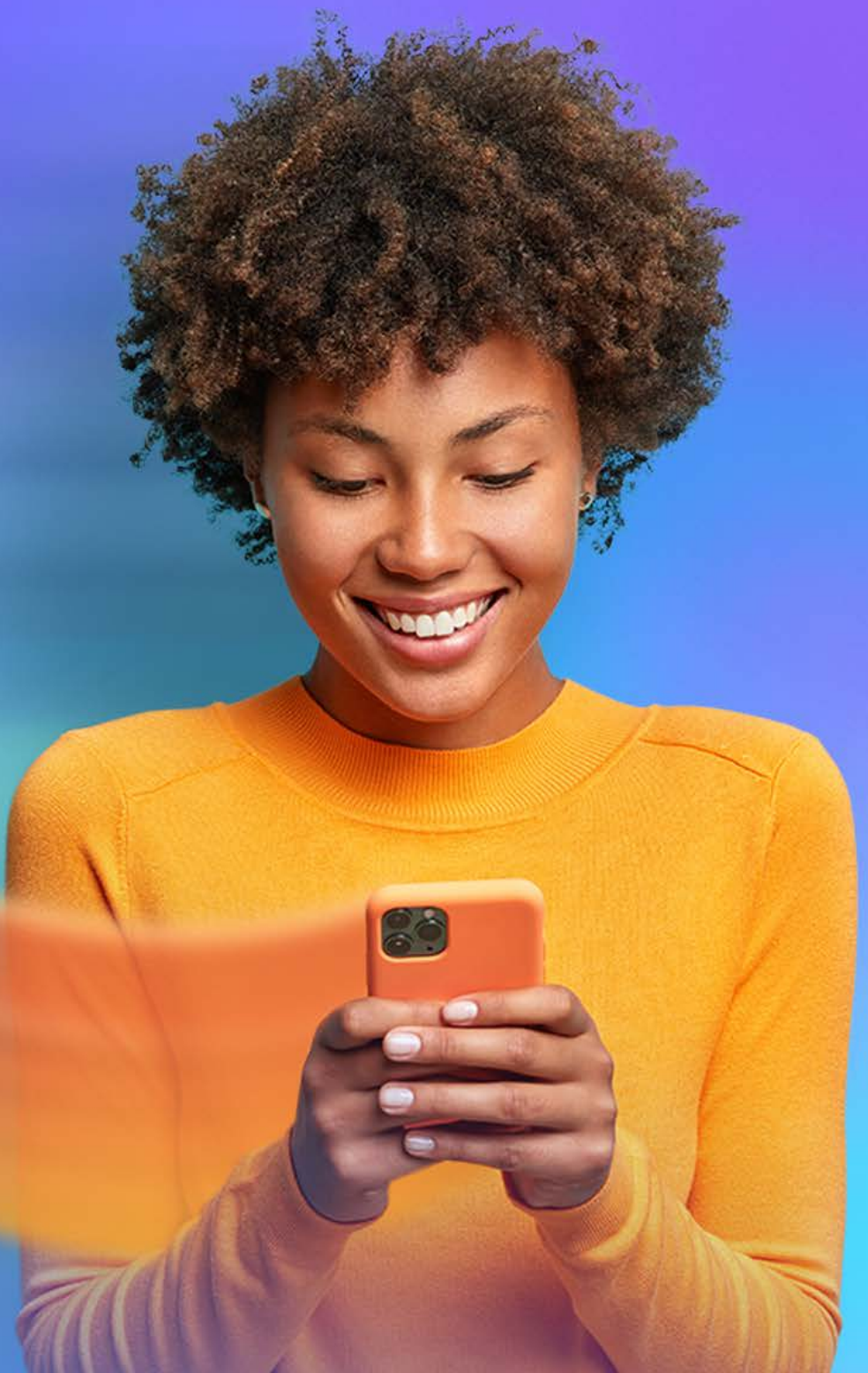


2021 Trend Almanac



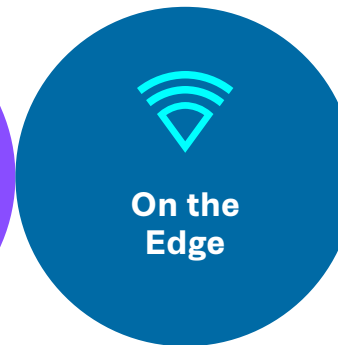
If 2020 taught us anything, it's that some events simply cannot be predicted. This was a reality for businesses worldwide, which are breathing a sigh of relief with the end of the COVID-19 pandemic drawing closer. Now, the focus is the post-COVID-19 world and the innovations and trends businesses will need to help power their success in the era of the new normal.

