

# Home

Make Reality Alive

We focus on IT consulting and technology solutions.

Leveraging world-class technology creatively to deliver exceptional experiences to every business with **trust** and **quality**.

## Core Solutions & Services

### **Banking SSO (Single Sign-On)**

- Trusted by top Thai banks.
- Secure login for multiple systems.
- Integrated with legacy infrastructure.
- Focus on security, efficiency, and user convenience.

### **Financial Gateway**

- Secure money transfer and e-wallet transactions.
- Microservices architecture.
- Scalable, API-driven, and easy to integrate.

### **Blockchain Solutions**

- Built on R3 Corda, tailored for finance.
- Award-winning “Procure-to-Pay” platform.
- Features: smart contracts, workflow automation, and digital ID (NDID) integration.

### **Mobile Application Platform**

- Mobile-first solutions for banking, retail, and education.
- Features: secure login, KYC, payment gateway, QR/barcode, multilingual support.
- Supports both iOS and Android with seamless DevOps & CI/CD integration.

### **Big Data & Advanced Analytics**

- AI/ML-powered analytics for better business decisions.
- Services: Data platform (Data Lake, Warehouse), ETL, BI dashboards, and predictive modeling.
- Certified Google Cloud and Azure Data Engineers.

## **ECE Platform for LINE OA**

- Automates marketing and customer engagement via LINE Official Account.
- Features: Chatbot, segmentation, live chat, CMS, analytics, real-time alerts.

## **API Management**

- Thailand's only hybrid API team with Apigee expertise.
- Design, manage, and secure APIs.
- Full CI/CD, OAuth2, multi-cloud support.

## **Automation & Low-Code Platform**

- Official partner with Nintex K2 and Microsoft Power Platform.
- Accelerates app development without full coding.
- Use cases: Digital payments, HR transformation, insurance, approvals, RPA.

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## **Technical Expertise**

- Microservices architecture
- DevOps, CI/CD pipelines
- React, Angular, Java
- AD/LDAP, OAuth2, IAM integrations
- On-cloud & on-premise deployments

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## **Trusted by Top Institutions**

### **Key Clients:**

KBank, SCB, Krungsri Bank, Government Savings Bank, InnovestX, AIS, Robinhood, PTTEP, TokenX, Lao Telecom, Isuzu Leasing, and many more.

# Our Services

Your Trust, Our Quality

Discover the range of services we offer that have been carefully crafted to empower your growth, enhance your efficiency, and drive your success forward.

## Our Services

Unlock greater business potential with our diverse array of IT solutions, endorsed by top enterprises in Thailand.

## Our Methodology

We develop IT solutions with multiple languages and currently trending technologies, accepted by top businesses in Thailand.

### SOFTWARE DEVELOPERS LIFE CYCLE

#### 1. Ideation

The ideation process involves thinking about and creating innovative solutions to a user-base problem.

#### 2. Requirements

Interacting with stakeholders and users to collect documents and project requirements.

#### 3. Design

The software system architecture efficiently turns requirements into a complete software design.

#### 4. Development

Software is developed using programming languages by the development team.

#### 5. Testing

Software quality evaluation is being conducted with the clear objective of discovering and correcting defects.

#### 6. Deployment

Installing and configuring software in a target environment is called deployment. A given context optimizes software execution and function.

#### 7. Maintenance

The software requires ongoing maintenance to last. Maintain the software and give technical support after launch.

## **Banking Solution**

We implement and develop SSO solutions for Thailand's top banks. Our business-specific services are customizable for the most satisfactory outcomes.

We are experts at implementing Single Sign-On (SSO) solutions, which are used by many Thai banks and financial institutions.

Single Sign-On (SSO) is a way to handle logins that lets users access multiple apps or services with just one sign-on. With a one-time license, This makes it easier for users to keep track of their passwords and makes things easier for them overall. Large banking companies must use SSO to make things easier and stop people from stealing user info.

With a focus on safety and efficiency, we can set up and develop SSO as well as add it to your existing system. Having worked on several of the biggest banks, We know what businesses need and are committed to making systems that meet them effectively. Considering safety and work quality.

With a team of experts who know and understand business processes and frameworks. So, we will achieve your goals and improve the system so that it works best for your business and is in line with what you want.

Banking Single Sign-On Mastery is trusted nationwide.

With over 2 decades of experience, we create innovative and durable products. Adapted to the era and practical.

## **Internet Mobile Banking & PromptPay**

Introducing Single Single Sign-On (SSO) on the Internet and Mobile Banking. With a wealth of features and functionalities, our system provides exceptional ease and flexibility for both commercial and retail clients. Withdrawal, top-up, loan, etc.

## **Cross border Payments**

Our cross border payment solutions provide you with unrivaled convenience. Transfer money across currencies with ease. Reduce the complexity and expense of currency exchange. We have enhanced the entire international money transfer process. Make everything as smooth and efficient as possible.

## **Digital ID**

NDID and bank integration to revolutionize digital identity verification utilizing the National Digital ID (NDID). Discover the power of an end-to-end digital identity authentication solution that goes beyond traditional boundaries. Our technology connects NDID and banks effortlessly.

#### Experience & Services

We specialize in IT solutions and provide high-quality service. To boost the growth and success of IT businesses.

#### **Impact Analysis Application Design & Architecture**

Utilize our best practices for application design, business impact analysis, and budget estimation to ensure the greatest possible project success.

#### **Software Development**

Our microservices platform increases productivity, lowers costs, and automates development to speed up innovation. Use React, Angular, Java, DevOps, and CI/CD to seamlessly link products to legacy systems.

#### Our Customers

Success requires collaboration.

Let's combine our strengths and resources to achieve our goals.

Thank you KBank, important customers, for always trusting us.

## **Financial Gateway**

Successful Financial Gateway Solution. We build solutions based on 20 years of banking and finance experience.

We specialize in developing Financial Gateway Solutions for businesses. With over 20 years of experience in financial and banking solution development.

Our Financial Gateway Solution provides a wide variety of transaction management services, such as money transfers and e-wallets, with a focus on optimum security for your business.

A microservices architecture is used to design our solutions. To aid in the simplification of the system deployment and maintenance process, allowing consumers to easily manage numerous financial transactions. Using the most precise and secure method

We are eager to contribute to the success of your financial venture.

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### Key Features

Increase your business's success with our key features.

### **Empower Your Business**

Our flexible middleware API scales smoothly to meet your requirements<sup>1</sup>

### **Flexible**

Experience the flexibility of our API, which supports multiple formats, including the popular REST API, SOAP, and more.

### **Minimal Package**

Choose our Minimal Package to easily install and integrate the API into your financial operations

### **Scalability**

Use our API to scale your business to new heights with simplicity. It is designed for easy scaling and can handle large volumes of traffic, providing continuous service and excellent performance.

## **Reusable**

Our API is built for easy reusability and convenient customization, allowing for smooth modifications and efficient operations.

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Thank you InnovestX, AIS, Bangkok Bank, Krungsri Bank, Government Savings Bank, KAsset, Lao Telecom, important customers, for always trusting us.

## **Blockchain Solution**

Blockchain technology benefits businesses with increased efficiency, lower costs, and enhanced security.

Blockchain is a decentralized technology with many outstanding features that can be applied to increase efficiency and reduce hidden costs for organizations such as high levels of security and data transparency that centralized systems cannot achieve, workflow automation with smart contracts, and unlimited traceability.

## **Our Service - Procure 2 Pay**

Our Procure 2 Pay Platform utilizes R3 CORDA DLT to streamline the procurement process from PO to payment, with customized solutions to meet your specific needs. Increasing automation processes, and reducing human involvement can deliver cost savings, time-saving, and increased accuracy.

Power by R3 CORDA DLT which is created especially for the finance and banking industries and our R3-Certified engineers with more than 10 years of experience in banking and finance software development.

Procure 2 Pay on Blockchain is a TIS Good Job Award-winning.

## Experience & Services

We specialize in IT solutions and provide high-quality service. To boost the growth and success of IT businesses.

## **Assessment**

Analyze the effect of blockchain specifically. Design a use case, a system flow and diagram, and a high-level architecture appropriate for the system. Integrate blockchain seamlessly for the best outcomes.

## **Software Development**

Customized modules integrate with legacy or adjacent bank systems. Innovative DevOps and CICD for agile development.

### **Key Features**

Increase your business's success with our key features.

### **Security**

Securely innovate with support for 2FA (OTP), decentralized ledger technology, and third-party AD/LDAP authentication.

### **Connectivity**

Various bank legacy systems connectivity.

### **On-Cloud / On-Premise deployment**

We are professionals at implementing banking solutions on both cloud and on-premise systems and have more than ten years of experience.

### **Flexible for workflow**

Provides exceptional workflow flexibility. Launching apps to production is a simple and quick process that saves you time. Existing API services can be readily reused, streamlining development efforts.

### **End-2-End process**

Streamlined end-to-end process: Purchase Order to Payment. Simplify procurement with our user-friendly platform, fostering seamless collaboration.

### **Our Customers**

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## ECE Platform for LINE OA

Streamlining LINE OA's corporate operations. Automate marketing, analyze customer data, collect data, and handle high transaction volumes. Real-time alerts and efficient marketing.

### **ECE stands for Enterprise Channel Engagement Platform.**

A system built to fulfill the demands of organizations that utilize LINE OA to help you collect customer data, analyze target groups based on criteria, and group segments based on marketing objectives. In addition, we can deliver product information and promotions automatically based on your intended audience. This enables your company to access the appropriate customers and engage with them more effectively.

We also offer analytics services to LINE OA clients, transforming data from views, subscriptions, and actions into highly accurate reports. Which customers can be utilized to effectively plan marketing tactics. Furthermore, we support a wide range of transactions, including the delivery of real-time notifications, to give customers a more convenient and speedier user experience.

### Experience & services

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## **UXUI System Design & Architecture**

Elevate your business efficiency with our expert design consulting services, where user experience professionals address pain points and streamline processes for maximum impact.

- Process analysis
- System business flow & diagram
- Architecture design

## **Software Development**

Seamlessly integrate legacy or adjacent systems with our customizable modules, designed and implemented to meet your unique needs.

- Establish DevOps
- CI/CD and Mobile Platform Foundation
- Build BFF module with integrated systems and business logic
- Build Micro-services

## Key Features

เพิ่มความสำเร็จให้กับธุรกิจของคุณ

### Chat Bot

Generate QR Codes of various flows and enable users to share them on LINE to increase your followers, Increase your sales with personalized LINE content and create a variety of promotions, Easy to create answer formats, including Flex Message, Image Map, unique to LINE

### Live Chat

Customer Information, Chat History, Reply Realtime, Send feed by Template, Manage Agent's Ticket, Measure the performance of your live agents

### CMS

Rich Menu Management, Campaign Management, Summary Dashboard

### Analytics & Report

Summary Dashboard, Campaign Response Report, Custom Report Engine

### Agent & Ticket Management

Questionnaires, Feedback Collection, Satisfaction Survey

### Survey & Feedback

Questionnaires, Feedback Collection, Satisfaction Survey

### Chat Marketing & Segmentation

- Agent Management
- Ticket Management
- Agent Performance Report

## Our Customers

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Thank you KBank, Bangkok Genomics Innovation, important customers, for always trusting us.

## Mobile Application Platform

Revolutionize your business with our customizable mobile platform. Unlock a wide range of functions to elevate your business.

Perfect for education, retail, and banking industries.

Mobile applications are becoming an essential tool for developing a solid business strategy. It is the ideal platform for organizations to successfully respond to client needs. It may capitalize on it by improving consumer engagement and experience. It's not simply about gaining a loyal consumer base and collecting useful data. However, it also assists us in developing long-term partnerships with our consumers. and preserve long-term communication.

to ensure the company's readiness. Mobile apps, such as those that track user behavior and comments, can collect useful data and content for business decisions. It is also a tool for acquiring reliable and quality information about consumers in order to understand market trends and client wants. This can help firms better understand their clients. and enhance products and services to make them more appropriate.

Our IT team and expertise are primarily concerned with designing mobile solutions. We are knowledgeable about the most recent mobile technology. You may develop your business and become a market leader by offering products and services that correspond with the Mobile First idea. We are developing software with a team of specialists who are experienced in merging technology and strategy. It can propel your company to indefinite success.

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## **Key Features**

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## **Security**

- Securely innovate with support for 2FA (OTP)
- Decentralized ledger technology, and 3rd-party AD/LDAP authentication.

## **Flexible for workflow**

On - boarding process, Maker | Checker

## **Role Based Access Control (RBAC)**

Hassle-free of granting an access right for each user group by using our CMS.

## **Known Your Customer**

KYC-MAPPING CUSTOMER ID + LINE ID or others authenticated ID and record user activity for analyzing.

## **Ready Made Component**

- Secure login mechanism by AD/LDAP, e-mail, LINE Id, SNS account and mobile no.

- Term and Condition
- PDPA, Notification
- Maintenance Page and Force Update
- Barcode and QR code scan
- Payment gateway and mobile banking integration
- Map and Location based
- Analytic and Remote Configuration
- Multi-language supported
- Multi-device supported

## Our Customers

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Thank you KBank, SCB, Government Savings Bank, KAsset, SCB TechX, Robinhood, and Isuzu Leasing important customers, for always trusting us.

## Big Data & Advanced Analytics

Enhance your data management capabilities with the assistance of our experienced Data Analytics team. Boost your productivity by integrating advanced AI and ML solutions for efficient data analysis.

In an era where data is more vital in decision-making and business analysis. Data management in organizations must be efficient and up-to-date. To be able to use data for quality analysis. It is important to have a team of data analysis experts.

Data monitoring and analysis will be more accurate and precise with AI/ML (Artificial Intelligence/Machine Learning) solutions. To make the data analysis process more efficient, we can build and improve it. By developing AI/ML models for businesses or complex data analysis procedures, such as data management, in numerous projects. or studying and forecasting business trends

We should concentrate on improving skills in the use of AI/ML technologies and learning how to interpret business-relevant data. As a result, we will be able to use data as a vital tool in making decisions and improving the business in order for it to grow in the future.

### Experience & Services

We specialize in IT solutions and provide high-quality service. To boost the growth and success of IT businesses.

### Data Platform

Designing and implementing data platform architecture.

- Data Lake
- Data Warehouse
- Data Mart

### Data Collection

Create a data pipeline that efficiently collects and processes diverse data from multiple source systems in batch and real-time, enabling effective data-driven decision-making.

- Data Pipeline
- Data Ingestion
- ETL/ELT

### Data Management

Governance, control, and optimization of an organization's data assets throughout their lifecycle.

- Data Quality/Data Cleansing
- Master Data Management
- Data Standards
- Data Retention
- Data Change
- Data Modeling

### Data Analytics

Analyze and interpreting data to identify patterns, trends, and insights that drive strategic business decisions.

- Business Intelligence
- Data Visualizations
- Data Sharing
- Data Insights
- AI/ML

#### Our Expertise

Our specialists have received top-notch cloud technology certifications.

#### **Google Cloud**

Certificates from Google Data Engineer and Google Data Analytic

#### **Azure Cloud**

Certificates in Microsoft Azure Data Engineer and Microsoft Power BI Data Analyst.

#### Our Customers

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#### **API Management**

Unleash API power with our expert development and management.

**We are the only team from Thailand that has experience in developing hybrid APIs using Apigee.**

Building a digital ecosystem to optimize growth and reach consumers is critical in today's rapidly changing digital environment, and API Management is a vital tool that helps create a digital ecosystem that surpasses expectations.

The Digital Ecosystem created with API Management enables businesses to collaborate with critical partners to generate financial value. Sharing data and services via APIs is an

excellent way to strengthen ties and collaborate with partners. To encourage growth and provide value to customers.

API management is a critical step in providing a consistent and efficient user experience. It also aids in user management and other controls such as security and access limits when integrating different applications to work smoothly and easily together.

And API access verification is a critical tool for IT services in order to give customers a positive and secure experience when accessing various APIs.

### Experience & Services

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### **Development & Consult (T&M)**

API proxies development consulting services

- API Spec
- Proxies/Plugins/Policies configuration
- etc.

### **Customization & Integration**

Customize and apply integrated API configurations (e.g. portal theme, logging, monitoring), consult on configuration and migration.

### **Architecture Design & Installation**

Streamline your API publishing with our end-to-end infrastructure support. Our team designs, configures, and tests your infrastructure to meet all requirements, ensuring a seamless and reliable process.

- Architecture Design
- DevOps Installation scripts
- System Runbook
- Configuration

### 5 Key Features

Increase your business's success with our key features.

## **API Design**

- Swagger and Open API Specification
- API Mock and tracing

## **Security**

- Support IAM, and OIDC integration
- Thread Protection and OWASP
- Access control by OAuth2 and API Keys
- Quota control using Spike Arrest and Rate Limiting

## **Flexible for Deployment**

- Cloud-Native deployment  
(Apigee / Kong)
- Multi-Platform support, based-on Kubernetes engine

## **Hybrid work across site**

- Multi-cluster and Multi-site across data center or cloud
- Centralized management and monitoring

## **Development and publishing**

- Flexible for API publishing as conditional flow
- Pre-defined security and conditional flow support for re-use
- Build-in revision control
- CI/CD support by Management API
- Build up API as product package and monetization

## **Our Customers**

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## Automation

Increase the speed and quality of your software with a Low-Code Platform from a prominent partner to propel your company forward.

In an era where software is fundamental to corporate operations. Software development and improvement at high speed and quality should not be ignored. To achieve these requirements, the Low-Code Platform helps accelerate the process of designing programs with limited code (Low-Code). It is not necessary to hire a coding professional.

The Low-Code Platform is an architecture that enables developers to construct and customize programs quickly and easily. Utilizing user-friendly tools and interfaces, there is no requirement for complex coding knowledge.

With the Low-Code Platform, it is feasible to develop and upgrade software quickly without the constraints or complexities of traditional coding. The Low-Code Platform provides advantages such as high-quality software development and enhancements that it effectively conveys.

The Low-Code Platform is a platform that not only helps to accelerate the creation of software systems, However, it also minimizes frustration in the software development process. Furthermore, it saves money in the long run.

Experience the power of the leading and officially certified partner, Nintex K2 and Microsoft Power Platform. This enables you to streamline business process operations and integrate with SAP, Salesforce, and Microsoft Dynamics. So that you can bring your business to success with stability.

## Experience & Services

We specialize in IT solutions and provide high-quality service. To boost the growth and success of IT businesses.

## UXUI System Design & Architecture

Improving User Experience: Developing Solutions to Identify Pain Points and Redesigning Business Processes with Flow and Architecture Design.

## Software Development

Seamless 3rd Party Authentication (AD/LDAP) integration for enhanced security. Proudly SOC 2 and 3, ISO 27001:2013 compliant with a focus on Data Loss Prevention for utmost data protection.

## 5 Key Features

Increase your business's success with our key features.

### **Security**

Seamless 3rd Party Authentication (AD/LDAP) integration for enhanced security. Proudly SOC 2 and 3, ISO 27001:2013 compliant with a focus on Data Loss Prevention for utmost data protection.

### **Empowering Users**

Set standards governance as a top priority for effective development. Assist customers in developing software employing new ideas.

### **Drive to Modernize**

Using RPA as the primary working method, connect to many systems, including the use of chatbots. swiftly and effectively developed.

### **Specialized Business**

We specialize in Hire Purchase Operation, Insurance Online, Digital Payment (Petty Cash, Advance, etc.), Digital Assets, Centralized Approval on Mobile, and HR Transformation.

### **Transformation**

We define and analyze manual processes, match them with automated solutions, address problems and pain points, and drive clients toward digitalization for greater business improvement and value.

### Our Customers

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# Insights

## Test Coverage Matrix Your Roadmap to Quality Software

2 Dec 2024

Imagine building a house without a blueprint. You might end up with a structure that's standing, but it might lack essential features or have structural flaws. That's where a **Test Coverage Matrix (TCM)** comes in for software development. It's your blueprint, ensuring that every part of your software is tested thoroughly.

**What is a Test Coverage Matrix?** A TCM is a tool that provides a visual representation of your software's test coverage. It's essentially a grid that maps out your software's features or functions against the different testing techniques or environments used. By marking off the tests you've performed, you get a clear picture of what's been covered and what still needs attention.

### Why is it Important?

- **Comprehensive Testing:** The TCM helps ensure that every nook and cranny of your software is tested.
- **Prioritization:** It allows you to prioritize tests based on risk or importance, ensuring that critical features are thoroughly tested.
- **Communication:** The TCM serves as a common language for development and testing teams, ensuring everyone is on the same page.
- **Traceability:** It provides a clear link between requirements, test cases, and defects, making it easier to identify the root cause of issues.
- **Quality Assurance:** A high level of test coverage is a strong indicator of software quality.

