms to inform them of any impersonation or hacking.
- **Inform Your Contacts:** Alert your friends and family so they don't fall for scams sent from your account.
- **Review Account Activity:** Check for any suspicious posts or messages sent from your account.

In the digital era, protecting your social media presence is as important as safeguarding your physical belongings. By following these simple steps, you can enjoy social media while keeping your personal information safe.

About
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Kumaresan Periyasamy has more than 17+ years of Technology experience in Cyber Security, IT Infrastructure Audit, Risk Management, Compliance and Project Management. He has done his MBA in IT Systems.

Kumaresan Periyasamy has rich experience in Information Security, GRC, Information Technology Audit, Compliance Audits and Program Management.

Kumaresan Periyasamy

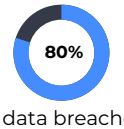
GRC and Access Goverance

GRC is Governance, Risk and Compliance that involves strategies to manage an organization's risk and compliance adherence, an effective marriage of People, Processes and Technology.

How do we converge GRC and Access Governance?

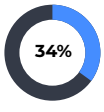
- **Focus on Segregation Duties**
  - Out-of-box Rulesets
  - Analysis and Remediation
  - Segregation of Duties Workbench
  - Mitigating Controls
- **Audit focus on Sensitive data (GDPR, who has access to Customer data - PII)**
- **Seamless integration into governance processes**

Application access governance is gaining importance

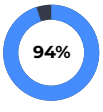


of data breaches involve access misuse or compromise

of cloud security failures are due to inadequate management of identify, access and privileges



on average, companies use 34 SaaS apps in their enterprise



of companies use some form of cloud SaaS

$4.24 Million – Average cost of data breach

Proactive, Active and Reactive approach

Proactive Measures:

- How are identities defined and where are they stored?
- How are managing authentication and authorization controls?
  - Who am I?
  - What can I see/do?
  - Support for principle of Lease privilege

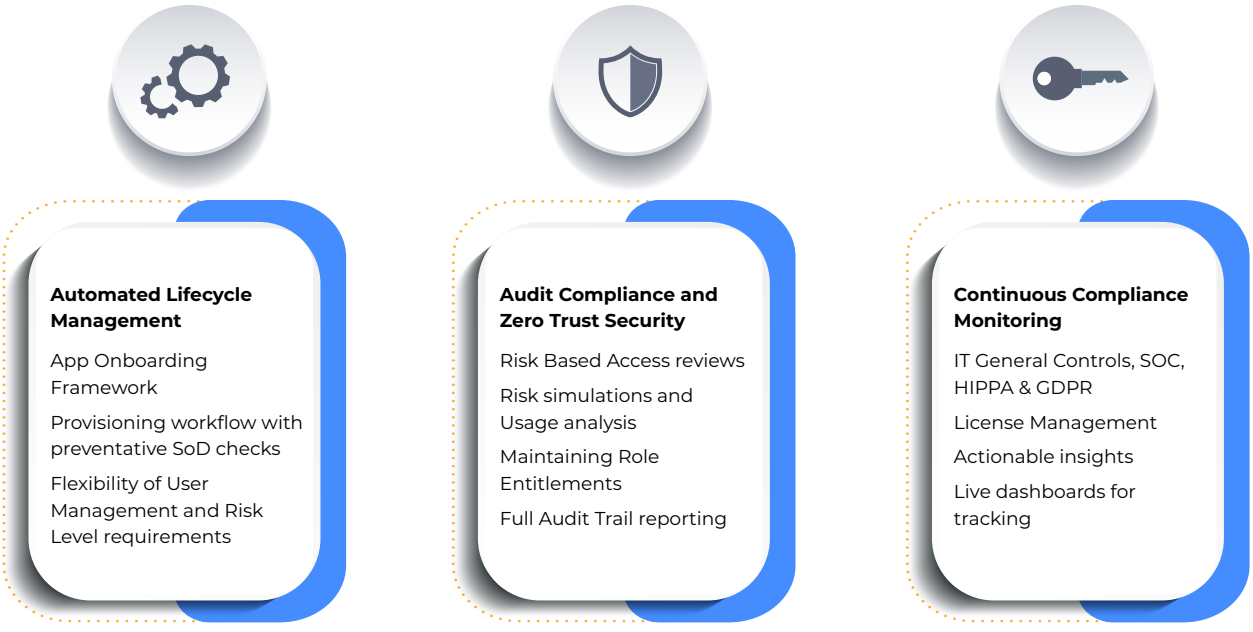
Active Measures:

- Access logging at a granular level
- Correlation and alerting across Enterprise
- Timely access provisioning and deprovisioning

Reactive Measures:

- Compliance towards GDPR, SOX audits etc.
- Limited mitigation controls
- Responding only when there is an incident and not addressing the root cause

Comprehensive GRC Solutions include



By implementing the above, we would realize the following key benefits:

- Significant time in provision (typical 90% reduction in effort) 80 hours to 8 hours
- Audit efforts can be streamlined (by baselining the risk environment and implementing effective change management process)
- Facilitate least privilege access module (utilizing emergency access management remove standing privileges
- Audit cycle reduction (typical 45%+ reduction in effort – 8 weeks to 5 weeks per audit cycle)

Overall, we would save COST, TIME, and improve EFFICIENCY.

To know about GS Lab | GAVS' cybersecurity solutions, please visit
https://www.gavstech.com/service/security-services/

About
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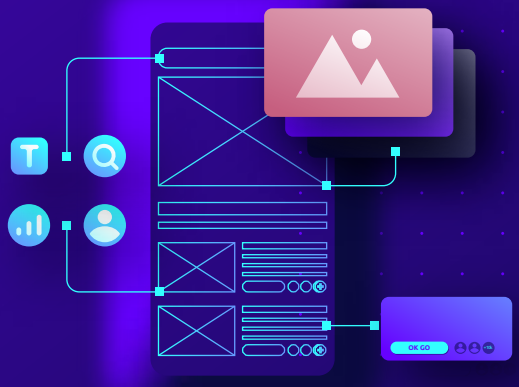
Anitha Rajmohan is a seasoned leader with overall 24+ years of experience in multiple domains with a diversified Industrial background. She has 14+ years of experience in Delivery managing Project Management, Governance, Transitions, Complex Partner Negotiations for Banking, Financials, Telecom and Insurance. She also has 5 years of experience in Cyber Security, Auditing and Risk management, Internal Audit and Control, third party audits and compliance audits for Retail, Life Science, Healthcare, Energy and Resource, Utilities, Manufacturing, Banking, Insurance and Financial services comprising for 17,000 employees for US, Australia and New Zealand geography.

Anitha Rajmohan



Best Practices for Accessible UX Design and Common Accessibility Mistakes

User Experience (UX) design should cater to a wide range of users, including those with disabilities. While the term disability is broad, UX design accessibility ensures that people with disabilities can access, understand, and interact with websites and applications effectively. According to the World Health Organization (WHO), more than 1.3 billion people worldwide experience significant disability. To that end, inclusive design principles guide the process, emphasizing the need for clear and adaptable content, intuitive navigation, and compatibility with assistive technologies.

Recommended best practices promote a user-centric approach that benefits many users, fostering a more equitable online experience. When developers consider accessibility in UX design, the application or a website adheres to legal and ethical requirements. It helps create better more user-friendly products that cater to diverse needs and abilities.

Part one of the series focused on the **importance of accessibility in UX design.** In part two of the blog series "Accessibility in UX Design," we will focus on some of the best practices recommended by experts to improve

Common Accessibility Mistakes

Common accessibility mistakes in UX design can hinder the usability and inclusivity of digital products. Here are five such mistakes:

- **Inadequate Color Contrast:** Poor color contrast between text and background makes content difficult to read, especially for visually impaired people. Designers should adhere to WCAG guidelines for color contrast to ensure legibility.
- **Neglecting Keyboard Accessibility:** Some users rely on keyboard navigation rather than a mouse. Ignoring keyboard accessibility can leave these users unable to interact with web content. All interactive elements should be reachable and operable using the keyboard.
- **Lack of Alternative Text for Images:** Omitting descriptive alternative text for images means that visually impaired users miss out on critical information. Each image should have an alt attribute that conveys its purpose or content.
- **Ignoring Proper Semantic HTML:** Failing to use semantic HTML tags and elements can affect screen reader compatibility and the overall structure of a web page. Designers should use appropriate HTML tags (e.g., headings, lists, tables) to accurately convey content hierarchy and relationships.
- **Unlabeled Form Fields:** Not providing clear and concise labels for form fields or input elements can confuse users who rely on screen readers or keyboard navigation. Labeling form fields correctly is essential for form accessibility.