Virtusa's innovation unit has its fingers on the pulse of what's next and, for the past four years, has revealed its findings and guidance in the Trends Almanac. Now, we are introducing our fourth annual installment, which features our views on the technologies and trends that will dominate the business and consumer landscape for 2021. As with past Almanacs, our hope is to help steer businesses towards the right path for their success.

Trends



**Digital
Identities**



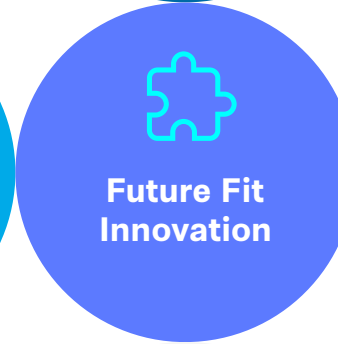
**On the
Edge**



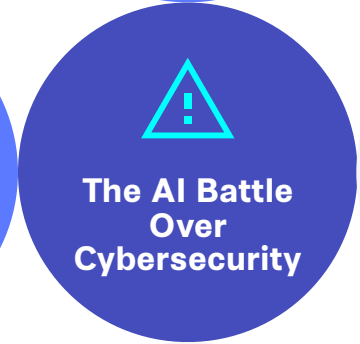
**Lending
2.0**



**Doctor AI is
Ready to See
You Now**



**Future Fit
Innovation**



**The AI Battle
Over
Cybersecurity**



**Programmable
Realities**

Digital Identities

Bringing Law and Order to the World of Virtual Identification



Nearly everything in our lives has gone digital – banking, shopping, healthcare, transportation, and more – making it critical for people to prove their identity without the help of physical documents such as a traditional physical identification (ID).

Digital IDs are vastly evolved versions of the physical IDs people have used for decades, usually stored away in their wallets. The digital version is built on an expansive set of personally identifiable information (PII), including a social security number, age, date of birth, and biometric data, as well as activities that reflect online behavior. In addition, unlike traditional IDs, digital IDs live and grow as we lead our lives.

Bringing all of that personal information together presents challenges as this data is commonly not in the hands of the individual but controlled by Big Techs and Social Media companies. These companies have the ability to complement our traditional ID information (name, date of birth, contact details, etc.) with personal digital details such as:

- What we are interested in and are shopping for
- Who our friends are on social media and what we talk about with them
- Where and when we move around in the world

Understanding the growing importance of digital identities and the opportunities they present, consumers are actively looking to take back control of their online personal identities to supervise their usage and use them for identification and authentication purposes.

#Communications

#Banking

#FinancialServices

#Healthcare

#Telco

#LifeSciences

#DigitalIdentity

A growing number of digital identity solutions providers have arrived to help. According to MarketsandMarkets, the global digital identity solutions market size is projected to grow from \$13.7 billion in 2019 to \$30.5 billion by 2024.¹

Taking back control over identity data is not enough. To ensure people's digital identities are universally usable, additional guidance in the form of Trust Frameworks is needed. The Trust Framework is a set of agreed-upon principles, definitions, standards, specifications, conformance criteria, and assessment approaches that digital ID solutions can follow. The goal is to make it easy for organizations to accept a person's credentials by ensuring they have been verified by agreed trust anchors. A trust anchor is a public key associated with accompanying information, which acts as an authority to verify a digital signature's authenticity. In addition to authenticity, it allows credentials to be used in a wide variety of ways.

Today it's crystal clear that the industry is rallying to introduce new guidelines and solutions that provide both law and order. Through these continued efforts, people can not only gain control over their digital IDs, but they can also deliver on the United Nations' Sustainable Development Goals (SDGs) by getting everyone the legal ID they need.

¹ <https://www.marketsandmarkets.com/Market-Reports/digital-identity-solutions-market-247527694.html>



Examples

DATASWIFT

DataSwift offers personal data servers (PDAs) that let individuals own and control their data. Last year, the company partnered with ShareTrace, a smart digital risk assessment app that provides contact tracing in a privacy-preserving way and offers additional personalized infection risk management tools. As a result, it helps communities, businesses, and cities stay safe by making it easy for people to assess their own risks and prevent the spread of COVID-19 by using state-of-the-art decentralized Personal Data Accounts from Dataswift.