### How to Create and Use a TCM

- **Identify Features:** List all the features or functionalities of your software.
- **Define Test Types:** Determine the types of tests you'll perform, such as unit tests, integration tests, and user acceptance tests.
- **Create a Matrix:** Build a table with features listed in rows and test types in columns.
- **Execute Tests:** As you perform tests, mark the corresponding cells in the matrix.

- **Review and Update:** Regularly review the matrix to ensure it's up-to-date and accurately reflects your testing progress.

### **Real-World Example: E-commerce Application**

Imagine you're testing an e-commerce application. Your TCM might look something like this:

### **A Visual Analogy: Coloring a Picture**

Think of the TCM as a coloring book. Each feature is a section of the picture, and each test type is a color. As you complete each test, you color in the corresponding section. When the entire picture is colored, you know you've covered all the bases.

### **Benefits of Using a TCM**

- **Increased confidence in your software's quality.**
- **Reduced risk of defects slipping into production.**
- **Improved collaboration between development and testing teams.**
- **Better decision-making based on data.**

**In conclusion,** a Test Coverage Matrix is a valuable tool for any software development project. By providing a clear and comprehensive overview of your testing efforts, it helps ensure that your software is delivered with the highest quality.

## **Top 9 Use Cases of AI in Oil and Gas Industry**

9 Oct 2024

By 2028, the AI market in the Oil & Gas sector is expected to reach \$4.21 billion, with a compound annual growth rate (CAGR) of 12.09%, driven by AI's capability to analyze vast datasets and learn from various patterns.

The application of artificial intelligence in the Oil & Gas industry is revolutionizing the way companies operate across various aspects. From predictive maintenance that prevents equipment failures to supply chain optimization that ensures smoother operations, AI is making significant impacts.

In this article, Bluebik Vulcan will explore 9 AI use cases in the Oil & Gas industry, highlighting their critical effects on this sector. Let's look at what they are.

## **9 Compelling Use Cases of AI in Oil and Gas**

### **1.Demand Forecasting**

Traditional forecasting methods often fail to manage the complexities of the global energy market. AI solutions for Oil & Gas help analyze historical data, market trends, and geopolitical events, providing companies with insights that lead to more accurate decision-making.

For example, drilling companies using AI can forecast demand accurately by analyzing data from past drilling projects, oil price volatility, and global energy demand. This enables optimal resource allocation and enhances drilling operations.

### **2.Predictive Maintenance**

AI-driven predictive maintenance analyzes IoT sensor data and real-time operational data effectively. It can predict equipment failures or maintenance needs. For instance, oil rigs can use AI to continuously monitor the condition of pumps, compressors, and machinery, detecting anomalies and scheduling maintenance in advance.

Not only offshore rigs but also refineries and pipelines benefit from predictive maintenance, using machine learning to optimize maintenance and improve safety.

### **3.Oil Exploration**

Finding new oil reserves is a challenging and costly task. AI enhances exploration efficiency and accuracy by analyzing large datasets. Exploration teams can use AI to identify areas with the highest drilling potential, reducing time, cost, and environmental impact safely.

### **4. Handle Price Fluctuations**

AI helps analyze historical price data and market trends to forecast oil price movements. This allows companies to develop appropriate strategies, such as predicting price declines and recommending risk mitigation measures.

AI can analyze real-time price data, enabling companies to make swift decisions and trade oil contracts based on predefined criteria. It also supports long-term strategies by tracking and analyzing market factors for smarter investment and asset allocation decisions.

### **5.Improve Safety**

AI enhances safety by performing maintenance, detecting anomalies, and predicting failures before accidents occur. It allows for better scheduling of maintenance and reduces accident risks.

Additionally, AI monitors safety in real-time using environmental sensors, analyzing data instantly and alerting when abnormal activities are detected. It also optimizes transportation routes by analyzing traffic and weather conditions.

## **6.RPA for Back-Office Tasks**

In the Oil & Gas industry, back-office tasks that are repetitive and time-consuming can benefit from AI and Robotic Process Automation (RPA). For instance, RPA bots can process invoices quickly and accurately, reducing errors.

RPA bots also handle complex tasks like supply chain management by analyzing data from various sources to enhance decision-making. Machine learning further allows RPA bots to learn and adapt, improving operational efficiency.

## **7.Oil Spills and Hydrocarbon Detection**

AI in the Oil & Gas industry can detect oil spills and hydrocarbons by analyzing satellite images and survey data. This enables immediate action to mitigate environmental impacts.

AI systems can calculate and predict ecological impacts. Additionally, AI-powered sensors monitor infrastructure in real time, detecting temperature, pressure, and anomalies that might indicate leaks, allowing for swift action.

## **8.Regulatory Compliance**

AI systems can evaluate company practices against new regulations and identify gaps that need addressing. They also assist in assessing and managing risks by analyzing historical data to mitigate risks effectively.

AI-driven analytics continuously monitor compliance and immediately alert companies to any deviations, enabling prompt corrective actions.

## **9.AI-driven Supply-Chain Management**

AI-driven supply chain management in the Oil & Gas industry is transforming operations. AI technology improves supply chain management using real-time data, such as traffic and weather conditions, to optimize transportation and reduce logistics costs.

AI also aids in supplier evaluation, maintaining good supplier relationships, and budget planning to meet financial requirements more effectively.

## **AI Use Cases in the Oil & Gas Industry in Thailand**

PTT Exploration and Production Public Company Limited (PTTEP) is a key organization in securing stable petroleum sources for Thailand and the energy industry, including future new energy forms. The company utilizes advanced innovations and technologies to reduce greenhouse gas emissions and aims to become a low-carbon organization for sustainable growth.

PTTEP recently held Digital Transformation Day 2024 under the theme “Digital the Future” to showcase cutting-edge digital technologies that drive and enhance various aspects of the company’s operations. They introduced the “EP Digital Platform,” a hub for digital innovation projects that employ technologies such as Machine Learning, Artificial Intelligence (AI), and Robotic Process Automation (RPA). PTTEP has developed these technologies in-house and with partners, launching over 65 projects to support petroleum exploration and production, maintenance, logistics, and safety and occupational health. These innovations aim to enhance capabilities, reduce operational time and costs, and provide long-term benefits to the industry, including:

- The CREST is a comprehensive geological data management system capable of rapidly processing data with high accuracy and precision. It utilizes AI algorithms to analyze and compare the operational patterns of production equipment, providing warnings and recommending effective solutions.
- DORA analyzes petroleum drilling data in real-time using AI and Machine Learning, enabling the identification of potential issues or risks. This helps reduce time and costs.
- AI for Bid Evaluation and AI for Bid Quality Assurance use AI to analyze and evaluate bidding documents and verify the history of bidders, streamlining processes and reducing time while ensuring transparency.

The current global trend focuses on achieving Net Zero greenhouse gas emissions, a critical factor for mitigating business risks. Thailand aims to achieve this goal by 2065, while international companies target Net Zero by 2050.

AI will play a pivotal role in helping businesses achieve their Net Zero goals.

PTT Public Company Limited (PTT) utilizes AI in five key areas, including:

1. Power Tech uses AI to develop carbon credit exchange platform with partners
2. Health Tech: Development of targeted treatment processing data platform and development of healthcare throughout the system.
3. Mobility Tech on the electric vehicle (EV) ecosystem and battery supply chain

4. Industrial Tech, machine learning development, including maintenance forecasting
5. Creative Tech uses AR and VR systems to process and motors such as oil and gas pipelines at sea

Additionally, PTT has developed Generative-AI software for use within its group of companies, such as ABDUL, which can answer any query by compiling internal organizational data for historical research and processing recommendations, and OLoF, which is used for processing meetings, summarizing key points, and efficiently converting them into reports.

### **Why choose Bluebik Vulcan?**

Bluebik Vulcan is a seasoned web developer with extensive experience and expertise in creating secure solutions. We are dedicated to crafting software that meets your business needs by following certified processes to ensure data security and regulatory compliance.

In addition to custom application and software development, Bluebik Vulcan has a proven track record of modernizing legacy systems. Our specialized team is ready to enhance your operations with Artificial Intelligence (AI) and Machine Learning (ML) to develop software that effectively predicts potential issues.

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# Enhancing In-App User Experience with AI Personalization

18 Sept 2024

In today's digital age, user experience (UX) is paramount. We all want seamless interactions, tailored content, and intuitive interfaces. Enhancing user experience with AI Personalization is the key to achieving this.

AI personalization makes your digital life smoother and more enjoyable.

Let's dive into how AI is revolutionizing the way you interact with your favorite apps, making each experience unique and engaging.

## **Understanding AI Personalization**

### **What is AI Personalization?**

AI personalization involves using artificial intelligence to tailor experiences specifically for you. This means that the content you see, the recommendations you get, and even the ads that pop up are customized based on your behavior, preferences, and past interactions.

Imagine walking into a coffee shop where the barista knows your favorite order because you visit often—that's AI personalization in a nutshell.

### **How Does AI Personalization Work?**

AI uses data from your interactions to create a unique profile just for you. It gathers information like your browsing history, purchase habits, and even the time you spend on different pages. Then, using complex algorithms, it predicts what you might like or need next.

The important thing is “The more you interact, The smarter it gets”. This ongoing learning process is a key element in enhancing UX with AI-powered personalization.

## **The Role of AI Personalization**

### **Personalized Contents Recommendations**

One of the most visible roles of AI in in-app personalization is content recommendation. Think about the last time you watched a movie or read an article based on a suggestion from an app. These recommendations aren't random. AI analyzes what you've viewed

before, what people with similar tastes enjoy, and even the time of day you're most active. Then, it serves up options that are likely to catch your interest.

### **Dynamic User Interfaces**

AI doesn't just stop at recommending content, it can also adapt the user interface (UI) of a website or app to fit your needs. If you often use specific features, AI might prioritize these in the layout, making them easier to access. This creates a more intuitive and efficient experience for you. It's as if the app or website evolves to fit your habits, making your interactions smoother and more enjoyable.

### **Predictive Text and Smart Assistance**

Ever started typing a message and noticed your keyboard suggesting the next word? That's AI in action again! Predictive text and smart assistants are part of the broader AI-powered personalization trend. These features learn from your typing habits and the context of your conversations to offer more accurate and relevant suggestions.

## **Benefits of AI Personalization**

### **Enhancing User Engagement**

Have you ever found yourself glued to an app, unable to put it down? That's AI-powered personalization at work, creating an engaging experience just for you. By understanding your preferences and habits, AI ensures the content you see is exactly what you want. This tailored experience keeps you coming back for more because it feels like the app was designed with you in mind. Bringing more loyalty to your app.

### **Boosting Customer Satisfaction**

AI's ability to predict users' needs and deliver what they want when they want it, while also adapting to their preferences, helps build trust and satisfaction. Users feel special and are more likely to continue using the app because it feels like it truly understands and caters to their needs.

### **Increased Revenue & Competitive Advantage**

AI-powered personalization can lead to increased revenue for app developers by presenting products and content that spark user interest. When an app provides a unique and personalized experience that stands out from other apps, it attracts more users. This distinctive experience not only boosts user retention but also draws in new users, ultimately increasing revenue and giving the app a competitive edge.

## **Challenges of AI Personalization**

### **Privacy Concerns and Data Security**

Have you ever felt uneasy about how much your apps know about you? That's one of the big challenges of AI-powered personalization: privacy concerns. To offer personalized experiences, AI needs access to a lot of your data. This can include your browsing history, location, and even personal preferences.

While it's great to have apps that feel tailor-made for you, it's also a bit spooky knowing they're tracking your every move. Protecting this data from breaches and ensuring it's used responsibly is a major hurdle for companies using AI.

The balance between personalization and privacy is delicate. You want relevant recommendations, but you also want to know your data is safe. Companies must be transparent about how they use your information and put strong & clear security measures in place.

### **Ethical Issues and Bias**

AI isn't perfect, and sometimes it can even be biased. Have you ever noticed an app recommending things that seem a bit off? That's because AI systems are trained on data that might include biases, which can lead to unfair or inaccurate recommendations. For example, if an AI system is trained on data that favors certain groups over others, it might not provide the best experience for everyone.

Addressing these ethical issues is crucial for creating fair and inclusive AI-powered personalization. Companies need to regularly audit their AI systems to ensure they're not perpetuating biases. This involves using diverse datasets and continuously monitoring AI behavior. By doing so, they can make sure their apps provide a positive experience for all users.

### **Over-Personalization**

Over-personalization can limit your experiences and stifle your curiosity. To avoid this, companies need to strike a balance between personalized and diverse content. Including options that encourage exploration can help you discover new interests and broaden your horizons, keeping your app experience fresh and exciting.

### **Implementation Techniques**

Now, let's dive into some key AI-powered personalization techniques that can elevate your UX game.

### **Machine Learning Algorithms: The Backbone of Personalization**

Machine learning (ML) algorithms are the unsung heroes behind personalized user experiences. These algorithms analyze vast amounts of data to understand user preferences and predict future behavior. By leveraging ML, you can create dynamic content that adapts to individual users in real-time.

For instance, collaborative filtering, a popular ML technique, identifies patterns in user behavior to recommend products. This technique ensures that the more you use the platform, the better it understands your preferences, continually enhancing your experience.

### **Natural Language Processing: Making Sense of User Interactions**

Natural Language Processing (NLP) is another AI tool that's transforming personalization. NLP allows machines to understand and respond to human language, making interactions more intuitive.

For example, think of chatbots that provide instant support, answering your queries in a conversational tone. These bots analyze your questions using NLP to deliver accurate and relevant responses, mimicking human conversation.

Moreover, sentiment analysis, a subset of NLP, can gauge user emotions based on their text inputs. By understanding how users feel, businesses can tailor their responses to enhance satisfaction. For example, if a customer expresses frustration, the system can prioritize their issue and offer empathetic support. This emotional intelligence adds a personal touch that makes users feel valued and understood.

### **Predictive Analytics: Anticipating User Needs**

Predictive analytics is a game-changer in enhancing UX with AI-powered personalization. By analyzing historical data, predictive models can forecast future user actions. This foresight enables businesses to proactively address user needs, creating a seamless experience. For instance, an online retailer might use predictive analytics to anticipate when you'll need to restock certain items, sending you timely reminders and special offers.

### **Case Studies of Personalized Mobile Apps.**

By leveraging AI-powered personalization, these apps understand your preferences, predict your needs, and deliver content tailored just for you. Let's explore some standout examples of personalized mobile apps that are enhancing UX with AI-powered personalization.

### **Nike Training Club**

Nike Training Club (NTC) enhances user experience by personalizing workout plans based on your goals, fitness level, and exercise history. The AI within the app offers exercise recommendations aligned with your abilities and preferences, continuously adjusting the training plan to meet your evolving needs. This personalization helps maintain motivation and supports you in achieving your fitness goals more effectively.

### **Duolingo**

Duolingo revolutionizes language learning through AI personalization. The app uses AI to track your progress, strengths, and areas for improvement, tailoring lessons and exercises to your learning style. Each time you use Duolingo, the app adjusts to provide content that suits your pace, offering more challenging material when you're ready and reviewing previous lessons when needed. This personalized approach ensures an engaging and motivating learning experience throughout your language learning journey.

### **Calm**

Calm, a meditation app, uses AI to customize your meditation and relaxation experiences. By analyzing your usage patterns and preferences, Calm suggests meditation sessions, sleep stories, and relaxation techniques that match your needs. Whether you aim to reduce stress, improve sleep, or increase focus, Calm adapts to help you achieve your goals more effectively.

### **TikTok**

TikTok leverages AI to create a personalized video feed based on your behavior and interests. The system recommends videos that match your preferences by analyzing your viewing time, likes, comments, and shares. This personalization delivers a user experience that feels tailor-made and highly engaging.

### **Conclusion**

AI personalization enhances user experience through intelligent prediction of needs. However, it should not be implemented without caution. Finding a balance between data collection and user privacy remains crucial. When done correctly, AI personalization can transform your interactions with apps into something remarkably special. So, let's dive into the world of AI and explore these innovative technologies together!

## **Netflix**

Netflix uses AI-powered personalization to create a viewing experience that feels tailor-made for you. By analyzing your watch history, search queries, and even the time you spend on different shows, Netflix generates recommendations that are incredibly spot-on.

For instance, if you binge-watch crime dramas, Netflix will suggest similar shows and movies, making sure you never run out of content you love. This level of personalization keeps you engaged and coming back for more. Netflix also uses personalized thumbnails to catch your eye, highlighting aspects of shows that are most likely to appeal to you. This enhances your user experience, making it easier and more enjoyable to find new shows and movies to dive into.

## **Spotify**

Spotify's AI-powered personalization works behind the scenes to create a unique musical experience for each user. By analyzing your listening habits, favorite genres, and even the songs you skip, Spotify crafts personalized playlists like Discover Weekly and Release Radar.

These playlists introduce you to new artists and tracks that fit seamlessly into your music preferences. Spotify's personalized recommendations don't stop at playlists; they also extend to curated daily mixes and concert recommendations based on your location and favorite artists. This keeps your music experience fresh and exciting, ensuring you always have the perfect soundtrack for any moment.

## **Amazon**

Amazon uses AI-powered personalization to track your browsing history, previous purchases, and items you've shown interest in, Amazon tailors its recommendations to suit your tastes and needs. This makes your shopping experience smoother and more enjoyable, as you're more likely to find products that are relevant to you.

For example, if you frequently buy fitness gear, Amazon will suggest related items like workout clothes or nutrition supplements. Additionally, Amazon's personalized homepage showcases deals and new arrivals that match your interests, helping you discover new products effortlessly. This level of personalization not only enhances your user experience but also builds customer loyalty, making you more likely to return for future purchases.

# Deepfake Technology: The Dark Side of AI

4 Sept 2024

Cutting-edge artificial intelligence (AI) technology, now a serious threat, is causing damage worldwide.

## What is Deepfake?

The term "deepfake" comes from the combination of "deep learning" and "fake." It refers to the technique of faking information using AI technology. By leveraging deep learning technology to analyze and process data and using a machine learning model known as Generative Adversarial Networks (GANs), deepfakes are synthesized to resemble the original closely. This includes physical movements, facial features, and even voices, resulting in highly realistic fake images and sounds that are almost indistinguishable from the real ones. If not closely observed, it is impossible to tell that they are fake. This is the looming threat that is emerging in Thai society and globally today and in the future.

## Source: Avast

## History of Deepfake

This technology is not entirely new. Deepfake technology has been used in the entertainment industry for several years. Researchers abroad developed Generative Adversarial Networks (GANs), and as algorithms emerged, people began to further advance this technology. Now, there is increasing development of software to detect deepfakes because of their various benefits, such as reducing production costs and saving time. However, deepfake technology is now being used more commercially and by the public, making it more prevalent on social media.

## Impact of Deepfake in the Present

In the past, using artificial intelligence (AI) required coding skills. Nowadays, there are ready-made programs that are much easier to use. By simply inputting data, AI can instantly produce results. Moreover, AI-generated voices are becoming increasingly realistic with daily technological advancements.

However, the personal information of customers, such as names, phone numbers, and addresses, is frequently sold on the black market. Even information on parcel labels can be misused. This poses significant concerns regarding data security and privacy, necessitating greater caution and improved protective measures.

## **Trends of Deepfake Most Discussed**

In 2024, deepfake technology has become a focal point for developers in KYC (Know Your Customer) and various sectors such as finance and insurance. Reports from experts highlight the challenges and trends in these industries. Experts predict a rapid increase in the use of biometrics for identity verification to counteract fake information, particularly the use of facial recognition in financial institutions.

Additionally, there is mounting regulatory pressure regarding identity fraud. New regulations, such as those in China and the European Union, are emphasizing the use of AI and biometrics for more stringent verification. It is expected that other countries will follow suit, especially in areas that are currently less regulated, such as cryptocurrency exchanges.

## **Deepfake Scams Leading to Financial Losses**

In recent news, CNN reported one of the largest cases this year that occurred in February. A finance employee in Hong Kong was tricked into transferring over 25 million USD to criminals using deepfake technology to impersonate the company's Chief Financial Officer (CFO) during a video conference, according to Hong Kong police.

In Thailand, "call center gangs" have also used AI deepfake technology to conduct video call scams, tricking victims into transferring money. These scammers, posing as police officers with fake faces, voices, and gestures created by deepfake technology, have successfully swindled over 600,000 baht from victims in the country.

Deepfake technology not only causes financial damage through fraud but is also used to distort information, create misunderstandings, and defame important individuals, celebrities, politicians, and even ordinary people.

## **Examples of Deepfake Misinformation:**

- Editing celebrities' faces into pornographic videos.
- Fabricating videos to make important individuals say things they never said.
- Creating fake news to defame individuals or politicians.
- Distorting information about significant events.

Despite existing laws and multiple platforms banning the use of deepfake technology, the issue of misinformation persists.

## **How to Detect and Prevent Fake Clips Created by AI Deepfake**

To avoid becoming a victim of deepfake technology, let's explore some methods to determine whether what we see and hear is real or fake.