Best Practices to Improve Accessibility in UX Design

Color Contrast

Color contrast is a vital best practice for web accessibility. It involves ensuring that text and images have sufficient contrast with their background, making content legible for users with visual impairments or in different lighting conditions. The guideline specifies a minimum contrast ratio of 4.5:1 for normal text and 3:1 for large text. Designers should test and adjust color combinations to meet these ratios to reach even those with low vision or color blindness.

Alternative Text for Images

Alt text serves as a textual description of images, making content accessible to users with visual impairments who rely on screen readers. To ensure compliance, designers should create concise, descriptive, and contextually relevant alt text for every image on a website or application. This practice helps visually impaired users understand the content and benefits search engines and users with slow internet connections.

Keyboard Navigation Support

According to WCAG 2.0, providing robust keyboard navigation support is a fundamental best practice for web accessibility. To ensure inclusivity, websites, and applications should allow users to navigate and interact with all content and features using only a keyboard. This means that keyboard users, including those with mobility impairments, can easily move through a website, activate links and buttons, and fill out forms without encountering obstacles. Designers should prioritize keyboard focus indicators, logical tab order, and shortcuts.

Explicit Link Text

Using explicit and descriptive link text helps improve accessibility. Link text should provide a clear and meaningful description of the linked content's purpose or destination, aiding users, including those with screen readers or other assistive technologies, to understand where a link leads without relying on the surrounding context.

Instead of generic phrases like "click here" or "read more," use specific, descriptive terms that convey the destination's relevance, such as "Read the latest news"

Focus Indicators

Focus indicators are essential for keyboard users who use visual cues to navigate websites and applications. Designers should ensure that they are visually highlighted when interactive elements like links, buttons, and form fields receive keyboard focus. Creating highly visible and distinct focus indicators is crucial for making web content usable for those with mobility or visual impairments, ensuring an inclusive and user-friendly experience for all.

Testing

Accessibility testing in UX design is a critical process focused on ensuring that digital interfaces and user experiences are inclusive and user-friendly for individuals with disabilities. This involves evaluating the design, navigation, and functionality to meet accessibility standards like WCAG (Web Content Accessibility Guidelines). Accessibility testing identifies barriers, such as keyboard navigation, alt text for images, and legibility, enabling designers to make necessary adjustments. One tool that can be used is Chrome's built-in accessibility tool, Accessibility Insights. Developers can use Accessibility Insights to pinpoint and fix accessibility issues early in development, ensuring that websites and web applications are more inclusive and usable for individuals with disabilities.
or "Download the accessibility guide".

Web Accessibility Evaluation Tool (WAVE)

WAVE is a widely used web accessibility testing tool that helps designers and developers identify and address website accessibility issues. It operates as a browser extension and provides real-time feedback on the accessibility of web content by flagging potential problems and suggesting corrective actions. WAVE checks for semantic HTML, ARIA landmarks, alt text for images, contrast ratios, and keyboard navigation.

The next part of this blog series will focus on the benefits of accessible UX Design for businesses.

The UNBOX team is the UX COE at GS Lab | GAVS. To learn more about our User Experience Design services, please visit https://www.gslab.com/user-experience-design/

About the Author

Team UNBOX
U: Usability
N: Next Generation Media
B: Branding
O: Optimized Solutions
X: Experience

Unbox is a User Experience team at GS Lab | GAVS. The team prides itself on being the experience strategists who elevate their client's digital growth and add to their business value.Focus areas of the team being Branding, User Research, Visual Design and User Testing. Team has a mix of skills like Researcher, Information Architect, Interaction Designer, Brand Designer and Visual Designer. Team specializes in user research, working on new product concepts, redesign/revamp of existing products and feature enhancements. Team also helps in discovery phases involving UX for early product validation from business users. Agile collaboration with UI development teams to ensure the required product experience.

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