AID:Tech

Another organization that's stepping up is AID:Tech, which is focused on helping a different group, those currently lacking legal paperwork. According to the [World Bank Group's 2018 #ID4D Global Dataset](#), an estimated one billion people around the globe face challenges in proving who they are. As a result, they cannot open up a bank account, get a loan, or even vote. Until now. Using innovative technologies including decentralized digital identity and blockchain, AID:Tech is helping people without official documents create a personal legal identity, which is [#16](#) of the United Nations' Sustainable Development Goals (SDGs) for 2030.



On the Edge

The Promise of Near-Zero Latency



While the emergence of smart cities, IoT, telemedicine, and self-driving cars have been several years in the making, 5G and edge computing have been the catalysts for widespread adoption.

Increased connectivity and the explosion of data generated by IoT, people, and enterprises is prompting organizations to find new ways to process and store data acquired, analyzed, and acted upon. Edge computing fills that need by placing workloads closer to digital interactions, allowing organizations to enhance their customers' experiences and harness growing data volumes for actionable insights.

As with many emerging trends, the pandemic has only accelerated the need for edge computing. According to IDC's worldwide IT predictions, COVID-19's impact on the workforce and operational practices will be the dominant accelerator for 80 percent of edge-driven investments and business model change across most industries over the next few years.

This demand for edge computing is generated by the need for faster, more secure, and geographically dispersed applications to power everything from autonomous cars to coffee makers.

Fueled by emerging use cases like IoT, AR/VR, robotics, and machine learning, edge computing helps solve bandwidth, latency, and resiliency issues with many of these applications. More and more workloads require processing in near real-time, and that's where edge computing delivers.

#Edge	#EdgeComputing	#IoT	#Data
#MachineLearning	#5G	#AR	#Robotics

By bringing computing and processing to the data versus bringing data to the data center, businesses will have the ability to run advanced machine-learning algorithms far from the traditional cloud's centralized servers and sometimes even on the device itself. This will reduce latency to almost zero.

The increased adoption of edge computing also poses new security challenges. Given the sharp rise in ransomware, threats, and attacks, businesses have to secure everything from mobile devices and applications to their edge nodes. To protect their enterprise, businesses need to update their security tools, processes, and strategy to account for new vulnerabilities edge computing can create by leveraging state-of-the-art cybersecurity policies and AI in cybersecurity frameworks.

Overall, the benefits outweigh the challenges. Expect to see more breakthroughs brought about by connected technologies in industries such as medicine, transport, manufacturing, agriculture, and the smart home. Organizations will have the ability to process data intelligently as near as possible to the source, creating an IoT that will deliver practical benefits to vast groups of people worldwide.

Examples

Agrix Tech

Edge computing is making it possible to bring much-needed connectivity to sub-Saharan Africa and parts of Asia and South America. The benefits of edge computing are evident now in sub-Saharan African countries. Agrix Tech, a Cameroon-based startup, deploys machine learning algorithms directly on farmers' smartphones to let them identify diseases on their crops using their phone's camera.

Farmers get this information immediately in the field. When the phone is near an internet connection, anonymized data goes to the cloud to train the centralized system. In combination with other emerging technologies like low-orbit satellites, which reduce cloud latency, edge computing applications will significantly impact many lives in these regions.

AlefEdge

AlefEdge is the leader in the edge internet. It delivers the power of the 5G-based edge internet to application developers through its easy-to-use technologies.

One of its newest offerings is a MEC (mobile edge computing) infrastructure solution offered as a service to telecom operators, allowing them to implement cloud computing environments within the infrastructure of mobile networks without needing to modify the existing system. This provides multi-cloud environments in a convergent and agnostic way so operators can offer a better experience for their users, launch products such as video analytics, gaming, augmented reality, CDN (content delivery networks), among others, and ultimately bring new revenues while optimizing network capacity and costs.



Lending 2.0

A New Era For Lending



In 2020, banks gave out an unprecedented amount of loans to help businesses survive and prevent people from losing their livelihoods. Between April and August 2020, banks loaned \$523 billion to 5.2 million small businesses.² This continued in January, when an additional \$35 billion was loaned to businesses. Given the drastic transformation in financial service industries, banks must shift their focus.

This includes continuing to financially support small businesses worldwide, including the 37 million in the U.S. – as this sector is vital to the global economy. As they do so, banks must proceed with the utmost caution and review their loan origination processes more closely to better judge which of these companies will be able to pay back their loans. At the same time, banks will need to identify organizations that were given a loan-repayment holiday at the beginning of the pandemic and begin to wean them out of the life-support system.