1. Observe Speech Movements: Pay attention to the lip movements. In AI deepfake clips, the lip movements often do not align with the speech or other facial movements, and there may be blurring in the image.
2. Examine Clip Content: The content in deepfake clips often deviates from what the person typically says or may seem exaggerated, such as presenting unrealistic profits and heavily promoting investments or memberships. If you notice these characteristics, be cautious as it could be a scam.
3. Light and Shadows on the Face: Light and shadows on the face may not follow the principles of reality, such as light coming from the right but the right side of the face being darker than the left.
4. Check Image Elements: Sometimes, AI deepfake creation is not perfect. The facial symmetry may be unusually elongated, head turns may look unnatural, and the rendering of skin and hair might appear blurred. Additionally, blemishes on the body might shift positions during movement.
5. Stay Calm Before Believing: If an offer seems too good to be true, stay calm and do not immediately believe it. Scammers come in many forms today, so do not transfer money to others easily and always verify thoroughly.
6. Video Clarity: Notice selective blurriness, such as between the face and neck or between the neck and torso, which can indicate inconsistencies in the video. Unrealistic eye movements, like abnormal blinking or no blinking at all, are also red flags.
7. Unusual Sound: Deepfake creators often do not focus on sound as much as they do on making the video appear seamless. Thus, the sound may not match the speech, might sound robotic, mispronounce certain words, or show discrepancies between lip movements and speech.

Deepfake technology can be both a villain causing harm and a hero fostering creativity when used appropriately. Therefore, media consumers must be knowledgeable about technology, think critically, ask questions, and analyze information thoroughly before making judgments based on what they see. This helps protect oneself from falling victim to the misuse of technology and fraud, contributing to a safe and trustworthy digital society.

**Source:**

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# Artificial Intelligence in Healthcare All You Need to Know

28 Aug 2024

Artificial Intelligence, commonly known as AI, is now playing a significant role in human work across various sectors. In industrial businesses, AI robots are used to perform hazardous tasks instead of humans. In the financial sector, AI chatbots provide quick and efficient customer service. AI also has a crucial role in the healthcare industry, assisting doctors and nurses in patient care, from queue management to surgery and postoperative care.

In Thailand, the application of this technology is particularly interesting, with universities, government agencies, and private sectors collaborating on research, development, and implementation.

When integrating technology into healthcare, it is essential to consider data security and patient privacy, as well as the potential risks associated with its use. Given the importance of patient safety, stringent control and prevention measures are necessary to avoid errors.

## **Source: Acropoliun**

The healthcare sector generates vast amounts of data that require automated analysis to improve hospital workflow efficiency and reduce costs. Consequently, artificial intelligence (AI) plays a crucial role in healthcare. It is projected that the global AI in the healthcare market will reach USD 148.4 billion by 2029. In 2024, this market is expected to be valued at USD 20.9 billion, with a compound annual growth rate (CAGR) of 48.1% over the next four years.

As healthcare organizations utilize AI and machine learning (ML) algorithms to manage enormous datasets, the benefits of AI in healthcare extend far beyond data processing alone. Some of these additional benefits include:

## **Let's look at the benefits of AI in the healthcare industry**

### **1. Increased Diagnostic Accuracy**

AI can analyze large datasets of medical records, images, and diagnostic tests to help medical clinics make more accurate and timely diagnoses. This can lead to the early detection of diseases and improved treatment outcomes.

### **2. Personalized Care**

By analyzing patient data, including medical history, genetics, and lifestyle factors, AI can create individualized treatment plans. These AI solutions in healthcare often use cloud-based systems, collecting data on medical platforms or web applications. Personalized care can lead to higher patient satisfaction, contributing to better diagnoses and outcomes.

### **3. Efficient Administrative Tasks**

AI streamlines administrative tasks by automating appointment scheduling, managing medical records, and processing billing. This efficiency gives healthcare professionals more time, reduces administrative burdens, and minimizes errors, allowing for greater focus on patient care.

### **4. Predictive Data Analysis**

By optimizing processes, reducing medical errors, and facilitating preventive care, AI can help lower healthcare costs for both providers and patients. Through the digital transformation of healthcare routines and the shift to remote care models with telehealth applications, institutions can serve more patients daily with fewer resources.

Predictive analysis can also identify high-risk patients and intervene early to prevent costly medical complications.

## **AI Use Cases in the Healthcare Industry**

### **Medical Diagnosis and Treatment**

Currently, AI aids in diagnosing diseases and recommending treatment plans efficiently. For example, IBM's AI Watson for Oncology analyzes patient data to recommend personalized cancer treatments.

AI Watson for Oncology (WFO) has gained knowledge from testing at the Memorial Sloan Kettering Cancer Center (MSKCC) and data from experts. This helps doctors obtain insights to diagnose and propose effective cancer treatment options for patients.

### **Patient Data Processing**

One use of AI in healthcare is the efficient processing of vast amounts of patient data. For example, Google's DeepMind Health uses AI algorithms to analyze patient records to help doctors identify high-risk patients.

Recently, the UK's National Health Service (NHS) developed an AI tool called Mia to detect early-stage breast cancer from mammogram images. This AI tool aids doctors in detecting

cancer 12% more effectively than conventional methods, reducing the workload of medical personnel by 30%. This could lead to better outcomes for female patients in detecting breast cancer cells, which are often hard to identify. About 20% of women with breast cancer have tumors that go undetected by mammograms, which is why many countries require radiologists to read mammograms for each case.

### **Medical Imaging Analysis**

Medical imaging is one of AI's applications in healthcare. AI analyzes medical images, assisting in the diagnosis and treatment of diseases. For example, it identifies brain tumors from MRI scans, helping doctors plan surgeries accurately.

AI can also detect Alzheimer's disease and dementia in brain scans by evaluating structural changes. Additionally, AI analyzes retinal images to detect early-stage diabetic retinopathy, a leading cause of blindness in diabetic patients. GE Healthcare's AI-powered Edison platform automatically analyzes MRI and CT scans, enabling radiologists to detect abnormalities more quickly.

### **Remote Patient Assistance**

AI is leveraged to monitor and assist patients remotely, emphasizing convenience and timely access to services while enhancing patient benefits and reducing healthcare costs.

Patients can access real-time medical support and share health data, receiving remote treatment advice from experts. AI in healthcare analyzes data to identify trends and potential issues beforehand. This approach reduces hospital readmission rates and promotes efficient healthcare delivery.

Philips' HealthSuite digital platform uses AI to monitor patients' vital signs remotely, facilitating immediate check-ups and treatment while reducing the risk of hospital readmissions.

### **Virtual Assistants and Chatbots**

AI-powered virtual assistants and healthcare chatbots are crucial for remote patient care. These tools offer personalized health advice, recommend pharmacies, and provide timely medication information. With rapid and accurate responses, patients don't need to wait for expert advice.

Patients can use chatbots to schedule appointments and clarify upcoming check-ups. AI-driven virtual assistants offer medical advice and support, improving patients' access to healthcare services.

### **Drug Discovery & Vaccine Research**

AI in healthcare accelerates drug discovery and vaccine development by efficiently identifying potential drugs or vaccine targets. AI predicts the efficacy and safety of compounds, leading to faster development and testing processes.

Atomwise uses AI for virtual molecular screening in drug discovery, speeding up the identification of potential treatments. This deep learning technique simulates interactions among millions of molecules, reducing the time needed to progress to the next stage. Atomwise collaborates with academic partners and pharmaceutical companies, having developed drugs for multiple sclerosis and Ebola, and has begun animal testing.

The mentioned examples are just a glimpse of how AI technology is applied in the medical and pharmaceutical sectors to enhance treatment efficiency. While AI plays a significant role in patient care, the importance of trust, confidence, and respect between patients and healthcare professionals cannot be overlooked. Today, medical personnel must adapt and work alongside AI technology, using it as support to improve treatment outcomes.

**Source:**

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# Top Mistakes in Data Strategy Development

21 Aug 2024

Developing a robust data strategy is crucial for business success, but many organizations fall prey to common mistakes in developing data strategy.

Without a clear vision, proper data integration, strong privacy and security measures, and effective stakeholder engagement, your data strategy can falter.

This article explores the top pitfalls and provides actionable insights to help you craft a robust and impactful data strategy that aligns with your business goals.

Let's discover how to steer clear of these common errors and ensure your data initiatives drive meaningful results.

## Mistake 1: Lack of Clear Vision

### Importance of a Clear Vision in Data Strategy

Having a clear vision in your data strategy is like having a roadmap for a road trip. Without it, you might find yourself lost, driving in circles, and wasting precious time. When you know where you're headed, every step of the journey makes sense. A clear vision ensures that your data initiatives align with your business goals, helping you stay focused and avoid costly detours.

When you clearly define your vision, everyone on your team understands the destination and the steps to get there. This unity prevents miscommunication and conflicting efforts, which are common mistakes in developing a data strategy. You'll find that a well-articulated vision boosts motivation and engagement, as everyone knows their role in the bigger picture.

Moreover, a clear vision helps in resource allocation. When you know what you're aiming for, it's easier to allocate resources efficiently, ensuring that your investments in technology, time, and personnel are purposeful and productive. This strategic clarity is crucial in avoiding wasted efforts and achieving measurable outcomes.

### How to Define a Clear Vision

Defining a clear vision might sound daunting, but it's simpler than you think. Start by

Asking yourself, "**What do I want to achieve with my data strategy?**" This question helps you pinpoint your primary objectives, whether it's improving customer experience, increasing operational efficiency, or driving innovation.

Involving key stakeholders in the vision-setting process. Their insights and buy-in are essential, as they bring different perspectives and expertise to the table. Collaborate to define specific, measurable, achievable, relevant, and time-bound (SMART) goals that align with your business objectives. This collaboration ensures that the vision is realistic and supported across the organization.

Once you've defined your goals, document them clearly and communicate them effectively to your entire team. Use visuals, charts, and simple language to make the vision easily understandable. Regularly revisit and refine your vision to adapt to changing business needs and market conditions, ensuring it remains relevant and actionable.

#### Common Consequences of a Lack of Vision

Without a clear vision, your data strategy is likely to flounder. One of the most glaring mistakes in developing a data strategy is starting without a well-defined direction. This lack of vision can lead to fragmented efforts, where different departments pursue conflicting goals, wasting time and resources.

You might also encounter analysis paralysis. With no clear end goal, the sheer volume of available data can be overwhelming. Teams might spend excessive time analyzing data without ever deriving actionable insights, leading to delays and frustration.

A lack of vision often results in poor resource allocation. Without knowing what you're aiming for, it's challenging to allocate budgets, time, and personnel effectively. This misallocation can cause significant financial waste and missed opportunities for impactful data initiatives.

Additionally, you might struggle with stakeholder buy-in. When the vision isn't clear, it's hard to rally support from executives, managers, and employees. This lack of support can hinder the implementation of your data strategy, as people are less likely to invest their time and effort in initiatives they don't understand or believe in.

Finally, without a clear vision, measuring success becomes difficult. You won't have benchmarks or KPIs to track progress, making it challenging to demonstrate the value of your data strategy. This ambiguity can lead to decreased confidence in data initiatives and reduced willingness to invest in future projects.

## Mistake 2: Neglecting Data Integration

Neglecting data integration is one of the most common mistakes in developing a data strategy. Data integration is the process of combining data from various sources into a cohesive, unified view. It's crucial because it provides a complete picture of your operations, enabling better decision-making and insights.

When your data is integrated, you can analyze it more effectively. You'll find patterns and trends that you'd miss if the data were scattered across different systems. For instance, integrating customer data from sales, marketing, and support can give you a comprehensive understanding of customer behavior and preferences. This holistic view allows you to tailor your strategies to meet customer needs more effectively.

Additionally, data integration enhances data quality. Combining data from multiple sources helps identify inconsistencies and errors, improving accuracy and reliability. High-quality data is essential for making informed business decisions. Without integration, you might rely on incomplete or incorrect data, leading to poor outcomes and strategic missteps.

## Tools and Techniques for Data Integration

Now that you know why data integration is crucial, let's talk about how to achieve it. There are several tools and techniques designed to make the process smoother and more efficient. For Example,

- ETL (Extract, Transform, Load), one popular tool that extracts data from various sources, transforms it into a consistent format, and loads it into a centralized data warehouse. This process ensures that all your data is compatible and ready for analysis.
- APIs (Application Programming Interfaces), another technique that enables different software systems to communicate and exchange data seamlessly. By leveraging APIs, you can integrate data from disparate systems without the need for manual intervention. This automation saves time and reduces the risk of errors.

## Learn More About API Management

- Cloud-based data integration platforms like Microsoft Azure Data Factory, Amazon Redshift, and Google BigQuery have also gained popularity. These platforms offer scalable solutions for integrating large volumes of data from multiple sources. They provide powerful tools for data transformation, cleansing, and enrichment, making it easier to achieve a unified view of your data.

- Master Data Management (MDM) is another crucial technique. MDM involves creating a single, consistent definition of critical business data across the organization. By maintaining a master data repository, you ensure that everyone uses the same data definitions and standards, promoting consistency and accuracy.

### Examples of Successful Data Integration

Let's look at some real-world examples to illustrate the power of successful data integration.

#### Example 1

A retail giant that integrated its sales, inventory, and customer data. By consolidating this information, the company gained a 360-degree view of its operations.

This integration allowed them to optimize inventory levels, improve demand forecasting, and enhance customer experiences.

The result was increased sales, reduced stockouts, and higher customer satisfaction.

#### Example 2

A healthcare organization that integrated patient records from different departments. By creating a unified patient view, healthcare providers could access comprehensive patient histories, improving diagnosis and treatment plans.

This integration reduced medical errors, streamlined workflows, and enhanced patient care. The organization also leveraged the integrated data for advanced analytics, identifying trends and patterns to improve public health outcomes.

### Mistake 3: Overlooking Privacy and Security

When developing a data strategy, it's easy to get caught up in the excitement of new technologies and analytics possibilities. However, overlooking privacy and security is one of the most critical mistakes in developing a data strategy.

Think of privacy and security as the foundation of your data strategy house.

Without a strong foundation, the entire structure is at risk of collapsing.

Data Privacy ensures that personal and sensitive information is protected from unauthorized access. When you prioritize privacy, you build trust with your customers, who know their data is safe with you.

*Trust is a valuable asset in today's digital world, where data breaches are alarmingly common.*

Data security, on the other hand, involves safeguarding data against malicious attacks, theft, and damage. Effective security measures protect your organization's data assets, ensuring that they remain intact and confidential.

Strong security practices not only prevent financial losses but also protect your company's reputation. After all, no one wants to be known as the company that couldn't keep its data safe.

### Common Privacy and Security Mistakes

One of the most frequent privacy mistakes is **collecting more data than necessary**.

You might think that gathering as much data as possible is a good strategy. However, the more data you collect, the greater the risk. Only collect data that is essential for your business needs. This practice reduces the potential impact of a data breach and simplifies your data management processes.

Another common security mistake is **neglecting to encrypt sensitive data**.

Encryption converts data into a code that can only be read by someone with the correct decryption key. By encrypting sensitive information, you add an extra layer of protection against unauthorized access. Even if attackers get their hands on encrypted data, they won't be able to read it without the decryption key.

**Failing to update software and systems regularly** is another security faux pas.

Cybercriminals are constantly looking for vulnerabilities in software and systems. Regular updates and patches fix these vulnerabilities, making it harder for attackers to exploit them. Make sure you have a routine for updating all your systems to keep your data secure.

### Best Practices for Ensuring Privacy and Security

To avoid the pitfalls of overlooking privacy and security, start by

implementing strong data governance policies. Data governance involves setting rules and standards for data management, ensuring that data is used ethically and securely. By establishing clear policies, you create a framework that guides your organization's data practices, helping you stay compliant with privacy regulations.

Investing in robust cybersecurity measures is another crucial step. Use firewalls, antivirus software, and intrusion detection systems to protect your data from cyber threats.

Regularly conduct security audits to identify and address potential vulnerabilities. Training your employees on cybersecurity best practices is also essential.

Adopting a privacy-by-design approach ensures that privacy considerations are integrated into every stage of your data strategy. This means thinking about privacy from the initial design phase of any project, not as an afterthought. Incorporate privacy features into your products and services, such as user consent mechanisms and data anonymization techniques. By doing so, you demonstrate a commitment to protecting your users' privacy.

#### Mistake 4: Insufficient Stakeholder Engagement

When developing a data strategy, it's crucial to recognize the vital role stakeholders play. Stakeholders are like the orchestra members in a symphony; each one brings unique expertise and perspective, contributing to the harmonious execution of the strategy. They include everyone from top executives and IT professionals to department heads and end-users.

Engaging stakeholders ensures that the data strategy aligns with the organization's overall goals and addresses the needs of various departments. When stakeholders are involved, you can better understand the specific data needs and challenges of each area. This comprehensive understanding helps create a data strategy that supports the entire organization, rather than just a few isolated parts.

Moreover, stakeholders are instrumental in securing the resources necessary for a successful data strategy. Their buy-in can facilitate the approval of budgets, tools, and personnel required to implement and maintain the strategy. Without their support, you might struggle to get the necessary backing, which can lead to one of the significant mistakes in developing a data strategy: insufficient resources.

#### How to Engage Stakeholders Effectively

So, how do you engage stakeholders effectively? It starts with:

1. Clear communication. You need to articulate the vision and goals of your data strategy in a way that resonates with each stakeholder group. Tailor your message to highlight how the strategy benefits them and the organization as a whole.

2. Involve stakeholders early and often. Invite them to participate in the initial planning stages, where their input can shape the direction of the strategy. Regular updates and meetings keep them informed and engaged. This ongoing involvement ensures that they feel valued and part of the process, which can significantly boost their commitment.
3. Transparency is another key factor. Be open about the challenges and risks involved in the data strategy, as well as the expected outcomes. This honesty builds trust and fosters a collaborative environment where stakeholders feel comfortable sharing their concerns and suggestions.
4. Provide training and resources to help stakeholders understand the importance of the data strategy and their role in it. When stakeholders are knowledgeable about data management and analytics, they can contribute more effectively and support the strategy's implementation.

## Conclusion

In summary, avoiding key mistakes in developing a data strategy is crucial for its success. A lack of clear vision can lead to wasted efforts and misalignment with business goals, while neglecting data integration hampers effective decision-making and data quality.

Overlooking privacy and security risks breaches and loss of trust, and insufficient stakeholder engagement can result in fragmented efforts and resource constraints.

By defining a clear vision, integrating data effectively, prioritizing privacy and security, and engaging stakeholders, you can create a robust and impactful data strategy.

# How Automation is Shaping Digital Transformation

17 Jul 2024

In today's fast-paced digital landscape, automation plays a pivotal role in driving and shaping digital transformation.

From streamlining processes to revolutionizing business models, automation is the driving force behind the evolution of businesses across various industries.

Let's learn how automation is reshaping digital transformation and explore its various facets.

## **Understanding the 4 Types of Digital Transformation**

Digital transformation isn't a one-size-fits-all concept; it encompasses various types, each serving a distinct purpose in modernizing businesses. Here's a breakdown of the four main types:

### **1. Process Transformation**

This type involves optimizing and automating internal processes to enhance efficiency and productivity. It focuses on eliminating manual tasks and streamlining workflows using digital tools and technologies.

### **2. Business Model Transformation**

Business model transformation entails redefining how a company delivers value to its customers. It often involves leveraging digital platforms and technologies to create new revenue streams, enter new markets, or offer innovative products and services.

### **3. Domain Transformation**

Domain transformation involves expanding into new markets or industries by leveraging digital technologies. It allows businesses to diversify their offerings and tap into new revenue opportunities beyond their traditional scope.

### **4. Cultural/Organizational Transformation**

Cultural or organizational transformation revolves around fostering a digital-first mindset and creating a culture of innovation within the organization. It focuses on empowering employees to embrace change, adapt to new technologies, and drive digital initiatives forward.

## **Essential Automated Tools for Each Transformation Type**

Automation relies heavily on the use of advanced tools and technologies to drive digital transformation forward. Here are some essential automated tools tailored for each type of digital transformation:

### **Process Transformation**

- **Robotic Process Automation (RPA):** Automates repetitive tasks such as data entry, invoicing, and report generation, freeing up valuable time for employees to focus on more strategic activities.
- **Workflow Automation Software:** Streamlines and automates workflows across various applications and systems, reducing human errors and improving operational efficiency.
- **Customer Relationship Management (CRM) Systems:** Automates customer interactions, sales processes, and marketing campaigns, enhancing customer engagement and driving revenue growth.

### **Business Model Transformation**

- **E-commerce Platforms:** Enables businesses to establish an online presence and sell products or services to a global audience, facilitating business expansion and revenue diversification.
- **Subscription Management Software:** Automates subscription billing, management, and recurring payments, allowing businesses to monetize digital products and services effectively.
- **Cloud Computing Services:** Provides scalable computing resources and infrastructure on-demand, enabling businesses to innovate rapidly and deploy new digital solutions with ease.