Here's why— the U.S. Fed estimates that COVID-related loan losses for big U.S. banks could reach \$700 billion.³ This is a worst-case scenario, of course, but even if it misses the mark, the damage will likely be significant. Because of this, banks would need to create a model for various scenarios such as V vs U vs L recovery curves that address various employments rates and provision for these losses accordingly.

#Lending #Banking #Banks #Loans #FinancialServices

This new examination is part of the loan origination process. It includes a risk assessment which helps businesses avoid any loans that fall into the high-risk category. This is especially critical now in this post-COVID era. Some banks are taking this one step further by adding a COVID threat score that features sectoral variations and shows that, for example, hi-tech and digital industries are performing better than the Hospitality & Travel sector. In the future, the COVID threat score may turn into a more diverse set of scores. These will help banks assess the future fitness of businesses from different industries and how vulnerable they are to factors such as environmental, health, and market threats.

Next, defaulted loans will be an unfortunate reality for many businesses. To make matters worse, there's no quick fix for these small and mid-sized businesses (SMBs). In fact, according to The EY Future Consumer Index, 25% of respondents believe it will take years to regain the level of financial security they had before COVID-19. The European Central Bank has warned that bad loans in the eurozone could soar to as high as €1.4 trillion—more than during the aftermath of the financial crisis—if the economy contracts more than expected.⁴

This is an opportunity for banks to serve as a trusted supporter—along with a need to adjust their collection journeys. Specifically, banks will need to explore ways to help viable businesses get back on their feet that go beyond lending. EY's Index touches on the role of data which gives banks the opportunity to provide “real-time, integrated solutions including treasury, legal and risk management services” and allows them to connect banks to their clients' infrastructure in order to reduce cost and enhance efficiency.

These banks can also leverage data to spot anomalies and uncover “patterns that affect their business.” With this insight, they can then work together to build “integrated ecosystems of trusted providers to connect different customers and foster growth opportunities.” Navigating a market landscape that is becoming increasingly competitive with the emergence of more LendTechs, this provides banks with a strong competitive advantage.

This post-pandemic period is uncharted territory for banks. In addition to pivoting to remain viable as a business while protecting themselves from potentially devastating losses, financial institutions that are victorious will simultaneously help SMBs rise to prominence once again.

² <https://www.bloomberg.com/news/features/2020-12-18/desperate-small-businesses-await-fresh-aid-with-or-without-flaws>

³ <https://www.wsj.com/articles/fed-stress-test-finds-u-s-banks-healthy-enough-to-withstand-the-coronavirus-crisis-11593117020>

⁴ https://www.ey.com/en_gl/banking-capital-markets/how-banks-can-lead-the-post-covid-19-recovery-for-consumers



Examples

OakNorth Bank

UK-based OakNorth Bank is focused on small and medium-sized businesses. In partnership with PNC Bank, OakNorth introduced a COVID-19 vulnerability rating which rates loans from 1-5 based on their exposure to the new economic environment. The rating was designed to look at what the pandemic's impact could be on a business if the lockdown lasted for six-weeks, three-months, six-months, and longer.

The ratings are based on multiple factors, including liquidity, debt capacity, funding gap, and profitability. It then integrates over 130 proprietary COVID-19 stress scenarios with regional overlays, incorporating assumptions for impacts on critical financial metrics such as revenue, operating costs, working capital, and CAPEX.

OakNorth is also working with its lending partners to help them identify businesses in their portfolio that should be prioritized for government-backed funding.

Associated Bank

Associated Bank is providing personalized assistance to customers who have been financially impacted by the coronavirus. This assistance includes suspending fees on a range of loan and deposit products for up to 90 days as well as implementing payment deferrals for up to 90 days on consumer, mortgage, and small business loans. Beyond this, the bank also provides temporary payment relief assistance, fee waivers for consumer and small business credit cards, and suspending foreclosure activity on homes and new repossession activities for 60 days. This example of putting customer need first, presents an important step for banks to regain customer trust in the battle with start-up banks.



Doctor AI is ready to see you now

Saving Personal Care With Artificial Intelligence



2020 in many ways, fast-tracked the adoption of virtual and digital healthcare solutions. While the market size of telehealth and remote patient monitoring solutions has grown significantly in recent years, consumer uptake has been slow, with only 19% of U.S consumers receiving virtual care before the pandemic.⁵ Yet, with most in-person care visits on hold during the pandemic, virtual healthcare has become a necessity rather than a choice.

Enabled by temporary regulatory waivers, remote care solutions have reached vast numbers of new users. According to Forrester, by April 2020, 80% of U.S physicians had conducted virtual consultations with patients. Banyan Medical Systems, a virtual care provider in the U.S, reported a 900% increase in their telehealth service usage.⁶ As more patients experience the convenience of remote and digital care solutions, providers and payers are permanently rethinking their healthcare delivery models.

Introducing AI to Digital Health

As people learn to trust digital services with their health, in 2021, there will be an increase in AI applications that directly interact with patients at-home for diagnosis and triage, care planning, chronic care management, and prevention and wellness. This will take shape in two ways: apps that act as AI doctors, answering patient's questions about symptoms and pointing them towards treatments, and self-directed remote monitoring tools that analyze health data trends. Dynamic chatbots that contextualize patient input with historical data and clinical insight will help ease workloads for nurses and doctors, which also presents an opportunity for the radical accessibility of health advice around the globe.

#Healthcare #Personalcare #security #LifeSciences #AI

AI for Mental Health

The world is steering towards a mental health crisis partly attributed to toxic traits in our relationship with social media and the digital world. This has worsened as a result of the isolation and anxiety many people have experienced during COVID-19 and lead to a mental health shadow pandemic.⁷ As a result, there is a soaring demand for products and services in the mental health space that improve accessibility and lower treatment price points.

Driving Adoption with Security and Quality

Healthcare bots and apps hold users' most intimate personal details. Privacy and data security concerns present a barrier to adoption and we may see current users turn away from digital services as the crisis and social distancing measures ease. High-end encryption and multilayer cybersecurity protection to keep data secure is critical in generating trust and encouraging on-going usage. Along with security, quality is essential in long-term digital adoption. Users have increasingly high expectations when it comes to user experience, and bots and apps must be user-friendly and intuitive, with 60% of people citing this as a potential barrier for transitioning to digital health services⁸ permanently.

The pandemic has accelerated the previously incremental adoption of digital care, and payers and providers globally will harness this momentum. Accessible and trustworthy AI health care solutions will improve the patient experience and relieve pressure from doctors and nurses at the frontline.

⁵ https://www.accenture.com/_acnmedia/PDF-130/Accenture-2020-Digital-Health-Consumer-Survey-US.pdf#zoom=40

⁶ <https://www.washingtonpost.com/news/powerpost/paloma/the-health-202/2020/04/08/the-health-202-coronavirus-means-americans-are-finally-embracing-virtual-health-care/5e8cf38d602ff10d49adf807/>

⁷ <http://protomag.com/articles/shadow-pandemic-mental-health-crisis>

⁸ https://www.accenture.com/_acnmedia/PDF-130/Accenture-2020-Digital-Health-Consumer-Survey-US.pdf#zoom=40

⁹ <https://news.microsoft.com/innovation-stories/project-breathe-cystic-fibrosis>

¹⁰ <https://royalpapworth.nhs.uk/our-hospital/latest-news/project-breathe-kate-eveling>



Examples

Buoy Health Assistant

Boston-based Buoy provides access to clear and accurate health information. The app allows people to talk with an AI-driven personal health assistant who provides them with information on possible causes for symptoms and guides them to the right care options. The app also reviews health insurance eligibility to point people towards the most financially viable solutions.

Buoy also launched a vaccine monitoring platform for employers, to simplify the process for companies transitioning back to the workplace. It gives organizations an overview of their employees' interest and progress in getting vaccinated while educating employees about their options and helping them navigate the vaccine rollout.

Project Breathe

Project Breathe aims to give people suffering from Cystic Fibrosis (CF), a genetic disease that damages the lung and digestive organs, more control over their health. As a group that is particularly vulnerable to respiratory diseases, it became necessary for CF patients to isolate during the pandemic, leading to the urgent need for at-home health data collection. Participating patients can use equipment to measure their lung function and oxygen saturation, and automatically log data in the accompanying app for analysis. The data, which would usually be collected in-person at a clinic twice a week, allows for early detection of declines in the patient's health and impact assessment of treatments. Stored in the cloud, all information can easily be accessed by clinicians.