### **Domain Transformation**

- **Artificial Intelligence (AI) and Machine Learning (ML) Platforms:** Empowers businesses to develop intelligent applications, analyze data, and make data-driven decisions, driving innovation and competitive advantage in new markets.
- **Internet of Things (IoT) Platforms:** Facilitates the integration and management of connected devices and sensors, enabling businesses to collect and analyze real-time data for insights and optimization.

- **Big Data Analytics Tools:** Enables businesses to process and analyze large volumes of data quickly and efficiently, uncovering valuable insights and opportunities in new domains. [Learn More About Big Data & Advance Analytic](#)

## Cultural/Organizational Transformation

- **Collaboration Tools:** Facilitates communication, collaboration, and knowledge sharing among employees, fostering a culture of teamwork and innovation within the organization.
- **Learning Management Systems (LMS):** Provides employees with access to online training and development programs, promoting continuous learning and upskilling in digital technologies.
- **Employee Engagement Platforms:** Collects feedback, measures employee satisfaction, and identifies areas for improvement in organizational culture, driving employee engagement and retention. [Learn More About Employee Engagement Platforms](#)

## Benefits of Automation in Digital Transformation

Automation brings a myriad of benefits to businesses undergoing digital transformation. Here are some key advantages:

- **Increased Efficiency and Productivity**

Automation streamlines processes, eliminates manual tasks, and reduces errors, allowing employees to focus on higher-value activities that drive business growth.

- **Enhanced Customer Experience**

Automation enables personalized customer interactions, faster response times, and seamless omnichannel experiences, leading to higher customer satisfaction and loyalty.

- **Cost Savings**

By automating repetitive tasks and optimizing workflows, businesses can reduce operational costs, improve resource utilization, and achieve greater ROI on their digital transformation investments.

- **Innovation and Agility**

Automation fosters a culture of innovation and agility by enabling rapid experimentation, iteration, and adaptation to changing market dynamics and customer needs.

- **Data-Driven Decision-Making**

Automation generates valuable insights from data analytics, enabling businesses to make informed decisions, identify opportunities, and mitigate risks more effectively.

## **Challenges and Solutions in Implementing Automation**

While the benefits of automation are undeniable, businesses may encounter various challenges during the implementation process. Here are some common challenges and solutions

- **Resistance to Change**

Employees may resist adopting new technologies and processes due to fear of job loss or unfamiliarity.

**Solution:** Provide comprehensive training, clear communication, and ongoing support to help employees embrace change and adapt to automation.

- **Integration Complexity**

Integrating automation tools with existing systems and processes can be complex and time-consuming.

**Solution:** Invest in scalable, interoperable solutions and work closely with IT professionals to ensure smooth integration and minimal disruption.

- **Security Concerns**

Automation introduces new security risks, such as data breaches and cyber threats.

**Solution:** Implement robust cybersecurity measures, such as encryption, access controls, and regular security audits, to protect sensitive data and systems from unauthorized access and malicious attacks.

- **Skills Gap**

The rapid pace of technological advancement may outpace employees' skills and capabilities

**Solution:** Offer training and upskilling programs to help employees acquire the digital skills needed to effectively leverage automation tools and technologies.

- **Measuring ROI**

Quantifying the return on investment (ROI) of automation initiatives can be challenging, especially in terms of intangible benefits such as improved efficiency and customer satisfaction.

**Solution:** Define clear KPIs, establish benchmarks, and regularly monitor and evaluate the impact of automation on key business metrics to demonstrate ROI and justify continued investment.

By addressing these challenges proactively and implementing effective solutions, businesses can overcome barriers to automation adoption and maximize the benefits of digital transformation.

### **Conclusion**

In conclusion, automation is a driving force behind digital transformation, enabling businesses to streamline processes, innovate business models, enhance customer experiences, and achieve sustainable growth.

By understanding the various types of digital transformation, leveraging essential automated tools, realizing the benefits of automation, and addressing implementation challenges, businesses can navigate their digital transformation journey with confidence and success.

# 4 Decades of Innovation: 11 Technologies that Changed the World

9 Jul 2024

On January 24, 1984, Apple introduced the first Macintosh and revolutionized the personal computer ever, leading to a myriad of technological innovations that rapidly spread worldwide.

In this article, the World Economic Forum will take you back through 11 technologies that have transformed our lives over the past 40 years.

## **1993: World Wide Web**

Though the debate about the inception of the internet persists, the introduction of the World Wide Web by British scientist Tim Berners-Lee in 1993 facilitated widespread access to information, fostering online communication, e-commerce, and laying the groundwork for the digital economy.

## **1997: Wi Fi**

The advent of Wi-Fi in 1997 revolutionized internet accessibility, liberating users from wired connections. Wi-Fi has since become a critical technology in the era of smartphones and current internet connectivity.

## **1998: Google**

The launch of the search engine 'Google' in 1998 marked a significant shift in efficient web search, altering the way people seek information online. Now, there are many search engines that you can choose from Bing, Yahoo!, and Baidu, but Google remains the most widely used search tool globally.

## **2004: Social Media**

Over the past two decades, social media growth has played a vital role in communication, connecting people, and sharing information. In 2004, MySpace emerged as the first social media platform with over a million monthly users, followed by platforms like Facebook, Instagram, and TikTok, dominating today's social landscape.

## **2007: iPhone**

The iPhone redefined the smartphone landscape by combining a phone, music player, camera, and internet into a single device, popularizing smartphones worldwide.

## **2009: Bitcoin**

The inception of Bitcoin in 2009 heralded a new era of secure digital transactions. As the first-ever digital currency, Bitcoin introduced a secure, transparent, and decentralized form of digital payment through blockchain technology for peer-to-peer transactions. Bitcoin's impact extends far beyond its influence on the development of other cryptocurrencies; it has also ignited debates about the future of money in the digital age.

### **2014: Virtual Reality**

2014 witnessed the commercial development of Virtual Reality (VR), enabling users to experience immersive virtual environments. Companies like Facebook's acquisition of Oculus VR and Samsung's and Sony's ventures into VR product development further propelled its adoption.

### **2015: Autonomous Vehicles**

The introduction of Tesla's Autopilot system in 2015 integrated autonomous driving features into automobiles, accelerating the widespread adoption of self-driving technology in the automotive industry. It is predicted that by 2025, nearly two-thirds of personal cars worldwide will have driving assistance systems.

### **2019: Quantum Computing**

A pivotal moment in the history of quantum computing came in October 2019, when Google reported success in developing a quantum computer with Quantum Supremacy capabilities that could solve complex problems faster than the most powerful supercomputer in the world. This quantum technology can be used in various applications and can revolutionize various industries.

### **2020: COVID-19 Pandemic**

The COVID-19 Pandemic accelerated Digital Transformation unprecedentedly. It has impacted almost every aspect of our lives from communication to how and where we work. Also, emerging Technologies such as remote working, video conferencing, telemedicine, and e-commerce in our daily lives.

Source: <https://www.weforum.org/agenda/2024/03/11-technology-milestones-ai-quantum-computing-vr/>

# Enhancing Code Quality with SonarQube

3 Jul 2024

It is undeniable that today, every business requires high-quality products as quickly as possible to stay competitive. Releasing a flawed product can lead to numerous problems. However, you can prevent these issues early on by prioritizing thorough testing to ensure a product meets all usage requirements, saving both time and cost on future fixes.

Therefore, quality assurance of source code is a crucial part of the development process. It helps software developers to effectively improve and control the quality of the product, reducing the risks of potential system errors.

SonarQube is an open-source tool used for code quality analysis, developed by Sonar Source. It aims to help software developers inspect and improve the quality of source code, detecting code smells (code that is not necessarily incorrect but can be improved), bugs and vulnerabilities (issues or potential problems), and duplicate code (code that is repeated across multiple files).

## **What are the special features of SonarQube?**

SonarQube has a variety of features that efficiently analyze and review code quality, including:

**1. Programming Language Analysis** SonarQube can analyze code in over 30 programming languages, such as Java, JavaScript, C#, Python, and PHP, ensuring code correctness and adherence to standards.

**2. Risk Assessment** SonarQube can analyze and assess risks in various aspects, such as code security, code duplication, and compliance with coding standards.

**3. Integration with Continuous Integration (CI) and Continuous Delivery (CD)** SonarQube integrates directly with CI/CD processes, such as Jenkins, GitLab CI, and Azure DevOps, to analyze code at different stages of development, allowing the development team to check code quality immediately upon any system changes.

**4. Performance Reporting** SonarQube offers clear and well-designed reporting systems, enabling development teams and stakeholders to easily understand the overall quality status of the product, including potential future trends.

Additionally, SonarQube has commercial extensions for extra features and technical support. It also features a user-friendly web interface, allowing developers to review and resolve issues in the source code quickly.

### **Benefits of Using SonarQube**

#### **For General Users**

Using SonarQube enhances the efficiency of source code quality checks. It helps identify potential issues in the source code before they affect users, increasing confidence in using high-quality programs.

#### **For Executives**

SonarQube ensures that products are developed according to established standards, maintain good performance, and minimize the risk of future errors. It also streamlines and improves the efficiency of the development process, providing detailed and transparent quality reports of the source code, thus enabling informed decision-making.

#### **For Development Teams**

SonarQube reduces the burden of manual code reviews, helping developers learn and improve their coding skills. It facilitates effective team conventions for collaborative work, reducing the time spent on identifying and fixing errors before moving the product to the next testing phase, thereby increasing the speed and quality of the development process.

### **Why does Bluebik Vulcan use SonarQube?**

**Bluebik Vulcan** use SonarQube to enhance the quality of the code they develop. SonarQube provides automatic code inspection, allowing for easy and quick verification of code correctness, application of best practices, and improvement of poor code in the early stages of development. This ensures that Bluebik Vulcan can confidently deliver high-quality work to clients.

In summary, SonarQube is a highly beneficial tool for developers to maintain and improve the quality of source code, ensuring high-quality software development and reducing the chances of future issues. It can track the quality trends of the code, indicating whether it is improving or deteriorating, and can be utilized from the very first day of a project.



# Artificial Intelligence in Financial Services

26 Jun 2024

In an era of advanced technology, Artificial Intelligence (AI) has garnered significant interest from everyone. Many are aware that AI plays a crucial role today and is transforming various aspects of our lives, including organizational workflows, customer service, and daily routines.

AI not only plays a crucial role in transforming and developing financial businesses but also helps deliver a superior customer experience with its ability to quickly and accurately meet personalized financial needs, the financial sector places significant emphasis on leveraging AI technology to drive financial business. This encompasses product development, service integration, internal process enhancement, and upskilling employees in technology. By utilizing AI and Machine Learning, the foundation for a customer-centric service is established to improve the efficiency of communication and service through hyper-personalization. This enables customers to conveniently access services through the bank's digital platforms at any time. It also enhances their overall customer experience by allowing them to interact with the brand independently.

## **Use Case AI in Financial Services**

### **24/7 AI-Powered Chatbots**

AI and Machine Learning-powered chatbots provide users with detailed information about suspicious transactions and increased membership fees, helping them efficiently track and control their spending and make informed financial decisions. Additionally, these chatbots can answer questions about accounts and transactions, customize alerts and recommendations to suit individual customers, and reduce customer service costs by up to 30%.

### **Financial Risk Prediction**

Using Natural Language Processing (NLP) technology combined with elements like Deep Learning and Machine Learning (ML), financial risk prediction involves analyzing and monitoring unusual transactions to identify suspicious behavior and block malicious transactions. This helps reduce financial risks and ensures secure online transactions for customers.

### **Fraud Prevention**

AI's deep data analysis and anomaly detection capabilities are effectively applied in fraud detection. AI and ML models identify patterns of abnormal behavior that indicate fraud and insecure applications, enabling banks to make intelligent decisions to protect against fraud.

### **Loan Approval and Credit Evaluation**

AI is used to assess the creditworthiness and risk of loan applicants based on their financial data and spending behavior. This allows for accurate loan approval decisions tailored to customer needs, increases loan sales, and provides customers with fast approval results.

### **Will AI Disrupt Financial Services?**

Financial services cannot be fully disrupted by AI, but AI is a technology that enhances human efficiency and accuracy in finance. These tools assist in financial data analysis, trend forecasting, and business decision-making. The collaboration between AI and humans is crucial and serves as a mechanism for sustainable growth and development in the financial sector.

However, from the past to the present, the application of AI in finance has continuously evolved. In the future, there will be even more products that cater to personal finance and facilitate business operations.

If you are looking for an AI/ML solution to enhance data management and analysis, Bluebik Vulcan has a team of data analysis experts who can transform data into critical tools for decision-making and developing strategic business plans for growth. >> [Explore](#)

# Empower Your Business with Microsoft Power Platform

5 Mar 2024

When your business grows to the point where the old system can't keep up, it's time for you to seek out new tools.

## What is Microsoft Power Platform?

Microsoft Power Platform is an intelligent set of tools that enables organizations to build solutions for business applications, helping organizations analyze data, develop applications, manage workflows, and create chatbots using low-code alongside AI and more than 400 data connectors, facilitating rapid development for developers.

Microsoft Power Platform operates in a Low-code/No-code format. So, let's get acquainted with what Low-code/No-code Platforms are.

Low-code/No-code Platforms are platforms used to develop applications, whether in the form of websites or mobile apps, without the need for extensive coding or with minimal coding.

### Low-code Development Platform

These platforms require some coding skills, typically in conjunction with User Interface (UI) design. Users can customize and enhance the code themselves. Suitable for those with some programming background.

### No-code Development Platform

These platforms don't require coding skills. Users can customize ready-made layouts or semi-custom layouts to create User Interfaces (UI) without writing any code. Suitable for non-programmers looking to develop simple and fast applications.

### Microsoft Power Platform includes:

- Power App
- Power Automate
  - Power Automate Desktop
- Power BI
- Power Virtual Agent

- Power Pages

## 5 Components of Microsoft Power Platform

### 1. Power Apps: Unleashes the potential of creating applications without coding, meeting every organizational need

One of the Microsoft Power Platform tools, Power Apps facilitates easier work within organizations by allowing customized app creation to match business requirements. It enables the design of user interfaces within applications without the need for IT expertise.

**The advantages of integrating Power Apps into businesses include:**

- Easy app creation without coding, enabling general users to develop applications effortlessly using pre-built templates or by dragging and dropping various components onto the screen with a user-friendly interface.
- Customization of apps to suit business needs, empowering organizations to design and tailor applications according to their requirements, from screen layouts to functionalities and display formats.
- Enhanced capabilities with developers, as Power Apps supports advanced features for applications requiring complex functionalities, allowing professional app developers to customize users' apps for increased potential and efficiency.
- Diverse templates available, providing a wide range of pre-built app templates covering general use cases such as leave management, stock management, and document approvals, enabling users to quickly start building apps without starting from scratch.
- Time and cost savings, as Power Apps reduces complicated processes and development costs, resulting in real, cost-effective applications that meet every business need.

**Examples of Power Apps usage include:**

- Leave management systems.
- Product stock management systems
- Document approval systems.
- Task tracking systems
- CRM systems

- Sales management systems
- Customer service systems

Therefore, Power Apps is an easy-to-use application-building tool that meets every organizational need, improving efficiency and saving time and costs.

## **2. Power Automate: Ignite the power of automation to enhance work efficiency, eliminate repetitive tasks, and allocate more time to critical work**

Power Automate is a tool for building automated systems that enables users to design or develop workflows. It works seamlessly with Power Apps and helps users create automated workflows within web applications such as Microsoft 365, Salesforce, and Dropbox.

### **Examples of workflows in Power Automate include:**

- Sending email notifications when new tasks are added to the CRM system.
- Extracting data from websites and importing it into Excel.
- Posting messages on social media platforms.
- Updating product information in the ERP system.

### **Example of using Power Automate:**

- Users can create workflows on Power Automate using pre-built templates or create new ones from scratch.
- Power Automate has pre-built connectors to connect with various applications such as Microsoft Office 365, SharePoint, OneDrive, Salesforce, and Google Drive, enabling users to create automated workflows smoothly and efficiently.
- Users can design workflows and processes using a drag-and-drop interface.
- Power Automate supports real-time collaboration.
- Users can track the performance of workflows and processes.

### **Advantages of Power Automate:**

- Easy to use, no coding required.
- Abundance of pre-built templates to choose from.

- Integration with various applications.
- Real-time collaboration capabilities.
- Performance tracking.
- Time-saving.
- Increased efficiency.
- Reduction in human errors.

**Disadvantage:**

- Some functions may require technical knowledge to use.

**Power Automate also features Power Automate Desktop. So, what is it?**

Power Automate Desktop is one of the features within Power Automate and falls under the category of Robotic Process Automation (RPA) software. It's a cloud-native RPA tool used for creating and developing bots using Low-Code/No-Code Platform technology. It integrates well with Microsoft 365, as well as APIs and AI Builder.

**The capabilities of Power Automate Desktop include the following:**

**1.Cloud flow is a tool for creating automated workflows on the Microsoft Power Platform that operates in the cloud.**

This includes:

- Connecting cloud-based applications
  - Integrating various cloud applications, such as Salesforce, Dropbox, and Google Drive
- Automating tasks within the organization
  - Approving expense reports
  - Notifying customers
  - Sending automated emails
- Building complex workflows

- Credit approval processes
- Product management

3. Desktop flow is a tool for creating automated workflows that operate on a computer (desktop).

This includes:

- Repeated tasks on desktop applications
  - Data entry into documents
  - File downloads
  - File conversions
- Time-consuming tasks
  - Data analysis
  - Data copying
- Tasks that need to be repeated multiple times
  - Email sending
  - Data updating

**3. Process mining is a technology used to analyze and identify weaknesses in an organization's workflow processes by utilizing event log data from various related systems.**

This includes:

- Analyzing business workflows
  - Studying all steps in the workflow
  - Identifying issues such as redundant steps and time-consuming processes
- Identifying the root cause of issues

- Analyzing the causes of issues
  - Identifying the root causes, such as poorly designed workflows or inappropriate tools.
  - Repetitive steps, time-consuming processes
- Proposing solutions
  - Offering solutions to improve workflow efficiency.
  - Focusing on reducing the number of steps, reducing time, and enhancing the capabilities of the workflow.

### **Examples of tasks using Power Automate Desktop:**

- Secure and rapid data migration between systems
- Software testing for increased efficiency and accuracy
- Image-to-text conversion (additional purchase required)
- Copying and pasting data between two systems to save time and reduce errors
- Application or website automation
- Enhanced workflow efficiency on Excel, Outlook, PDF, and browsers
- Convenient and fast file, folder, and Zip management
- Running scripts, commands, and Power Shell for enhanced capabilities

### **Benefits of integrating Power Automate Desktop into business operations:**

- Elimination of repetitive tasks through automated systems, with Power Automate RPA (Robotic Process Automation) software assisting in creating 'robots' to handle repetitive tasks, reducing complexity and saving time, allowing employees to focus on important tasks, and helping organizations develop efficiently.
- Smooth operations without interruptions; Power Automate helps create interconnected workflows, automating tasks systematically and enhancing work efficiency.
- Accuracy and error reduction; by reducing human intervention, Power Automate minimizes the chances of errors, making data more reliable.

Therefore, Power Automate is an easy-to-use RPA tool that helps increase work efficiency, reduce errors, and seamlessly connect data.

### **3. Power BI: A tool for managing, analyzing, and presenting data, transforming raw data into deep insights to drive accurate business decisions.**

When making critical business decisions, it's essential to have accurate and detailed insights. This is where Power BI, one of Microsoft Power Platform's programs, comes into play.

**Power BI's capabilities revolve around three main aspects:**

#### **Data Management:**

- Collecting data from various internal and external sources within the organization.
- Organizing and cleansing data for analysis.
- Ensuring data security and accessibility.

#### **Data Analysis:**

- Conducting in-depth data analysis using various tools and techniques.
- Uncovering hidden correlations and patterns within the data.
- Supporting decision-making processes.

#### **Data Presentation:**

- Presenting data in easily understandable formats such as graphs, charts, and reports.
- Creating interactive dashboards to track business outcomes.
- Sharing data with others within the organization.

#### **How does the Power BI platform work?**

- Connects to various data sources such as Excel, SQL Server, Salesforce, and others.
- Transforms data into a format suitable for analysis.
- Analyzes data using various tools and techniques.
- Presents data in an easily understandable format.

- Share data with others within the organization.

**Benefits of Power BI:**

- Enables accurate and rapid business decision-making.
- Increases work efficiency and productivity.
- Enhances understanding of business situations.
- Identifies new opportunities and risks.
- Facilitates the sharing of information and knowledge within the organization.

**Power BI can work with:**

- Other Power Platform programs.
- Microsoft 365 programs.
- Azure cloud platform.