Future Fit Innovation

The Ill Wind of Mass Disruption Sparks Leaner Innovation Practices



Disruptive at first—as teams were forced to adapt, maintain productivity, deal with new cybersecurity challenges, and find ways to collaborate—remote workforces have allowed organizations to thrive during the pandemic. Now as the world prepares to open back up, more companies are embracing the notion of permanent remote workforces, or a hybrid model, a split between remote and on-site.

With close to 80% of CEOs agreeing that remote collaboration is here to stay for the long-term, businesses are also planning to digitally and virtually transform operations, according to a recent PwC survey (How Business Can Emerge Stronger).¹¹ For those businesses built on a more traditional in-house foundation, moving past temporary fixes and adopting permanent remote infrastructure can be challenging. To accelerate the transformation and prepare for the future, business and IT leaders are embracing Lean Innovation.

Northeastern University defines Lean Innovation as being “focused on increasing efficiency by capturing customer feedback early and often and minimizing waste in the product development cycle. The process prioritizes experimentation rather than elaborate planning and celebrates continuous, incremental improvement.”¹²

To become lean, businesses must:

- Leverage innovation platforms that facilitate remote collaboration. This includes developer platforms that are moving into becoming innovation platforms where different people from the organization collaborate – from developer to designer and business expert.
- Create a strong ecosystem of partners that enable businesses implement new ideas at speed without developing new solutions from scratch

#Innovation

#RemoteWork

#FutureFit

#LeanInnovation

When done right, Lean Innovation helps businesses of any size move with a startup speed that is Future Fit and ready to adapt and evolve with the future.

Agile has transformed work over the past decade, but the way people and teams collaborate has also changed, and companies need to adapt accordingly. Businesses now face growing pressure to become future fit – to thrive in a world where constant change is inevitable.

At the very core of being future fit is an internal developer platform (IDP). When done right, these platforms allow developers and engineers to work at breakneck speeds, with each team focused on their slice of a project. This is made possible through a self-serve model that removes traditional red tape and bottlenecks that drastically slow progress in favor of accelerated innovation.

Successful businesses today cannot operate in isolation or attempt to develop everything on their own. Having a robust partner ecosystem is more important than ever and must be tied into this process.

Looking ahead, there's one certainty—more disruptive forces are in store. For those businesses lacking an agile technology foundation, now is the time to embrace the opportunity to transform operations fundamentally. Through Lean Innovation, businesses become Future Fit and empowered to adjust and evolve as the rules of the game change more quickly.

¹¹ <https://www.pwc.com/gx/en/ceo-agenda/ceo-panel-survey-emerge-stronger.pdf>

¹² <https://www.northeastern.edu/graduate/blog/what-is-lean-innovation-and-why-use-it/>

Examples

GitHub Developer Platform

GitHub is a provider of Internet hosting for software development and version control using Git, a version control system that lets people manage and keep track of source code history. GitHub had a complex set up that resulted from its fast-growing team, a multi-datacenter approach and more, which made development workflows unmanageable. Working with Humanitec, GitHub built a new internal developer platform (IDP) that lets teams spin up a new environment with a new database to test features using a simple command in Slack. At this point the IDP handles the rest, all in the background. In addition, GitHub has increased scalability and self-sufficiency for developers which has allowed it to ship more quickly.

Emirates NBD

Many banks today are struggling to keep pace with dynamic FinTech firms and tech giants that are developing and launching new banking applications at a Silicon Valley-like speed. In parallel, these banks have to deal with the changes brought about by Open Banking and other regulatory changes.

Emirates NBD, a leading banking group in the United Arab Emirates (UAE) recently took action, introducing the first open banking sandbox in the Middle East region. With the sandbox, the bank is incorporating design thinking, lean start-up, and agile development principles that are facilitating accelerated innovation with fewer resources. For example, FinTechs and developers are now able to turn creative ideas into real working prototypes, which can then be tested with real customers.





The AI Battle Over Cybersecurity

Enterprise Versus Hacker



As organizations from manufacturing, retail, healthcare, and other industries worldwide reinvent themselves and change how and where they operate, cybercriminals see it as an opportunity to penetrate security systems. The complexity and volume of threats continue to rise, and cyberattack incidents occur nearly every 11 seconds. To put into financial terms, cybercrime is projected to cost the global economy \$6.1 trillion in 2021.¹³

The most significant stressors plaguing the modern security operations center continue to be the usual suspects: alert fatigue, false positives, growing attack surfaces, disparate detection tools, skills shortages, and manual and inconsistent processes. Businesses need to be proactive and never assume they're protected against relentless hackers.