**Devices supported by Power BI:**

- Computers
- Tablets
- Mobile phones

**Advantages of integrating Power BI into business operations:**

- Allows checking dashboards on mobile phones.
- Receives notifications for important data updates.
- Facilitates easy data sharing.

Therefore, Power BI is a powerful tool for data management, analysis, and presentation, enabling you to make accurate and swift business decisions.

**4. Power Virtual Agents: The power of creating intelligent assistants, answering questions, and providing excellent customer service.**

The Power Platform software on the SaaS system enables the easy creation of Low Code/No Code chatbots by leveraging workflows from Power Automate and summarizing

reports with Power BI. This ensures highly effective chatbots with a minimal user learning curve, allowing anyone to create them.

### **Key capabilities of Power Virtual Agents:**

- Smart Bot Development without Coding: Power Virtual Agents empowers development teams to create chatbots or virtual assistants that can interact with users naturally, using a low-code graphical interface without the need for coding.
- IT Team Workload Reduction: Power Virtual Agents helps reduce the workload on IT teams by streamlining the maintenance and upkeep of bot solutions, allowing IT teams to focus on other tasks.
- Enhancing Expertise: Power Virtual Agents enhances the capabilities of experts, enabling them to create efficient bots that meet business needs effectively.
- Supporting Organizations 24/7: Bots created with Power Virtual Agents can serve customers or employees around the clock, enabling organizations to respond promptly to customer needs.
- Increasing Engagement and Satisfaction: Bots created with Power Virtual Agents promote engagement and enhance customer satisfaction by providing a positive user experience.

### **Examples of Power Virtual Agents usage include:**

- Answering questions about products or services
- Providing information about promotions
- Processing orders
- Assisting with customer service inquiries
- And many more.

Therefore, Power Virtual Agents is an easy-to-use tool for creating intelligent bots that enhance work efficiency, reduce IT team workload, and provide a great customer experience.

## **6. Power Pages: The power of creating business websites without coding, meeting all needs, and enhancing the online presence of businesses.**

Power Pages is a Software as a Service (SaaS) platform for building and managing modern business websites. Whether you're a low-code builder or a professional developer, Power Pages allows you to design, configure, and deploy websites smoothly on web browsers and various devices quickly.

### **Why choose Power Pages:**

- Easy to use, suitable for beginners and developers alike.
- Design, configure, and deploy websites instantly.
- Seamlessly integrate with business data in Microsoft Dataverse.
- Comprehensive, works with other Power Platform components.

### **Examples of usage:**

- Company websites
- Customer-facing websites
- Marketing websites
- Sales websites
- Customer service websites

### **Benefits of Power Pages:**

- Enhances website creation efficiency without coding.
- Saves costs and reduces expenses in website development.
- Ensures website security.
- Customizable and designed to meet specific requirements.
- Facilitates data integration and connection with business data.

Power Pages is an easy-to-use, secure, and data-connected website-building platform that creates beautiful websites to meet business needs and enhance online presence.

In conclusion, From the above benefits of Microsoft Power Platform, it's evident that it can greatly assist organizational tasks with its easy-to-learn and easy-to-use features. Especially if the organization is already using Microsoft Office 365, getting started efficiently becomes even simpler.

Bluebik Vulcan, we are leaders in Digital Transformation, offering Microsoft Power Platform services with over 10 years of experience. Our team of experts is ready to provide consultation to help unlock your business potential. >> [Explore](#)

**Our team of experts is ready to answer your questions:** contact@vulcan.bluebik.com

**Source:** <https://www.microsoft.com/th-th/>

# 3 Signs of AI Hallucination

9 Feb 2024

Have you ever experienced a scenario where you ask one question, and AI responds with an answer that doesn't quite align with your inquiry? The perplexing nature of AI, referred to as "AI Hallucination," raises questions about whether we misphrase our queries or if AI is engaging in its form of deception. What does this phenomenon entail, what signals indicate that AI is exhibiting signs of hallucination, and how to mitigate it? This article delves into the answers.

## What is AI Hallucination?

AI Hallucination is the term used to describe instances where AI models generate inaccurate or false data or content but confidently present the results as correct. This self-induced deception can lead users to confusion and result in flawed decision-making. A real-life example is the case of a lawyer who used ChatGPT to prepare a filing, but ChatGPT delivered fake cases that the attorney then presented to the court.

Identifying 3 signs that indicate AI is undergoing hallucination include:

### 1. Inconsistency in Responses

AI displays responses that are inconsistent, signaling a failure in comprehension and memory. This can lead to confusion and the dissemination of inaccurate information. For instance:

- Altering Responses: AI provides different answers for the same question at different times.
- Inconsistent Details: AI provides fluctuating details or conflicting explanations within the same conversation.
- Contradictory Facts: AI presents information conflicting with well-established truths.

### 2. Memory Augmentation with Fabricated Data

AI fills knowledge gaps with invented data, a behavior that is challenging to detect. This includes instances where AI crafts narratives that seem plausible but are entirely fictional. For example:

- Improbable Scenarios: AI may generate situations that defy reality, such as creating non-existent legal cases.
- Hypothetical Details: AI provides specific details about individuals, locations, or events that are entirely imaginary, potentially leading to misconceptions.
- Blurring the Line between Truth and Fiction: AI combines facts with fabricated elements, creating a seemingly trustworthy narrative with inherent flaws.

### **3. Irrelevance in Responses**

AI responds with statements that lack relevance or reasoning, indicating a failure to grasp the context or subject of the conversation. Examples include:

- Off-topic Responses: AI provides answers unrelated to the ongoing discussion.
- Random Topic Changes: AI shifts the conversation to unrelated topics without clear justification.
- Irrelevant Details: AI offers detailed information that does not contribute to the current conversation, even if accurate.

#### Safeguarding Against AI Hallucination

To prevent AI from succumbing to hallucination, **IBM recommends 6 following measures**

#### **1. Use High-Quality Training Data**

Ensure that the AI model is trained on diverse data to reduce bias and enhance performance. The quality and relevance of the training dataset significantly influence the model's behavior and output accuracy.

#### **2. Define the Purpose of Your AI Model**

Clearly define the responsibilities and limitations of the chosen AI system within your team or organization. This helps optimize the system's efficiency and minimizes erroneous results resulting from hallucinations.

#### **3. Implement Data Templates**

Employ data templates to provide predefined patterns, increasing the likelihood of the AI model generating results aligned with the specified guidelines. This reduces the chances of creating inaccurate outcomes.

#### **4. Limit Responses**

Mitigate hallucination by constraining the range of possible responses. Use filtering tools or well-defined criteria to limit the AI model's scope of answers, minimizing the risk of producing inaccurate results.

## **5. Test and Refine Continually**

Regularly test the AI model before deployment and continuously assess its performance. This ongoing evaluation allows for overall improvement and enables users to retrain the model when faced with new and evolving data.

## **6. Rely on Human Oversight**

Employ human oversight as the ultimate safeguard against hallucination. Humans can filter and rectify results generated by AI, ensuring a reliable and accurate outcome.

In conclusion, while AI contributes to increased efficiency and rapid task execution, it remains a tool susceptible to errors. Users should exercise discernment, double-check results, and utilize appropriate commands to achieve the most accurate outcomes.

If you are looking for an AI/ML solution to increase your data management potential and enhance the efficiency of your data analysis process to be more accurate and accurate. At Bluebik Vulcan, we have a team of data analysis experts so that you can use information as an important tool in making decisions and developing your business to grow valuably in the future >> [Explore](#)

### **Source:**

<https://ambcrypto.com/blog/3-signs-to-check-if-your-conversational-ai-is-hallucinating/>

<https://www.ibm.com/topics/ai-hallucinations>

# Unveiling Microsoft Copilot Studio with AI Copilot Customization

12 Dec 2023

In the era of Digital Transformation, businesses are relentlessly seeking ways to improve operations, enhance productivity, and foster efficient collaboration. The quest for a tool tailored to the specific needs of a business is crucial. One such influential tool this year, poised to potentially reshape business operations in the coming year, is the "Microsoft Copilot," including the recently unveiled "Microsoft Copilot Studio" by Microsoft in the last quarter. This has generated significant excitement in the global IT industry. In this article, we'll delve deeper into this innovative tool and explore some of its hot-off-the-press features.

## **What are Microsoft Copilot and Microsoft Copilot Studio?**

### **Microsoft Copilot**

an AI-powered assistant developed by Microsoft that combines large language models (LLM) with organizational data. What sets this tool apart is its adaptability for Microsoft 365 users, allowing them to customize Copilot in a low-code method. Real-time assistance is provided through natural language commands or prompts, facilitating users in tasks such as document creation, presentations, emails, and meeting summaries.

### **Microsoft Copilot Studio**

a low-code tool designed to customize Microsoft Copilot for Microsoft 365.

Microsoft Copilot Studio boasts 3 key features

#### **1. Customizing Microsoft Copilot on Microsoft 365**

- Enterprise Customization: Tailor Copilot on Microsoft 365 to align with your specific operational needs, seamlessly integrating with systems from CRM and ERP to HR.
- Drag-and-Drop Low-Code Approach: Develop plugins for Copilot on Microsoft 365 using drag-and-drop low-code method.
- Graphical Builder: Easily create graphics by connecting to backend APIs, constructing user-defined GPTs, and generating responses based on organizational data—all with a few clicks.

- Data Connectivity: Effortlessly link data sources with over 1,100 prebuilt connectors, simplifying business data integration with platforms like SAP, Workday, and ServiceNow.
- Custom GPTs: Collaborate with OpenAI services to empower users to create their own GPTs within Copilot.

## **2. Building Standalone Custom Copilots for Specific Use Cases**

Copilot Studio goes beyond customizing Copilot for Microsoft 365; it enables the creation of Standalone Custom Copilots tailored to the unique needs of individual departments within an organization. Whether it's an IT support Copilot or a sales team Copilot, Copilot Studio enhances responsiveness through features like generative answers, prompt building, and prompt customization using GenAI. Deployment to internal and external websites, Microsoft Teams, and mobile apps is seamlessly facilitated.

## **3. Unified Copilot Management**

Copilot Studio introduces governance and control features, empowering IT to supervise, monitor, and analyze Copilot centrally through the Integrated Admin Center. This Center introduces customization of your Copilot whether it's on Microsoft 365 or standalone versions. So, system administrators can control access, secure data, and manage environment within center.

In conclusion, Microsoft Copilot Studio transcends being a mere tool; it's a transformative assistant capable of elevating your organization's operational efficiency. Those intrigued can delve deeper into its capabilities on the official website [Microsoft Copilot Studio](#) or sign up for a free trial starting today [Free Trial Signup](#).

Reference: [Microsoft](#)



# Bluebik Vulcan Recommends Top 4 Frameworks in 2024

3 Dec 2023

In the world of web development, frameworks are essential tools for creating efficient and user-friendly applications. A good framework can save time in development by providing a solid foundation and necessary tools.

There are many frameworks to choose from, each with its unique features. The choice of framework depends on various factors such as the type of application you want to build, the user experience you aim for, and the budget within your organization. Today, let's explore the best options.

## **Top 4 frameworks in 2024**

### **1. Next.js**

Next.js is a highly popular React framework nowadays, designed for the fast and efficient development of websites and React applications. It boasts numerous features that set it apart from other React frameworks.

Next.js operates by generating static HTML web pages on the server first and then delivering them to the client side. This approach results in faster webpage loading and improved Google search rankings. Next.js offers a wide range of functionalities that empower developers to efficiently build React websites and applications, such as:

- A built-in routing system that makes it easy for developers to manage website navigation.
- Support for various State Management Libraries like Redux, MobX, and Context API.
- API Routes for server-side API development.
- Tools for resizing and compressing images to appropriate sizes.
- The ability to split code into sections for performance optimization.
- Page and component caching for improved webpage efficiency.

### **Advantages of Next.js:**

- Supports Server-Side Rendering (SSR), loading web pages from the server before sending them to the client side, resulting in faster webpage loading and improved Google search rankings.

- Features an SEO system that helps web pages rank better on Google searches.
- Next.js includes tools that enhance webpage performance, such as Automatic image optimization, Automatic code splitting, and Automatic caching.
- A simple and user-friendly code structure facilitates quick learning and implementation.
- A large and supportive community ready to assist developers facing challenges.

#### **Disadvantages of Next.js:**

- The code structure in Next.js differs from traditional React, which may require developers unfamiliar with React to spend more time learning.
- Next.js offers diverse functionalities, requiring developers to adjust code more extensively than traditional React based on website requirements.
- Websites developed with Next.js heavily depend on the framework, which may impact the site if Next.js development ceases or encounters issues.

#### **Using Next.js:**

- Next.js is suitable for developing e-commerce websites with a large number of web pages that require high performance.
- It can be used for developing news websites with many web pages and a need for good SEO.
- Next.js is suitable for developing mobile applications, supporting the creation of apps on both web and mobile platforms (Progressive Web Apps - PWAs). Next.js supports React Native, enabling the development of mobile applications.

React Native for the Web, and the code created can be used in both Web and mobile applications without duplication.

Next.js is a high-performance React framework suitable for web development requiring speed, efficiency, and good SEO.

## **2.Flutter**

Flutter is an open-source framework developed and supported by Google, used by Front-End and Full-Stack developers to create User Interface (UI) for applications across multiple platforms with a single codebase.

Flutter uses the Dart language as its primary language for designing screens and controlling functionality. It bears similarities to languages like C#, Java, and JavaScript.

### **Advantages of Flutter:**

- Hot Reload allows developers to edit code and see results instantly without having to restart the app, facilitating rapid testing and UI customization.
- Native Performance: Flutter applications can run smoothly and perform comparably to native mobile applications.
- Rich Widgets: Flutter offers a variety of widgets for developers to choose from, making it convenient to create beautiful and user-friendly UIs.
- Cross-Platform: Flutter can develop applications for both iOS and Android with a single codebase, reducing development time and costs.

### **Disadvantages of Flutter:**

- Ongoing Development: Flutter is still a relatively new framework, and some features may be incomplete or not supported on all platforms.
- Learning Dart: Flutter primarily uses the Dart language, which may require time for developers unfamiliar with it to learn.

### **Using Flutter:**

Flutter is suitable for developing mobile applications that emphasize both beauty and performance as its main focus. Major companies that have adopted Flutter include:

#### **E-commerce Applications:**

- Alibaba (Online buying and selling)
- Grab Food
- eBay Motors

#### **Technology Applications:**

- SpaceX

In addition to the examples above, many organizations in finance, healthcare, education, and other sectors use Flutter for application development.

To get started with Flutter, developers can refer to Flutter's documentation, websites, and the vibrant Flutter community available online.

### **3.Spring Boot**

Spring Boot is a popular Java framework that extends the capabilities of the Spring Framework, making it convenient and fast to build applications. Spring Boot manages essential details before application configuration (following Spring's convention-over-configuration). It handles tasks such as specifying dependencies, configuring web servers, setting up security, and more, using coding to override or change default configurations. This makes system development easy and efficient.

#### **Advantages of Spring Boot:**

- Easy Development of Web Apps or Microservices: Spring Boot simplifies the creation of web applications or microservices. It comes with an embedded web server like Tomcat, Jetty, or Undertow, enabling developers to run applications without a separate web server installation. Additionally, Spring Boot provides various Starter Dependencies, making it easy to choose and use desired features.
- Extensive Documentation and Community Support: Spring Boot has comprehensive and user-friendly documentation, allowing developers to find answers or assistance easily.
- Ready-to-Use Features: Spring Boot comes with many built-in features, such as support for REST API, data access, security, and more, making application development straightforward.

#### **Disadvantages of Spring Boot:**

- Requires Knowledge of Spring Framework: Since Spring Boot builds on the Spring Framework, developers may need some familiarity with Spring to fully leverage its capabilities.

#### **Examples of Using Spring Boot in Different Types**

##### **General Web Application**

Spring Boot is versatile for developing general web applications with ease. Developers are not required to configure various complex settings, such as specifying web server and database configurations. Spring Boot automatically handles these configurations.

##### **Examples of using Spring Boot for developing general web applications include:**

- News websites can utilize Spring Boot to present news, allow user comments, and more.

- E-commerce sites can use Spring Boot for product presentation, order processing, and payment.
- Social media websites can employ Spring Boot for posting messages, chatting, and other functionalities.

## **Microservices**

Spring Boot is also suitable for developing large and complex systems, such as Microservices. In this context, Spring Boot provides essential services for communication between Microservices, including load balancing and fault tolerance.

### **Examples of using Spring Boot for developing Microservices systems include:**

- Flight Booking System: This system can be divided into sub Microservices, such as managing flight data, passenger information, and payment processing.
- Banking System: Similarly, a banking system can be structured into sub-microservices for managing account data, financial transactions, and security.

Spring Boot is a highly popular framework for web application development due to its features that simplify and speed up the process. It can be used to develop various types of web applications, including general web applications and Microservices.

## **4. .NET Core**

.NET Core is a web application framework developed by Microsoft for web application development, enabling programmers to use languages such as C#, VB.NET, and others. Currently, there are two development options available: Web Forms and MVC.

### **Web Forms**

Web Forms is a framework designed to support the MVC pattern, managing the separation of concerns by dividing application components into separate parts. This separation of concerns simplifies complex unit testing.

### **MVC**

MVC is a framework for web application development using the Model-View-Controller concept. In this pattern, the Model manages data, the View displays data, and the Controller acts as an intermediary between the Model and View.

### **Advantages of .NET Core**

- Open-Source: .NET Core is open-source, allowing developers to access the source code and actively participate in development.
- Cross-Platform: It can run on Windows, macOS, and Linux.
- Lightweight: .NET Core is lightweight with high performance.
- Built-in Dependency Injection: Efficiently manages dependencies.
- Unit Testing Support: Supports effective unit testing.
- Microservices Architecture: Supports the development of large and complex systems.

### **Disadvantages of .NET Core**

- Steeper Learning Curve: More complex compared to Web Forms.
- Limited Documentation: Documentation is relatively limited when compared to Web Forms.

### **Using .NET Core**

.NET Core can be used for various types of web applications, including:

- General web applications such as news websites, e-commerce sites, and social media websites.
- Web APIs for data access.
- Microservices for large and complex systems.

.NET Core is a highly popular web application framework today due to its attributes as an open-source, cross-platform, lightweight, and high-performance solution. It is well-suited for the development of various types of web applications.

As technology evolves rapidly, frameworks follow suit. Developers who stay abreast of the latest framework trends have the opportunity to create applications that are efficient and responsive to current needs.

# 9 Trends in Blockchain for 2024

17 Nov 2023

Blockchain is a Distributed Ledger Technology that uses Cryptography to secure data. It consists of a chain of interconnected blocks, each storing various transactions that occur within the network. Data in a blockchain is recorded and backed up on all network computers.

Blockchain technology has continuously gained popularity over the past few years due to its various advantages, including transparency, immutability, and enhanced security. These qualities make it suitable for use in a wide range of industries.

## **Why is Blockchain Popular Today?**

**Transparency:** Blockchain enhances data transparency, benefiting all parties involved in transactions, such as businesses, customers, and regulatory authorities.

**Immutability:** Blockchain ensures that data cannot be altered or tampered with, reducing the risk of fraud and providing data security.

**Security:** Blockchain employs encryption to safeguard data, guaranteeing protection against attacks.

## **9 Blockchain Trends in 2024**

### **1. Decentralized Finance (DeFi) Evolution**

DeFi, or Decentralized Finance, operates on blockchain without the need for intermediaries like banks or financial institutions. DeFi is gaining popularity due to its accessibility and cost-effectiveness. In 2024, DeFi is expected to grow further, offering services such as lending, insurance, and investment.

### **2. Central Bank Digital Currencies (CBDCs)**

Central Bank Digital Currencies (CBDCs) are digital currencies issued by central banks. Several central banks worldwide are developing CBDCs, with China already introducing its Digital Yuan. In 2024, more countries are anticipated to launch their CBDCs.

### **3. NFT Integration**

Non-Fungible Tokens (NFTs) are unique digital assets often used to represent ownership of digital art, music, and games. NFTs are expected to continue gaining popularity and find applications across various industries.

#### **4. Blockchain Interoperability**

Blockchain interoperability allows different blockchain networks to exchange data and assets. In 2024, the ability to interoperate with other blockchains is expected to increase, facilitating integrations with other systems.

#### **5. Enhanced Privacy Solutions**

Maintaining privacy is crucial in blockchain development. Research and development efforts are expected to focus on enhancing privacy in blockchain technology. These measures will empower users to maintain the privacy of their data and transactions more effectively.

#### **6. Supply Chain Tracking**

Blockchain can be used to track the movement and origin of products, helping to prevent data tampering. In 2024, blockchain is predicted to be more widely used in tracking products, including in agriculture, fashion, and consumer goods.

#### **7. Enhanced Security Measures**

Expect the implementation of enhanced security measures and protocols in blockchain technology to strengthen network integrity and protect against potential vulnerabilities.

#### **8. Increased Blockchain Adoption**

Blockchain adoption is on the rise in various industries, including healthcare, finance, and government. This trend is expected to continue growing in 2024, showing no signs of decline.

#### **9. Education and Skill Development**

In 2024, education and skill development programs are expected to expand, preparing individuals with essential skills for the blockchain industry. These programs will play a pivotal role in equipping individuals for the blockchain workforce.

The increasing popularity of blockchain technology underscores its ability to enhance efficiency and security for businesses. When utilized appropriately, blockchain can help your business grow and compete effectively in the global market.

#### **Read more Programming Languages in 2024 at:**

<https://www.analyticsinsight.net/10-blockchain-trends-that-everyone-should-be-ready-for-in-2024/>

# Top 11 Most Popular Programming Languages in 2024

12 Nov 2023

The year 2024 it's a year of opportunity for both those who are just starting to learn programming and for experienced developers in the field. The job market in this sector continues to be dynamic, as programming languages are created by humans to communicate with computers, enabling them to perform desired tasks. Each programming language undergoes continuous changes in line with rapid technological advancements. As a result, programmers have become a highly sought-after workforce, commanding relatively high incomes due to the strong demand in the job market.

In this blog, we have gathered information about the 11 most in-demand programming languages in 2024, based on market requirements, job positions, and industry trends.

## **1. Python: Dominant in AI and Data Science (Recommended for beginning)**

Python has gained immense popularity in the fields of AI and Data Science due to its versatility and efficient libraries. Python's simple syntax makes it a top choice for many developers.

Python is widely adopted in the realm of data science because of its ability to handle large datasets with ease. Python's libraries and frameworks, such as NumPy, Pandas, and Matplotlib, empower developers to efficiently analyze data and create visualizations.

In the world of Artificial Intelligence (AI), Python's libraries like TensorFlow and Keras have made it a popular choice for building neural networks capable of handling complex computations. It is well-suited for use in applications.

Python's popularity is further enhanced by a strong and supportive community, as well as a wealth of diverse documentation and resources. Developers can easily find help and learning materials to harness the power of Python.

## **2. JavaScript: Essential for Web Development and Beyond**

JavaScript is a highly popular programming language for developing web applications on both desktop and mobile platforms. Additionally, it is widely used in game development. This language's versatility allows it to integrate well with other languages, making it a preferred choice for many developers.

JavaScript finds widespread use in web development, enabling the creation of highly interactive websites by adding features such as touch-responsive scrolling, auto-filling

forms, and real-time updates. Beyond web development, JavaScript is employed in developing desktop and mobile applications, games, and server-side programs.

As technology continues to advance, the role of JavaScript in the tech industry is expected to expand beyond web development. This language is increasingly used in various application types, including Artificial Intelligence (AI) and statistical analysis to predict and forecast outputs more accurately (Machine Learning)

In summary, JavaScript is a crucial language for developers in 2024 and beyond. Its flexibility and adaptability make it an excellent choice for developers aiming to create efficient and up-to-date applications.

### **3. Java: Still Relevant for Enterprise Applications**

Java is a highly popular programming language for developing applications in organizations. This language has been around for over 20 years, yet it continues to be relevant and significant for many organizations.

The importance of Java in organizational applications stems from various factors, including:

1. **Flexibility and Scalability:** Java is a flexible language that can adapt to the development of large and complex applications, making it suitable for organizations.
2. **Performance and Security:** Java is known for its efficiency and high level of security, ensuring smooth and reliable operation of applications.
3. **Large and Active Community:** Java has a large and vibrant community that provides extensive support and resources for developers.

Java remains a crucial language for organizations in 2024, and it is expected to continue gaining popularity in the future. This is due to the increasing demand for organizational applications and the language's value in terms of flexibility, efficiency, and high-level security, making it a worthwhile choice for learning and development.

### **4. TypeScript: Strongly Typed JavaScript Alternative**

TypeScript is an open-source programming language developed by Microsoft. It is an extension of JavaScript, incorporating static typing to reduce errors before code execution.

TypeScript offers several advantages that help developers enhance code reliability, flexibility, and maintainability:

1. Type Annotations for Early Error Detection: The ability to specify data types helps developers catch errors before runtime, making it easier to maintain large-scale applications.
2. Support for Data Types and Interfaces: TypeScript's support for data types and interfaces enables developers to use powerful tools and code analysis, leading to improved code quality.
3. Smooth Transition from JavaScript: Developers can migrate from JavaScript to TypeScript without the need to rewrite the entire codebase.

TypeScript has gained continuous popularity for various reasons, including:

1. IDE Support and Various Code Editors: Strong support from Integrated Development Environments (IDEs) and versatile code editors.
2. Language Robustness: The language's robustness contributes to its popularity.
3. Compatibility with JavaScript: TypeScript seamlessly integrates with JavaScript, allowing developers to leverage existing code.

Therefore, TypeScript is essentially an evolved version of JavaScript, aiding in the development of more efficient projects with reduced errors or vulnerabilities.

It is a valuable language for learning and usage, especially for developers aiming to build reliable, flexible, and easily maintainable applications. The language is expected to continue growing in popularity in 2024.

## **5. Go: Efficient and Scalable for Cloud Computing**

Go, also known as Golang, is an open-source programming language developed by Google. It has gained increasing popularity in recent years due to its performance and scalability, particularly for processing computer data over the Internet and cloud computing services.

Go has strengths that make it suitable for cloud application development, including:

1. Efficiency and Resource Optimization: Go is designed to allow developers to work efficiently while conserving memory, resulting in faster-performing applications.
2. Scalability: Go can easily support large-scale applications, making it well-suited for businesses that need to manage high-user traffic and large volumes of data.
3. Simple and Understandable Syntax: Go has a straightforward and easy-to-understand syntax, making it suitable for developers at all levels of expertise.

The popularity of Go is expected to continue growing in 2024 and beyond, driven by the ongoing growth of cloud computing.

## **6. Rust: Fast, Safe, and Reliable for System Programming**

Rust is an open-source programming language developed by Mozilla. It has gained increased popularity in recent years due to its focus on speed and efficiency, particularly for systems programming. Rust excels in memory management and allocation, providing precise control over memory usage and allocation, ensuring memory safety during compilation without the need for a garbage collector. This feature helps prevent common programming errors such as null pointer dereferences, data races, and use-after-free bugs.

Rust has strengths that make it well-suited for systems programming:

1. Efficient Resource Utilization: Rust is designed to work with high efficiency, utilizing resources conservatively.
2. Strong and Ownership-Based System: Rust employs a robust ownership system and strict rules to prevent errors that might compromise safety.
3. Diverse Tooling: Rust has a variety of tools that aid in the development and maintenance of complex systems.

The language is expected to continue gaining popularity in 2024, driven by the increasing demand for systems programming jobs. Rust is recognized for its fast development, safety features, and high reliability, making it highly suitable for systems programming tasks.

## **7. Swift: Choice for iOS and macOS Development**

Swift is an open-source programming language developed by Apple. It has rapidly gained popularity due to its high performance, readable syntax, and compatibility with Objective-C. Swift can be compiled into binaries that run on macOS and Linux, making it efficient for developing programs for iOS, macOS, watchOS, tvOS, and Linux.

Additionally, Swift is a powerful language, and Apple introduced the Swift Package Manager, a tool that helps developers manage Swift libraries and packages easily.

Swift has strengths that make it well-suited for Apple platform development:

1. High Performance: Swift performs exceptionally well, making it suitable for applications that require high efficiency, such as games or video editing apps.
2. Easy-to-Understand Syntax: Swift's simple and understandable syntax allows developers to write code quickly and reduces the likelihood of errors.

3. Safety Features: Swift includes a robust safety system that helps reduce the risk of errors, making applications more reliable.
4. Compatibility with Objective-C: Swift is interoperable with Objective-C, enabling developers to transition code seamlessly from Objective-C to Swift.

Swift is anticipated to maintain and increase its popularity in 2024, driven by the growing demand for Apple platform applications. Its high performance, user-friendly syntax, and safety features make it particularly suitable for Apple platform development.

## **8. Kotlin: Emerging for Android App Development**

Kotlin is an open-source programming language developed by JetBrains. It has gained rapid popularity in Android app development due to its compatibility with Java and ease of use.

Key advantages of Kotlin in Android app development include:

1. Concise Syntax: Kotlin features concise syntax, allowing developers to write less code compared to Java.
2. Enhanced Safety: Kotlin comes with a robust type system, reducing the risk of errors and making applications more reliable.
3. Java Compatibility: Kotlin seamlessly integrates with Java, making it easy for developers to migrate code from Java to Kotlin.
4. Community Support: Kotlin has a strong developer community and support from contributors, ensuring regular updates and improvements.

It is anticipated that Kotlin's popularity will continue to grow in 2024 and beyond due to the increasing demand for Android app development. Its efficiency, security features, and user-friendly nature contribute to its widespread adoption.

## **9. C#: Ideal for Windows Desktop and Game Dev**

C# (C-sharp) is a programming language developed by Microsoft that has rapidly gained popularity for developing applications on the Windows operating system and games. This is due to its user-friendly syntax, the availability of various libraries, and seamless integration with the .NET Framework.

Key features of C# for Windows desktop and game development include:

1. Familiar Syntax: C# has a syntax like popular languages like Java and C++, making it easily accessible for developers at all levels.

2. .NET Framework: The .NET Framework provides a set of commands and tools, enabling developers to create efficient and high-performance applications for Windows and games.
3. Compatibility: C# integrates well with the .NET Framework, allowing developers to migrate code from other languages within the framework to C# with ease.
4. Cross-Platform Capability: C# can work on Windows, Linux, and macOS platforms, making it suitable for businesses that need to develop applications that can run on multiple platforms.
5. Strong Community Support: C# has a robust developer community and strong industry support, ensuring regular updates and enhancements.

C# is expected to continue gaining popularity in 2024 due to the increasing demand for developing applications on the Windows operating system and for game development. Its efficiency, ease of use, and compatibility across various platforms contribute to its continued success as a programming language.

## **10. Ruby: Popular for Web Dev and Automation**

Ruby has quickly become popular for web development and test automation due to its ease of use and strong community support for ensuring quality in automated tasks.

Key features of Ruby for web development and automation include:

1. Clear Syntax: Ruby boasts a straightforward syntax that is easy to understand, making it accessible for developers of all levels.
2. Robust Community Support: The language has a strong community and contributor base, ensuring continuous updates and improvements.
3. Scripting Capabilities: Ruby's scripting abilities make it well-suited for automation tasks and repetitive processes, such as testing and scripting.

Given its ease of use, scripting capabilities, and effectiveness in web development and automation, Ruby is expected to continue gaining popularity in the future.

## **11. PHP: Widely Used for Web Dev and Server-Side Scripting**

PHP is an open-source programming language that has rapidly gained popularity for web development due to its user-friendly nature and its ability to work seamlessly with databases.

Key features of PHP that make it well-suited for web development include:

1. Familiar Syntax: PHP shares similarities with other popular programming languages like C and Java, making it easily accessible for developers of all levels.
2. Database Connectivity: PHP can connect to various types of databases, such as MySQL and PostgreSQL, making it suitable for building web applications that require data processing.
3. Strong Community Support: PHP has a robust developer community and contributor base, ensuring continuous updates and improvements.

PHP is an efficient and user-friendly programming language, making it well-suited for web development. This means that PHP has everything needed to create high-performance and visually appealing websites. It is anticipated to remain popular in 2024 due to its existing features and continuous development within the developer community.

As technology continues to advance, the demand for programming languages will evolve in parallel. Developers who keep track of the latest programming language trends will be well-positioned to plan effectively for building efficient applications in 2024.

Read more Programming Languages in 2024 at:

<https://identicalcloud.com/blog/10-most-in-demand-programming-languages-in-2024/>

<https://vegibit.com/the-12-most-in-demand-programming-languages-in-2024/>

<https://www.analyticsinsight.net/10-coding-languages-that-dominate-job-market-in-2024/>

# Top 10 Strategic Technology Trends in 2024 by Gartner

10 Nov 2023

“Technological disruptions and socioeconomic uncertainties require a willingness to act boldly and strategically enhance resilience over ad-hoc responses. IT leaders are in a unique position to strategically lay down a roadmap where technology investments help their business’s sustenance of success amidst these uncertainties and pressures,” said Bart Willemsen, vice president, and analyst at Gartner from the IT Symposium/Xpo 2023 conference.

According to Bart Willemsen, it is undeniable that technology is currently being used as a key driving force of future business. Gartner predicts that global IT spending will reach \$5.14 trillion in 2024, up from \$4.72 trillion this year. Additionally, the technology markets projected to generate the highest revenue in 2024 are IT services, software, and communications services.

Let's break down Gartner's Top 10 Strategic Technology Trends in 2024 to keep an eye on.

## 10 Strategic Technology Trends in 2024

### 1. AI Trust, Risk and Security Management (AI TRiSM)

The increasing accessibility of AI has created a need for AI Trust, Risk, and Security Management (TRiSM). AI TRiSM provides tools for ModelOps, proactive data protection and security, AI-specific security, and model monitoring, as well as risk controls for inputs and outputs to third-party models and applications. Gartner predicts that by 2026, enterprises that implement AI Trust, Risk, and Security Management will improve their decision-making accuracy by eliminating up to 80% of faulty and illegitimate information. Without these safeguards, Gartner believes that AI models can quickly generate negative effects that outweigh any positive performance they may offer.

### 2. Continuous Threat Exposure Management (CTEM)

By 2026, Gartner predicts that prioritizing security investments based on a Continuous Threat Exposure Management (CTEM) program can lead to a two-thirds reduction in security breaches for organizations by 2026. CTEM is a pragmatic and systematic approach that enables organizations to continuously evaluate and manage the risk of accessibility, exposure, and exploitation of their digital and physical assets. By aligning these approaches with specific projects or threat vectors rather than infrastructure, enterprises can not only identify vulnerabilities but also unpatchable threats.

### **3. Industry Cloud Platforms**

Industry Cloud Platforms (ICPs) are industry-tailored platforms that combine Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS). Organizations can customize these platforms to meet their specific needs. According to Gartner, it is predicted that by 2027, more than 70% of enterprises will use an industry cloud platform to accelerate business initiatives, compared to less than 15% this year.

### **4. Sustainable Technology**

Sustainable technology refers to a set of digital solutions that facilitate Environmental, Social, and Governance (ESG) outcomes, promoting long-term ecological balance and human rights. With growing concerns about the energy consumption and environmental impact of technologies such as AI, cryptocurrency, and cloud computing, it is becoming increasingly important for organizations to prioritize efficiency, circularity, and sustainability in IT.

### **5. Democratized Generative AI**

Due to the prevalence and accessibility of pre-trained models via cloud computing and open source technology, Generative AI (GenAI) is becoming increasingly democratized and able to be used on a global scale. Gartner predicts that more than 80% of enterprises will have used some form of Generative AI APIs and models and/or deployed Gen AI-enabled applications in production environments by 2026, compared to less than 5% earlier this year.

### **6. Platform Engineering**

Platform Engineering refers to the practice of building and operating self-service internal development platforms with the goal of optimizing productivity and user experience while accelerating the creation of business value. Gartner expects this discipline to become even more important in 2024.

### **7. AI-Augmented Development**

Gartner defines AI-augmented development as the utilization of machine learning, generative AI, and other AI technologies to assist software engineers in application design, coding, and testing. AI-assisted software development can enhance developer productivity and enable teams to meet the growing demands for business-critical software. Additionally, these tools liberate engineers to focus on more strategic tasks, such as application design and composition.

### **8. Intelligent Applications**

Gartner predicts that Intelligent applications are essential for enhanced efficiency and reliability of automated and augmented work, leading to dynamic user experiences. With a changing talent landscape and talent shortage being a top concern for CEOs, almost 26% said talent shortage will be a crisis situation for the organization. CEOs also recognize that AI will have the most significant impact on their industries in the next three years.

## **9. Augmented-Connected Workforce**

The need to scale talent drives the strategy of the augmented-connected workforce (ACWF), which aims to optimize the value delivered by human workers. The ACWF utilizes intelligent applications and workforce analytics to provide context and guidance that support the workforce's experience, well-being, and skill development while driving business results and positive stakeholder impact. According to Gartner, it is predicted that by 2027, at least 25% of Chief Information Officers (CIOs) will use an Augmented-Connected Workforce initiative to reduce the time to competency by 50% for many key roles.

## **10. Machine Customers**

Machine customers, which Gartner refers to as "custobots," are nonhuman customers capable of autonomously negotiating and purchasing goods and services. According to Gartner, this trend has the potential to generate trillions of dollars in revenue by 2030, surpassing the significance of the digital commerce revolution. Gartner recommends that organizations consider incorporating opportunities to create these custobots when developing their strategies.

These Strategic Technology Trends emphasize the importance of technology in determining the direction of the organization. So, it is essential that executives must evaluate the impacts and benefits of the upcoming trends to consider which technology will have the greatest impact on them and use it to maintain the success of the organization in the future.

**Read Full Gartner's article at:**

<https://www.gartner.com/en/articles/gartner-top-10-strategic-technology-trends-for-2024>

## **News & Events**

### **Unlocking business opportunities with API Strategy**

26 Jul 2023

‘พี.อี.ค - กังวาน อัศวไชยวงศ์’ ผู้เชี่ยวชาญทางด้าน API Management แห่ง Bluebik Vulcan ได้มีโอกาสเป็น Speaker พูดในหัวข้อ **Unlocking business opportunities with API Strategy** ที่งาน **TRANSFORMING THE FUTURE WITH CLOUD-DRIVEN MODERNIZATION, DATA AND SECURITY** เพื่อไขข้อสงสัยในความสำคัญของ API ที่เป็นหัวใจหลักในการทำ Digital Transformation ให้กับองค์กร

ความสำคัญของ API กับธุรกิจ คือ “ข้อมูล” เนื่องจากข้อมูลนั้นมีความสำคัญอย่างยิ่งสำหรับการดำเนินธุรกิจ ยิ่งถ้าข้อมูลนั้นเป็นข้อมูลเฉพาะธุรกิจที่ไม่สามารถทำซ้ำได้ ก็จะยิ่งทำให้องค์กรมีความได้เปรียบเชิงธุรกิจ แต่ความได้เปรียบเชิงธุรกิจนี้จะไม่ประโยชน์เลยถ้าหากไม่มีการจัดการข้อมูลที่ดี หรือไม่ได้นำข้อมูลเหล่านี้ไปต่อยอดเพื่อสร้างรายได้ให้กับธุรกิจ ดังนั้นสิ่งที่จะทำให้เกิดการแพร่และทำให้ธุรกิจอื่นๆ สามารถเข้าถึงเหล่านี้ได้นั้นคือ “API” (Application Programming Interface) ด้วยการสร้างเครือข่ายที่เกิดจากการนำข้อมูลที่มีมาเข้ามาร่วมกัน หรือแม้กระทั่งการแลกเปลี่ยนข้อมูลระหว่างกัน และนำข้อมูลเหล่านี้ไปใช้ต่อยอดให้เกิดผลประโยชน์ทางธุรกิจ และนำไปสู่การสร้าง Ecosystem

## ประโยชน์ของ API

### 1. Agility and Innovation

ธุรกิจสามารถเรียกใช้ API ได้โดยง่าย และรวดเร็วด้วยการ Register เพื่อขอเรียกใช้ API รวมไปถึงการสร้าง Partnership ได้ทั้งในเชิง Technical และเชิง Business

### 2. Ecosystem Multiplier

ที่ทำให้หลาย ๆ ธุรกิจสามารถใช้ API ร่วมกันได้

### 3. Risk Mitigation

รองรับการทำงานได้ในหลาย ๆ ระบบ

### 4. Sales Growth

สร้างผลประโยชน์ และสร้างรายได้จากการเรียกใช้ API

### 5. Operational Costs Saving

Reuse API ได้โดยง่าย และแชร์ API ได้กับหลาย ๆ แอปพลิเคชันของธุรกิจ

ดังนั้นในมุมมองของ Ecosystem API ก็ถือว่าเป็นอีกหนึ่ง Product ภายใต้ Digital Value Chain ซึ่งเป็น Key หลักในการทำ Digital Transformation ให้กับองค์กร และนำไปสู่การแพร่ขยายมูลรวมระหว่างธุรกิจ

Apigee API Management Tools เป็นเครื่องมือที่ช่วยในการจัดการ API ให้กับองค์กรไม่ว่าจะเป็นการกำหนดสิทธิ์ในการเรียกใช้งาน, การจำกัดจำนวนในการเรียกใช้งาน API, Analytics Monitor, จัดการเรื่อง Security และ Traffic รวมไปถึงการจัดการเรื่องการ Publish หรือการ On Boarding สำหรับบุคคลภายนอก องค์กรที่ต้องการเรียกใช้ API