The real challenge is not just preventing a cyberattack but discovering it has occurred in the first place. It's hard to believe, but 65 percent of cyberattacks go undetected by organizations today, and the average time to identify a breach is 206 days.¹⁴ By the time businesses realize they've been attacked, it's often too late to rebound from the impact of financial and reputational backlash.

Forrester predicts that, with an increasingly remote workforce no longer protected by the company's firewall, insider incidents will be the source of 33% of data breaches.¹⁵ Securing the enterprise has also become more complicated with the emergence of IoT, edge computing, endless security tools, a growing attack surface, and an increase in attack vectors. When you have more complexity, you have more risk. Cybersecurity firms are accelerating and combining human and machine insights to stay ahead of attackers to address these ever-increasing challenges.

#Cybersecurity #Retail #Healthcare #Banking #AI #Manufacturing

With AI, businesses can teach and automate systems to detect and respond to phishing, ransomware, insider threats, and other potential gaps. As the cybersecurity industry grapples with attracting new talent to meet the skills gap, AI can free up bandwidth for existing staff.

By leveraging AI, businesses can take an aggressive approach to predict, detect and remediate threats – almost instantly. Unlike traditional detection and response-based cybersecurity solutions that wait for the execution of the attack to react, AI-based cybersecurity platforms automatically deter and prevent attacks, keeping businesses protected at all times.

One industry where there is tremendous optimism is healthcare. According to RBC, by 2025, the compound annual growth rate of data for healthcare will reach 36%. That's 6% faster than manufacturing, 10% faster than financial services, and 11% faster than media & entertainment.¹⁶ This is far more data than a human can handle. With AI organizations can quickly analyze this data, identify patterns and pinpoint possible incidents of healthcare fraud.

In addition to detection, another capability that makes AI so powerful is its ability to learn, and specifically to identify patterns over time and do so at speeds that far surpasses that of humans. With AI this happens in real-time and following identification, it can immediately and automatically determine the best way to fight the attack and prevent it from impacting the company.

As cyberattacks become more complex and persistent, AI will play a prominent role in maintaining secure enterprises. The criminals will never stop innovating, so businesses need to make cybersecurity an integral part of their operations.

¹³ <https://cybersecurityventures.com/cybercrime-damages-6-trillion-by-2021/>

¹⁴ <https://www.forenova.com/blog/the-new-era-of-cybersecurity>

¹⁵ <https://digitalguardian.com/blog/insider-threats-poised-increase-2021#:~:text=Forrester%2C%20citing%20the%20persistence%20of,internal%20data%20theft%2C%20experts%20warn>

¹⁶ https://www.rbccm.com/en/gib/healthcare/episode/the_healthcare_data_explosion



Examples

Darktrace

Darktrace's Antigena Enterprise Immune System learns standard 'patterns of life' to discover unpredictable cyber threats while delivering visibility across a company's workforce — from cloud and SaaS to endpoints and the corporate network.

Energy Saving Trust is an organization striving to reduce carbon emissions in the U.K. by 80 percent by 2050. The company was looking for an innovative cybersecurity technology to strengthen its overall cyber defense strategy. Using Darktrace, Energy Saving Trust has been able to detect numerous anomalous activities as soon as they occurred and alerted the security team to carry out further investigations while mitigating any risk posed before real damage is done.



MixMode

Companies must evaluate their ability to weather the cybersecurity emergencies of tomorrow. To prepare, companies need a complete understanding of the baseline view across the network, and how it can change in response to an unexpected event. No security platform can detect every threat, but one company is taking a unique approach.

MixMode's third-wave AI solution develops an accurate, evolving baseline of network behavior and then responds swiftly to aberrations and unexpected behavior – and reduces the rate of false positives by 90% or more. Mixmode's makes its decisions on "Zero-Day" threats and false positives by analyzing the interaction of network elements over a variety of timescales – in the same way a human would – but utilizes its massive computational powers to do it efficiently.





Programmable Realities

Our Lives in the Metaverse



Technology that opens up new lanes to our “reality” is set to fundamentally change our lives. Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR) – united under the umbrella of Extended Reality (XR) – have been prominent topics over the past few years. But they haven’t quite met the inflated expectations that sci-fi films (The Matrix, Total Recall, TRON, for example) have conjured up in our minds for decades—yet.

Until now, VR headsets and AR apps have been primarily used as gaming devices. This will change in 2021 as more industries successfully utilize these technologies to transform the way we approach health and well-being, learn new skills, socialize, and consume entertainment.