## คุณสมบัติ Apigee ดังนี้

### 1. Developer Ecosystem

คนที่อยู่ภายนอกองค์กรสามารถเข้ามาเรียกใช้ API ได้โดยง่าย หรือสามารถ Build Up API ให้ออกมาเป็น Product ใหม่เพื่อรวมมาด้วย API ที่เหมาะสมกับธุรกิจนั้นๆ ขึ้นมา

### 2. API Analytics

เมื่อทำการ Publish API บน Apigee Platform แล้วองค์กรสามารถ Monitor การเรียกใช้งาน API จาก Partner ได้

### 3. Mediation Engines

Transform, Catching API หลายๆ ชุดขึ้นมาเป็น API เดียวได้

### 4. API Runtime

Deploy และจัดการ Microservices Integration

## จุดเด่นของ Apigee มีดังนี้

1. มี Developer Portal และนำไป Customize ต่อได้ง่าย

2. เป็นเจ้าเดียวที่มีฟีเจอร์ API Monetization

3. Metering, Rating และส่ง Billing ไปยังผู้ที่เรียกใช้งาน API ได้

4. สร้างความแตกต่าง และมีความยืดหยุ่นในการ Build Up API ให้เหมาะสมกับแต่ละธุรกิจ

5. ดึงข้อมูลจากฐาน Database ที่อยู่บนคลาวด์ขึ้นมาเป็น API ได้เลยทันที

## 6. Deploy ได้ทั้งบนระบบ SaaS, Hybrid และ On-Prime

ซึ่งในปัจจุบัน *Bluebik Vulcan* เป็นบริษัทแรก และบริษัทเดียวในประเทศไทยที่มีประสบการณ์ในการ Implement Apigee ในรูปแบบ Hybrid ได้สำเร็จ

# ผนึกกำลังบริษัทเทคโนโลยีชั้นนำ สู่การเป็น Digital-First Company แบบ End-to-End Service

25 Jul 2023

การรวมตัวครั้งยิ่งใหญ่ของเหล่าบริษัทเทคโนโลยีชั้นนำประเทศไทย เพื่อผนึกกำลังนำทัพสู่การเป็น Digital-First Company ชั้นแนวหน้าที่ให้บริการแบบ End-to-End Service ครบ! จบ! ในที่เดียว

ล่าสุดบริษัท Bluebik Group ได้ทุ่มเงินกว่า 1 พันล้านบาท เข้าซื้อกิจกรรมแบบ 100% ของ 2 บริษัทยักษ์ใหญ่เทคโนโลยีของประเทศไทย ประกอบไปด้วยหน่วยธุรกิจ Digital Delivery ของ บมจ.เอ็ม เอฟ อี ซี หรือ MFEC ที่รวมผู้เชี่ยวชาญทางด้านเทคโนโลยีเอาไว้ และตามมาด้วย บริษัท อินโนวิซ โซลูชั่นส์ จำกัด หรือ Innoviz ซึ่งเชี่ยวชาญในระบบงาน ERP (Enterprise Resource Planning) ของ Microsoft Dynamics 365 ที่จะมาช่วยสนับสนุนการบริการแบบครบวงจรให้แก่ลูกค้า

การรวมตัวของ 3 บริษัท ยังเป็นการเพิ่มโอกาสทางธุรกิจ และทำให้บริษัทเติบโตได้อย่างรวดเร็ว ด้วยเหล่าผู้เชี่ยวชาญทางด้านไอทีมากกว่า 780 คน ที่จะมาช่วยเพิ่มขีดจำกัดในการทำงาน เพื่อรองรับการทำ Digital Transformation และเพื่อตอกย้ำการเป็น Tech Company ระดับโลก โดยบริษัทได้มีการวางแผนกลยุทธ์เน้นในเรื่องของการทำ Digital Transformation ที่จะมีการทำ Strategic & Plan Consulting จนไปถึงการทำ Deep Tech ที่มีทีมผู้เชี่ยวชาญในด้าน AI, Big Data, Blockchain จนไปสู่การเป็นเป็น Venture Builder ระดับสากล

## สร้างกองทัพเทคโนโลยีก้าวกระดิษชี้ | Forbes Thailand Magazine

25 Jul 2023

บทสัมภาษณ์ “สร้างกองทัพเทคโนโลยีก้าวกระดิษชี้” พี่ปอง ปัญญา โดย Forbes Thailand Magazine

คุณปัญญา พรชัยรักษ์ ผู้นำทัพ Tech Talent แหล่งรวมนักประดิษฐ์แห่งโลกยุคใหม่ Bluebik Vulcan

โดยประสบการณ์กว่า 20 ปีในแวดวงไอที ที่ได้ให้บริการลูกค้ามาตั้งแต่ยุคเริ่มต้นของ Digital Transformation ในการทำ ATM SIM, WOP, WRAP ไปจนถึงการทำ Mobile Banking จนนำไปสู่การต่อยอด และพัฒนาแอปฯ ให้กับกลุ่มธุรกิจอื่นๆ ในประเทศไทย

นอกจากนั้นทางคุณปัญญา ได้มีแนวคิดต้องการผลักดัน พัฒนา และเติมเต็มศักยภาพให้กับเด็กรุ่นใหม่ โดยได้เข้าไปเป็นส่วนหนึ่งในการเสริมความแข็งแกร่งให้หลักสูตรการเรียนในด้านเทคโนโลยีเพื่อให้น้องๆ มีความสนใจในด้านเทคโนโลยีทันการเปลี่ยนแปลงของโลกธุรกิจยุคใหม่

พร้อมทั้งยังนำประสบการณ์การทำงานจากต่างแดนมาพัฒนาและปรับเปลี่ยนรูปแบบการทำงานแบบไทยจนนำไปสู่การสร้าง Bluebik Vulcan บริษัทเทคโนโลยีชั้นนำที่มีพัฒนามากกว่า 300 ชีวิตสู่บ้านหลังใหม่ "Bluebik Group"

# ครบเครื่องเก่งเทคโนโลยี สมดุลชีวิต และการเรียนรู้

24 Jul 2023

'สมดุลชีวิต' ที่เล่าฝ่านจากประสบการณ์จริงกว่า 20 ปี ในวงการไอที

ครบเครื่องคนเก่งเทคโนโลยีและการจัดการ

จากบทความที่ The Story ได้กล่าวไว้ว่า การขาดแคลนบุคลากรไอทีเป็นโจทย์ใหญ่ขององค์กรในทุกยุคทุกสมัย แม้กระทั่ง Bluebik Vulcan ซึ่งมีพนักงานร่วม 300 คน และอยู่ในสายงานเทคโนโลยี เช่น นักพัฒนา นักวิเคราะห์ ซอฟต์แวร์ นักวิเคราะห์ธุรกิจ และผู้จัดการโครงการมากถึง 90% ก็ยังไม่พอ หน้าที่ในการนำองค์ความรู้ด้านเทคโนโลยี และประสบการณ์จริงไปถ่ายทอด การรับนักศึกษามาฝึกงานรวม 4-6 เดือน เพื่อจับมือสอนตั้งแต่เริ่มต้นจนสามารถ พัฒนาแอปพลิเคชัน และรับเข้าทำงานหลังเรียนจบ เนื่องจากมีการเตรียมความพร้อมทั้งเรื่องทักษะและเข้าใจ วัฒนธรรมการทำงานขององค์กร

แต่สิ่งที่ท้าทายมากที่สุด คือ “ทักษะการบริหารจัดการความต้องการของลูกค้า เพื่อให้การพัฒนาแอปพลิเคชัน ออกมาน่าใช้” ซึ่งต้องอาศัยประสบการณ์และมุมมองจากผู้รุ่นพี่ในการเติมเต็มและขัดเกลา เช่น เทคนิคในการเจรจา กับลูกค้าอย่างไร ทักษะในการเก็บข้อมูลความต้องการลูกค้าให้ครบถ้วนตรงใจของทุกฝ่าย ไม่ว่าจะเป็นฝ่ายปฏิบัติการ หัวหน้างาน หรือผู้บริหาร ตลอดจนทักษะการบริหารจัดการโปรเจกต์ และปิดงาน

แม้ Bluebik Vulcan จะได้ชื่อว่า เป็นผู้ให้บริการด้านไอทีครบวงจร หรือ SI ซึ่งเป็นคำที่ “พังดูไม่เซ็งซี” แต่ ตลาดกลับมีความร้อนแรง” ยิ่งในยุคดิจิทัลทุราษฎอร์เมชันที่เทคโนโลยีแทบจะฟังตัวเข้าไปเกือบทุกช่วงเวลาของชีวิต ความสนุกที่ได้รับจากการทำงานในวงการ SI คือ การที่มีองค์ความรู้และการทำงานกับเทคโนโลยีที่เปิดกว้าง หลากหลายไปในแบบทุกอุตสาหกรรม

บรรยากาศการทำงานแบบครอบครัว สิทธิประโยชน์ที่คุ้มค่ากับความเหนื่อย 力 ภาระดกลุ่มพูดคุยท่านอาหารหลัง เดิมงานทุกวันของค่าลับกันไป เพื่อสอบถามและรับฟังปัญหา ช่วยเชื่อมความคิดและเสนอความช่วยเหลือแบบพื้นบ้าน น้อง ล้วนอยู่บนหลักคิดที่ว่า “เราทำงานกับน้อง ๆ เหล่านี้ ไม่ใช่แค่เพราะอย่างได้ Source Code จากเข้า หรืออย่าง

ได้แค่ชื่องานของเข้า แต่เราอยากรื้นพวกรเข้าพัฒนาและเติบโตในองค์กรไปเป็นรุ่นพี่ หัวหน้าทีมทำงาน ผู้จัดการผู้อำนวยการ” เพราะเด็กรุ่นใหม่บางคนอาจสนใจเฉพาะงานที่ตัวเองทำ โดยลืมมองถึงการเติบโตไปกับองค์กรในมิติอื่นๆ เพื่อปูทางความมั่นคงในสายอาชีพนี้ต่อไปในอนาคต

สำหรับสิ่งที่หายไปแล้วต้องเติมให้เต็ม คือ ศักยภาพของน้องๆ ในการเข้าใจกระบวนการจัดกระบวนการทางธุรกิจ เรื่องของบิสซิเนสโดเมน (Business Domain) ต่างๆ เพื่อให้การพัฒนาแอปพลิเคชันมีเอกลักษณ์และตรงใจธุรกิจให้มากที่สุด

#### ไขข้อต่อกระบวนการทำงาน

ปัจจุบันเทคโนโลยีเกิดขึ้นใหม่ตลอดเวลา การตามทันเทคโนโลยีว่ายากแล้ว แต่ยังไม่ยากเท่าการจำแนกให้ได้ว่า เทคโนโลยีนี้ควรใช้กับใคร ใช่ทำอะไร และทำอย่างไร เมื่อทำแล้วสามารถสร้างประโยชน์อย่างไร ขณะเดียวกัน กำลังคนที่จำง่ายแล้วก็ต้องรับผิดชอบในการพัฒนาให้เติบโต และส่งเสริมศักยภาพของพวกรเข้าอย่างเต็มที่ เพราะยิ่งมีมาก ลูกค้าก็ยิ่งได้ประโยชน์

คุณปอง ปัญญาได้เข้าร่วมบริหารจัดการทีมในรูปแบบ “สquad (Squad)” โดยมีหัวหน้าและทีมงานในการรับผิดชอบหน่วยธุรกิจ (ไม่นับรวมส่วนงานจัดการทั่วไป) ทั้งหมด 8 หน่วยธุรกิจ แบ่งเป็น 2 แกนหลัก คือ แกนเทคโนโลยี เช่น กลุ่มเว็บ กลุ่มโมบาย และแกนประมวลผล เช่น กลุ่มพัฒนา กลุ่มธนาคาร

โดยแต่ละหน่วยจะบริหารสมอ่อนเป็นสตาร์ตอัพภายใต้ Bluebik Vulcan มีความเป็นเจ้าของหน่วยธุรกิจที่ต้องบริหารเรื่องการพัฒนางาน ตัวเลขรายได้ กำไร และค่าใช้จ่ายของตัวเอง โดยมีการปรับเปลี่ยนโครงสร้างบริหารไปตามสถานการณ์ เช่น การสลับสับเปลี่ยนเจ้าแกนเทคโนโลยีนำบัง แกนลูกค้านำบัง เพื่อให้เกิดพลวัตการขับเคลื่อนทางธุรกิจมากขึ้น เพราะเทคโนโลยีหนึ่งตัวอาจจะขายลูกค้าให้หลายกลุ่ม อีกกลุ่มขายกลุ่มลูกค้าการเงิน เมื่อตลาดกลุ่มนี้เริ่มนิ่งหรือมีความต้องการลดลง ก็อาจยกไปทำตลาดกลุ่มลูกค้าพัฒนา เป็นต้น

รวมถึงการนำ “ข้อมูล” มาเสริมการขับเคลื่อนการบริหารองค์กรนอกเหนือจากการใช้ความรู้สึก ประสบการณ์ หรือความเก่าเพียงอย่างเดียว ปัญญานบกอกร่วมกับ ไม่วันเด็กนั้นของคุณขอ喻ด้วยการใช้ข้อมูลมาวิเคราะห์ปัญหา ความยากง่าย และความเป็นไปได้ของงานแต่ละโปรเจกต์ รวมถึงการประเมินศักยภาพของบุคลากรต่อการทำงานและความสำเร็จในโปรเจกต์ต่างๆ เพราะในวันที่บริษัทยังเล็ก มีงานและคนที่ต้องดูแลไม่มาก ยังพอมองเห็นภาพรวม แต่เมื่อเพิ่มเป็นคน 200 – 300 คน ภาพที่เคยมองเห็นก็อาจจะเบลอและยากขึ้น

## ตัวตนคนไม่เกรง

จากใจที่คุณปองอดีตเด็กสวนกุหลาบเล่าให้ฟัง ตัวเองเรียนจบสถิติประยุกต์ คณะวิทยาศาสตร์ เทคโนโลยีพระจอมเกล้าฯ ลาดกระบัง ต่อด้วยปริญญาโทด้านวิทยาการสารสนเทศ (Information Science) การเรียนสถิติทำให้เข้าใจกระบวนการทำงาน เช่นการอ่านตัวเลข จนมาทำเรื่องการเขียนโปรแกรม และเริ่มการทำงานครั้งแรกที่บริษัทสตาร์ทอัพแห่งหนึ่งที่มีทุนมาทำธุรกิจในไทย ในตำแหน่งโปรแกรมเมอร์เขียนภาษา JAVA

พอยปี 2546 จึงลาออกจากไปทำงานที่เอ็มเฟค กรุ๊ป ในตำแหน่งนักพัฒนาอาชูส จนไปสู่นักวิเคราะห์ซอฟต์แวร์ และเป็นหัวหน้าทีมพัฒนา งานนักวิเคราะห์ซอฟต์แวร์ ร้อยเตอร์ ระหว่างปี 2551 และกลับไปทำงานที่เอ็มเฟค อีกครั้งในตำแหน่ง Deputy Project Director เมื่อปี 2554 จนมาถึง Bluebik Vulcan ในปัจจุบัน

ตอนอยู่รอมสั่น ร้อยเตอร์ นับเป็นโอกาสในการเรียนรู้กระบวนการจัดการทำงานของบริษัทระดับโลกตลอด รวมถึงการแยกแยะและวิเคราะห์ปัญหาได้ดีขึ้น เพราะตอนที่ยังเด็ก เขามักจะมองปัญหาแบบรวม ๆ แต่การทำงานที่รอมสั่น ร้อยเตอร์ สอนให้เข้าต้องแยกปัญหาออกมาร่วมแก้ไขละเอียด เพื่อไม่ให้ปัญหานั้นย้อนกลับมาอีก หรือแก้แล้วไม่ไปสร้างปัญหาเพิ่มขึ้น ไม่งั้นจะทับถมไปเรื่อย ๆ

“พี่เลี้ยง – ศิริวัฒน์ วงศ์จารุกร CEO เอ็มเฟค เคยสอนผมเรื่องของ “การรักษาสมดุล” ให้รอบด้าน ทั้งการทำงาน การทำงานที่เป็นชีวิต เทคโนโลยี ผู้ร่วมงาน ลูกค้า สิทธิประโยชน์ต่างๆ เราต้องพยายามเข้าใจเพื่อให้แกนทุกแกนอยู่ได้ในตำแหน่งที่ดี ที่สมดุลกัน และที่สำคัญต้อง “รู้จักให้ รู้จักรับ (Give and Take)”

ส่วนความเชี่ยวชาญแบบเปิดที่เข้าให้ยามตัวเองไว้ว่า “อยากเป็นเปิดที่เก่งที่สุด” ด้วยการพร้อมเปิดรับข้อมูลและการทำงานที่สดใหม่ไปกับโลกที่เปลี่ยนแปลงทุกวันแบบ 360 องศา ทำให้สามารถสื่อสารพูดคุยกับทุกคน ทุกที่ ในทุกเรื่องที่เกี่ยวข้อง

เทคโนโลยีกับสมดุลชีวิตและการเรียนรู้

ดิจิทัลทวนส์ฟอร์เมชันเป็นสิ่งที่พูดถึงกันมาแล้วอย่างน้อย 5 ปี และสิ่งนี้ถูกใช้ในการสร้างรูปแบบบริการต่าง ๆ แต่หลังจากนี้คือการต่อยอดเทคโนโลยีดิจิทัลให้มีความชาญฉลาดมากขึ้น (Digital Intelligence) ด้วย “ข้อมูล” ไม่ใช่แค่เป็นข้อมูลการใช้งานแอปฯ ต่าง ๆ ของผู้ใช้งาน การเก็บประสบการณ์ของผู้ใช้ที่ผ่านมา เพื่อให้องค์กรรู้ใจลูกค้า

มากขึ้นและสามารถผลิตสินค้าและบริการในแบบที่ “เรารู้ว่าคุณกำลังคิดอะไรอยู่” ส่วนการจะทำให้ข้อมูลมีประสิทธิผลได้ระดับนี้ จำต้องใช้ AI เข้ามาต่อยอด ซึ่งต้องเป็นการจับคู่ข้อมูลและแอปพลิเคชันที่ใช้งานอย่างเหมาะสม และต้องไม่ละเมิดข้อมูลส่วนบุคคล

เข้าใจว่า ยุคของ AI Revolution คงเกิดขึ้น แต่ใช่ว่าทุกคนจะใช้ AI ใน การตอบโจทย์โลกใบนี้ทั้งหมด ในกลุ่มนักคิดนักพัฒนาเราอาจพึ่งจากการครอบงำของ AI ไปได้ แต่ในมุมของฉุกเฉียวยังต้องเลือกค่าหรือผู้บริโภคจาก AI ครอบงำ เปรียบเทียบง่าย ๆ กับการขับรถโดยใช้แผนที่ Google Map อาจทำให้เรามองข้ามตัวเลือกอื่นที่อยู่ข้างทาง หรือเลือกที่จะไม่เปลี่ยนเส้นทาง ซึ่งต้องกลับไปนึกถึงคำว่า “สมดุล” ที่พูดถึงข้างต้น เช่น เราใช้ AI เป็นไกด์ไลน์ได้นะ แต่ก็ต้องเชื่อตัวเองบ้างในบางครั้ง และลองมองหาเส้นทางอื่นในการดำเนินชีวิตบ้าง เพื่อให้โลกความจริงไม่ไร้สัมภានเกินไป ส่วน Bluebik Vulcan เองจะทำหน้าที่เป็นพื้นเพื่องานนี้ในการพัฒนาเทคโนโลยี เพื่อสนับสนุนโครงสร้างและ การปฏิบัติงานในทุกมิติ เพื่อติดอางธุรกิจประเทศและองค์กรธุรกิจไทยให้มีศักยภาพในการสู้ศึกดิจิทัล ไร้พรมแดนทั้งปัจจุบันและอนาคต

ข้างในเนื้อหา ระบบความจาก “The Story Thailand”

# แม่ทัพ ‘Bluebik Vulcan’ สร้างการเปลี่ยนแปลง Digital Intelligence ด้วย T2P

24 Jul 2023

The Story กับบทสัมภาษณ์ของ ‘คุณปอง ปัญญา พรชารกิจกุล’ แม่ทัพ ‘Bluebik Vulcan’  
สร้างการเปลี่ยนแปลง Digital Intelligence ด้วย T2P

“Bluebik Vulcan” เทพแห่งการซ่างยุคดิจิทัล

จากที่ The Story ได้กล่าว หากจะสืบความย้อนถึงความหมายที่ลึกซึ้งของ Vulcan นั้น จะมีมาจากการ  
โรมันที่มีนามว่า “วัลแคน” (Vulcan) หรือรู้จักในชื่อภาษากรีกว่า เอฟเฟสตุส ซึ่งท่านเป็น “เทพแห่งไฟ โลหะ และการ  
ซ่าง ผู้ปะกอบอัสนีบาทเป็นอาชูให้เทพเจ้าซูส” โดยมีลักษณะคุ้นเคย คือ ผู้อ่อน และไฟ แทนความหมายของเทพเจ้าแห่ง<sup>1</sup>  
การประดิษฐ์อาชูและประติมากร