Working and Socializing in the Metaverse

Going to work in a virtual environment has long been a common occurrence in some professions. Military training is carried out in synthetic environments utilizing VR as well as AR.¹⁷ Walmart has moved employee training on tech, soft skills, customer service, and compliance into VR.¹⁸

Now, more industries than ever are accelerating innovation and future-proofing their work practices. Re-imagining colleague interaction in the context of remote work, Facebook has announced it will be releasing its VR remote working solution, “Infinite Office”, this year¹⁹ —to provide users with virtual monitors and enable co-workers to interact in virtual office spaces.

#MixedReality

#Telco

#ExtendedReality

#Healthcare

#AR

#VR

Mixed Reality Blends Worlds

Meanwhile, Microsoft HoloLens brings Mixed Reality solutions to sectors such as the healthcare, automotive, and space industries. Further blending the physical world and digital realms, MR combines the best of both and enriches physical interactions with digital material. The increased availability of information and the opportunity to bring experts into a situation remotely can dramatically improve outcomes and increase efficiency. As the technology is maturing out of beta testing and proving itself to be suitable for the mass market, in the coming year we will witness an increasing uptake of MR across sectors.

In line with this, XR hardware is being re-imagined and re-designed to better fit the requirements of different industries. The Swiss company NeuroPro²⁰ has developed a device named “Dream Machine,” which combines a VR headset with electroencephalogram (EEG) technology to monitor brain activity. Designed to aid meditation and relaxation, the application takes the user through a series of audio and visual experiences to train their mind to focus and gain better control over their thoughts.

Businesses are only just starting to harness the power of extended reality to solve human problems. With more use cases demonstrating the business value of programmable realities that go beyond gaming, and the falling cost-of-ownership of VR devices facilitating mass-market adoption, VR, AR, and MR are proving to be invaluable instruments in any businesses’ toolbox. The increasing accessibility of 5G worldwide will further contribute to the prevalence of XR, as the promise of high-capacity, low-latency connectivity presents a fundamental pillar to scaling real-time XR activities.



Examples

Engage VR

Engage VR²¹, a multi-disciplinary clinic in New Castle, Australia, combines VR with physical exercises to rehabilitate patients from neurological problems caused by Parkinson's, a stroke, or brain and spinal injuries. VR technology allows the company to tap into the power of neuroplasticity – the ability of our brain to change itself based on our habits and environment – while overcoming the obstacle of compliance with rehabilitation. By making the recovery journey engaging and fun, it inspires patients to continue with their treatments.

National Health Service

In the UK, the National Health Service (NHS) applies VR tech to treat patients experiencing social anxiety. Building on cognitive behavioral therapy techniques, the program developed by the tech firm Oxford VR immerses patients into controlled digital environments that mimic real-life situations. In this environment, the patient completes various tasks to tackle their anxiety. According to June Dent, director of clinical partnerships at Oxford VR, “[t]he immersive nature of VR provides a powerful new way to engage users and helps them to regain confidence, feel safe and overcome trigger situations.”

¹⁷https://defence.nridigital.com/global_defence_technology_special_nov18/synthetic_environments_the_next_generation_of_military_training

¹⁸ <https://corporate.walmart.com/newsroom/innovation/20180920/how-vr-is-transforming-the-way-we-train-associates>

¹⁹ https://www.youtube.com/watch?v=5_bVkbG1ZCo&feature=youtu.be&ab_channel=Oculus
<https://www-lsnglobal-com.arts.idm.oclc.org/news/article/26053/facebook-envisages-an-infinite-office-via-vr>

²⁰ <https://www.bbc.co.uk/news/business-53245567>

²¹ <https://engagevr.com.au/>



About Virtusa

Virtusa Corporation is a global provider of digital business strategy, digital engineering, and information technology (IT) services and solutions that help clients change, disrupt, and unlock new value through innovation engineering. Virtusa serves Global 2000 companies in the Banking, Financial Services, Insurance, Healthcare, Communications, Media, Entertainment, Travel, Manufacturing, and Technology industries.

Virtusa helps clients grow their business with innovative products and services that create operational efficiency using digital labor, future-proof operational and IT platforms, and rationalization and modernization of IT applications infrastructure. This is achieved through a unique approach blending deep contextual expertise, empowered agile teams, and measurably better engineering to create holistic solutions that drive business forward at unparalleled velocity enabled by a culture of cooperative disruption.

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