ซึ่งสื่อให้เห็นถึงภาพลักษณ์ทางธุรกิจของ Bluebik Vulcan นั้นคือ “การติดอาชูทางเทคโนโลยีให้กับลูกค้า  
เพื่อสู่ศักดิ์ในโลกดิจิทัลปัจจุบัน” และในอีกนัยเราต้องการใช้ชื่อ Bluebik Vulcan ให้มีความสอดคล้องกับ Bluebik  
Titans (บลูบิก ไททันส์) เพื่อแสดงความเป็นอันหนึ่งอันเดียว และการผนึกกำลังของมหาเทพกันภายใต้ปริษัท  
Bluebik Group

“เป็นชื่อที่ตั้งล้อกับอีกหนึ่งหน่วยงานไกดีกวายได้ Bluebik (บลูบิก) คือ Bluebik Titans (บลูบิก ไททันส์) ซึ่ง  
จะมาจับมือกันในการนำดิจิทัล化งานส์ฟอร์เมชันส์มอปให้ลูกค้า”

Bluebik Vulcan เป้าหมายสูงสุดขององค์กรเราต้องการทำให้เกิด “Make Reality Alive” ที่ต่อยอดจาก  
“Ambition to Reality” ที่เป็นเป้าหมายสูงสุดของ Bluebik Group โดยคำว่า “เรียลลิตี้มานิยามการพัฒนา  
เทคโนโลยีที่มีชีวิตให้เกิดขึ้นจริง และเติบโตไปกับลูกค้าในทุกยุคทุกสถานการณ์” ดังเช่น การพัฒนาแอปพลิเคชัน  
ธุกรรอมการเงินบนมือถือที่เริ่มต้นตั้งแต่ยุคเอทีเอ็มซิม (ATM SIM) บริการโอนเงินต่างประเทศ WARP และอื่น ๆ จน  
มาเป็น Mobile Banking ธนาคารบนมือถือในปัจจุบัน

โดยเดิมที่เราเป็นหน่วยธุรกิจดิจิทัล เดลิเวอรี่ (Digital Delivery) ภายใต้ปริษัท เค็มเพค กรุ๊ป ทำงานด้านการ  
พัฒนาซอฟต์แวร์แบบครบวงจร มีลูกค้าเป้าหมายเป็นกลุ่มนัการรา 80% และกลุ่มพลังงาน 20% ส่วนการเข้าซื้อ

หน่วยธุรกิจนี้เพื่อเข้ามาเป็นส่วนหนึ่งของบลูบิก กรุ๊ป ถือว่าเป็นโอกาสที่จะได้เสริมแกร่งในมิติการเป็นบริษัทที่ปรึกษา และต่อยอดโซลูชันเพื่อขับเคลื่อนดิจิทัลทรานส์ฟอร์เมชัน

คุณปอง บัญญาได้กล่าวว่า

“เรามีศักยภาพมากพอที่จะเติบโตเป็นบริษัทที่ปรึกษาที่สามารถแข่งขันได้กับต่างชาติ หรือเติบโตสู่ระดับโลก ลบอลได้ในอนาคต”

### มัดใจลูกค้าแบบ End-to-End

พันธกิจหลักของ Bluebik Vulcan ช่วง 1-2 ปีแรก จะเน้นการให้บริการฐานลูกค้าเดิมในกลุ่มการเงินการธนาคารและกลุ่มพลังงาน โดยทำคุณานิยมแผลงกลุ่ม เพื่อขยายฐานไปยังกลุ่มธุรกิจบริการด้านสุขภาพ เช่น โรงพยาบาลเอกชน หรือบริการสุขภาพสำหรับภาคประชาชนอื่น ๆ ร่วมกับทีมงานที่เคยดูแลงานกองทุนหลักประกันสุขภาพแห่งชาติมาก่อน ซึ่งทำให้ในอีก 2-3 ปีข้างหน้า สัดส่วนของลูกค้าเป้าหมายในอนาคตจะอยู่ในกลุ่มการเงินและการธนาคาร 70% พลังงาน 20% และบริการสุขภาพ 10%

“ชาวต่างชาติที่กลับเข้ามาและธุรกิจที่พื้นตัวจะทำให้เกิดการพัฒนาแอปฯ เพื่อรองรับธุรกิจรวมและรูปแบบการชำระเงินใหม่ ๆ ในภาคการเงินการธนาคารทั้งในและระหว่างประเทศมากขึ้น สร้างการจับตลาดพลังงานที่เพิ่งเริ่มเมื่อ 3-4 ปีที่ผ่านมา ทำให้เห็นโอกาสทางธุรกิจที่ไม่ใช่เฉพาะน้ำมันอิคต่อไป แต่คือ Business Ecosystem ที่ดึงชัพพลายเชนเข้ามาเพื่อให้การบริหารพื้นที่ในปัจจุบันนี้เกิดประโยชน์สูงสุด แต่คือ Super App น่าจะตอบโจทย์มากที่สุด และการเจาะตลาดสุขภาพซึ่งต้องการความรวดเร็วในการบริการ เช่น การนัดหมาย การเชื่อมข้อมูลคนใช้เข้าหากัน ตลอดจนระบบการรักษาความปลอดภัยของข้อมูล กฎหมาย PDPA ต่าง ๆ”

พัฒนาซอฟต์แวร์แบบ End-to-End ตั้งแต่การพัฒนาระบบงานหน้าบ้าน หลังบ้าน มองภาพรวมการเดินทางของลูกค้าต่อการใช้งาน (Customer Journey) ผ่านการพัฒนาแอปฯ การออกแบบให้ใช้งานง่าย (User Interface-UI) เพื่อให้ลูกค้าได้รับทั้งประสบการณ์การใช้งานที่ดี (User Experience-UX) ไปจนถึงการนำแอปพลิเคชันขึ้นสู่ระบบเพื่อส่งต่อการใช้งานจริง และการดูแลซ่อมบำรุงระบบ

“ความต้องการของลูกค้าในยุคดิจิทัลทำให้เราเข้าไม่ได้ เราเคยเจอกับความรายต้องการให้พัฒนาแอปพลิเคชันด้วยงบประมาณเท่านี้ให้เสร็จ พร้อมทดสอบและส่งมอบการใช้งาน (Minimal Viable Product-MVP) แบบเร็วสุด

คือ 4 เดือน ซึ่งเป็นการวัดขีดความสามารถขององค์กรในเชิงการจัดการรายได้ และองค์ความรู้ทางเทคโนโลยีที่แม่นยำของทีมงาน”

การเติบโตไปเป็น Tech Company ที่ครบเครื่องจึงต้องคำนึงถึง 3 ปัจจัยสำคัญ ได้แก่ “เทคโนโลยี” ที่ต้องตามให้ทัน “บุคลากร” ที่ต้องพัฒนาอยู่ตลอดเวลา และ “กระบวนการทำงาน” ที่ต้องปรับเปลี่ยนให้เหมาะสมกับปัญหาหรือสถานการณ์ที่เปลี่ยนแปลง

เก็บตกทุกความต่างทางเทคโนโลยี

The Story ได้กล่าวถึงจุดเปลี่ยนของการพัฒนาซอฟต์แวร์แบ่งได้ 2 ช่วง คือ

- ยุคของซอฟต์แวร์ที่เขียนมาสำหรับทำงานผ่านเว็บไซต์หรืออินเทอร์เน็ต หรือ “Web-based” ที่ไม่จำกัดค้าต้องการแบบไหน นี่คือสิ่งที่องค์กรมีให้
- ยุค Digital Transformation การพัฒนาซอฟต์แวร์เป็นแบบ “Application-based” ที่ทำงานผ่าน Mobile Devices ซึ่งมีตัวเลือกให้ผู้ใช้งานมากหลาย โดยแนวคิดของการพัฒนาแอปฯ ที่เปลี่ยนจาก “ทำไปอย่างไรก็มีคนใช้” กลายเป็น “ทำแล้วจะมีคนใช้หรือเปล่า” เพราะผู้ใช้งานอาจจะโหลดแอปฯ ลงมาใช้งานแค่ 3 นาทีก็ลบทิ้ง เพราะหากคลิกแค่ 3 ครั้งแล้วไม่ชอบ หรือใช้ยาก ผู้ใช้งานมักจะลบแอปฯ นั้นทิ้ง

เมื่อเป้าหมายการพัฒนา คือ ทำอย่างไรให้ลูกค้าติดใจ และอยู่กับแอปพลิเคชันไปยาว ๆ จึงไม่ใช่การยืนอยู่กับที่แล้วรอลูกค้าเข้ามา แต่ต้องเริ่มต้นเข้าหาความต้องการของลูกค้าก่อน และไม่คิดว่าแอปพลิเคชันนี้ใช้กับลูกค้าได้ทุกกลุ่ม แต่ต้องลงลึกถึงบุคลิกลักษณะของกลุ่มลูกค้าเป้าหมายแต่ละกลุ่ม ทำการวิเคราะห์ความต้องการอย่างจริงจัง เพื่อให้การพัฒนาไฟเจอร์การทำงาน หน้าตาของแอปพลิเคชัน ประสบการณ์ที่ดีที่ต้องการส่งมอบนั้น เป็น “โครงกันแน่” ต้องการ “โครงกันแน่ที่ยอมจ่าย” และด้วยความที่เทคโนโลยีไม่เหมือนเดิม เปลี่ยนแปลงรวดเร็ว ภาษาโปรแกรม เช่น JAVA ที่มีการใช้งานกันกว้าง ๆ เป็นสิบปี ซึ่งต่างจากภาษาเกิดใหม่หรือเทคโนโลยีบางตัวที่มาไว้ไปไว จึงเป็นสิ่งที่ต้องรังสรรค์ให้ได้ว่า ภาษาใดควรเรียนรู้ หรือไม่ ควรทุ่มนบุคลากรไปกับเทคโนโลยีนี้หรือเปล่า เพราะบางตัวมีอายุงานแค่ 5 ปี ลูกค้าก็เลิกใช้แล้ว

“ผมเคยพัฒนาแอปพลิเคชันให้กับธุรกิจบันเทิง โดยต้องทำให้ลูกค้าอย่างใช้เวลาไปกับการใช้งานแอปพลิเคชันของเราให้มากที่สุด แต่ทำอย่างไรถึงจะแย่งเวลาจากเฟซบุ๊ก เกม ยูทูป หรือแอปฯ อื่นๆ ที่เขาชอบ เราจึงต้องเข้าถึงลูกค้าและเข้าใจว่า เขาเหมาะสมกับเทคโนโลยีแบบไหน ภาษาแบบนี้เหมาะสมกับการพัฒนางานแบบไหน เพราะทุกอย่างที่พูดมาคือ การลงทุนทั้งสิ้นไม่ว่าจะเป็น เวลา และกำลังคนในการเรียนรู้และพัฒนา ซึ่งผมเองมีทีมงานในการจับตาความเปลี่ยนแปลงทางเทคโนโลยีตลอดเวลา”

ข้างในเนื้อหา และบทความจาก “The Story Thailand”

สามารถอ่านบทความ The Story

Thailand เพิ่มเติม: [https://www.thestorythailand.com/06/03/2023/92083/?fbclid=IwAR1fppDjfl5ysdn0dgFxquoJE6TpHumK5Risu\\_1qghc3OA2Abvtl7mO-jU](https://www.thestorythailand.com/06/03/2023/92083/?fbclid=IwAR1fppDjfl5ysdn0dgFxquoJE6TpHumK5Risu_1qghc3OA2Abvtl7mO-jU)

## Success Stories

2004 – 2017 NHO Data Center System, MA

2006 – 2007 Intelligent Payment Gateway – AIS

2007 – 2010 ATM Sim KBank & DTAC

2008 – 2011 SSO – The Revenue Department

2011 – 2017 K Mobile Banking, K corporate Mobile Banking

2018 – 2019 SCB BIKE, Thaibank Museum, Chatuchak Guide, E-Voucher

2018 – Today NDID, SCAN & PAY, Global Payment, KBIZ for KBank

2020 – Today Line API

2021 – Today Trade Documentary, Procure to Pay, KBank – Regional K+Vietnam Mobile Banking

2022 – Today KBank – Regional eKYC

2023 – Today Moving Forward to Bluebik Vulcan

# About Us

We are Vulcanian

We represent the beginning of the digital transformation.

As for end-user-delivered application solutions, we are the market leader.

Make Reality Alive

Vision

We focus on IT consulting and technology solution

Leveraging world-class technology creatively to deliver exceptional experiences to every business with **Trust** and **Quality**.

Mission

- To be a top leading IT solution provider in Thailand.
- Enhance services standard to deliver the best experience for every business.
- Be the force in developing technology experts in Thailand.

Background

Bluebik Vulcan was established in 2023 by the vision of Mr. Pochara Arayakarnkul, CEO of Bluebik PCL., who had the vision to increase the capability of IT Solutions, therefore acquired the Digital Delivery Division from Mr. Siriwat Vongjarukorn, CEO of MFEC PCL. and

established as Bluebik VULCAN, Aiming to create an IT solution company with international potential.

Bluebik VULCAN is comprised of over 300 IT developers, specializing in developing multilingual solutions and platforms. Experienced in providing IT systems development services for top enterprise businesses in Thailand.

Panya Pornkajornkitkul - Managing Director

Office of Executive

With over 20 years of experience in the IT industry, we have been serving customers since the beginning of the digital transformation. This has led to the development and extension of applications for various business groups in Thailand.

We have combined our work experience from abroad with the Thai style of work to create a team of tech professionals of Thai nationality. We are now ready to move forward with a development team of more than 300 people to our new home, "**Bluebik Vulcan.**"

Bluebik Vulcan Experts

Kungwan Assawachaiwasin - Business Unit Manager - Digital Platform Solution

Natchanan Tangthamniyom - Business Unit Manager - Modernized Automation Delivery

Tanin Patsornpun - Business Unit Manager - Digital Service Solution

Anuchard Aussavaviwatpong - Business Unit Manager - Fast Adoption of Solution and Technology

Rattapol Sreshthabutra - Business Unit Manager - Fast Adoption of Solution and Technology

Seri Makiad - Business Unit Manager - Unicorn Team

Watchara Metphan - Business Unit Manager - Major Financial Solution

Phalat Pipatboon - Business Unit Manager - Modernized Automation Delivery

Wisarut Phearnsaksiri - Business Unit Manager - Strategic Financial Solution

Autcharawan Jaroenrum - Data Consulting Manager - Major Financial Solution

# Contact Us

If you require help, we are available to offer the answers you need.

## **Contact Us**

[contact@vulcan.bluebik.com](mailto:contact@vulcan.bluebik.com)

## **Job Opportunities**

[career@vulcan.bluebik.com](mailto:career@vulcan.bluebik.com)

## **Address**

Bluebik Vulcan Company Limited

199 S-OASIS Building, 11th Floor, Unit no. 1103-1106, Vibhavadi Rangsit Road, Chomphon,  
Chatuchak, Bangkok 10900

Tax ID : 0105565196514

Tel. 02-107-0603

# Cookies Policy

## Additional Information About Cookies

### Cookies policy

The cookie policy explains cookies and how we use them. You should read this policy to understand the types of cookies we use, the information we collect using cookies, as well as how we use such information.

Cookies do not generally include user-identifiable information, but the personal information we collect about you may be connected to information stored and obtained from cookies.

### Definition

For the purpose of this cookie policy:

“Company” (also “we” or “our” in this policy) refers to Bluebik Vulcan Company Limited. at SINGHA COMPLEX, No. 1788, Unit 3001-3003, 3009-3014, 30th Floor, New Phetchaburi Rd., Bang Kapi, Huai Khwang, Bangkok 10310

“Service” means website.

“Website” means our website, accessible via <https://vulcan.bluebik.com>.

“You” means the persons who access or use service or the companies or other juristic persons that access or use service on behalf of the persons as agreed.

Cookies are those small files that contain data which will be stored in your computers and/or communication devices including tablet computers and smartphones via web browsers when you visit our website. Cookies will not harm your computers and/or communication devices.

In the following scenarios, your personal information may be collected in order to improve your service experience: for instance, to recognize your language identification and customize information according to your preferences; information about your privacy; items and services in which you are interested. Cookies may also be used to measure the website’s traffic and to customize the website’s content based on your past and present activity, or for advertising and public relations purposes.

### How do we use cookies?

We use cookies to enhance your experience and satisfaction. This will allow us to develop a better understanding of how you are using our website and improve its accessibility and

usability. In certain cases, we may require a third party to link and process information for marketing purposes, as well as collect Internet Protocol (IP) addresses and statistical analysis cookies.

The types of used cookies

**Types of cookies:** Cookies for usage analysis and measurement

**Description:** This type of cookies lets us measure the performance., for example, by processing the number of pages that you visited, the number and characteristics of users' groups. The data will be used to analyze users' behavior patterns.

**Examples:** Google Analytics, Hotjar

Types of cookies: Cookies for advertising

**Description:** This type of cookies are stored on your devices to collect data about usage and the links that you visit and follow. In addition, third-party cookies may use data that is forwarded in online media and content obtained from the service to understand users' requirement for the purpose of customizing the website's advertising campaigns to your interest.

**Examples:** Facebook Pixels

Cookie management

You can clear and reject the collection of cookies according to instructions from the web browsers that you use via the following links (as of May 30, 2022).

- Chrome
- Firefox
- Internet Explorer
- Microsoft Edge
- Safari
- Safari for iOS
- Chrome for android
- Chrome for iOS

Your choices about cookies

If you want to reject cookies on the website, you must first disable cookies on your web browsers and clear the cookies that were stored in your browsers that linked you to this website. You can choose this option to always block cookies.

If you reject our cookies, you may experience some inconvenience while visiting the website and some features may not work properly.

If you want to delete cookies or setting your web browsers to delete or reject cookies, please go to the help pages of your web browsers.

Contact us

Lao Peng Nguan Tower

333 Lao Peng Nguan Tower 21st Floor, Soi Choeipuang, Vibhavadi Rangsit Rd., Chompol, Bangkok 10900

Email: [contact@vulcan.bluebik.com](mailto:contact@vulcan.bluebik.com)

Changes to the cookie policy

This cookie policy may be updated occasionally to comply with the applicable rules and regulations. We recommend you to visit this policy from time to time to ensure that you are aware of any changes.

# Customer Privacy Notice

## Additional Information About Customer Privacy Notice

Bluebik Vulcan Company Limited (the “Company”) assure that the Company respect the statutory rights as the data subject of you as our customer (the “Customer”); and represent to collect and use your personal data correctly and transparently only as necessary for the efficient provision of our services or performance of any obligations that the Company may have with the Customer. In particular, the Company commit to ensure the compliance of their personal data processing with the applicable personal data protections laws and the best information security measures.

## Objectives of this Privacy Notice

The Company intend to inform this Customer’s Privacy Notice (the “**Notice**”) to notify the Company’s necessity and conditions for the collection, use, and disclosure of the Customer’s personal data.

## Acceptance of this Notice

When the Customer contact the Company for any inquiries via any of the Company’s channels that may include this Corporate Website or other channels; and when the Customer enter into an agreement and/or any transaction documentation with the Company, the Company shall deem that the Customer have accepted and acknowledged the terms and conditions of this Notice.

## Change of this Notice

The Company may review and update this Notice from time to time to ensure its compliance with the relevant laws and regulations and scope of the Company’s services provided to the Customer. The Company will notify the Customer of the amended Notice by announcing the updated Notice via Company’s communication channels.

## Definition and Scope of Personal Data

“Personal Data” means any information that is directly or indirectly personal identifiable in accordance with the definitions given under the Protection Data Protection Act B.E.2562, the amendment thereof and other relevant laws. For the avoidance of doubt, the Personal

Data hereunder would also be referred to the Personal Data of the authorized representative of the corporate Customer (the “Representative”)

The Personal Data to be processed under this Notice shall include the process of the personal data of the individual Customer and the process of personal data of the authorized director and/or representatives who is authorized by the corporate Customer to contact with the Company.

#### Source of Personal Data

The Company may receive the Personal Data from the following sources: (1) directly from the Customer during the communication, the conversation, the contract and transaction document preparation process; (2) indirectly from public records and non-public records that the Company may have the legitimate rights to get access to; or (3) indirectly from the reference made by any person; provided that in case the indirect collection of the Personal Data, the Company will inform the Customer of the source of data.

#### Personal Data being processed

The Company would need to collect, use and process the following Personal Data of the Customer:

1. Contact information including full name, contact information of the Representative (i.e., telephone number, email and contact address); and the Identification information of the Representative, for instance, a copy of identification card or passport;
2. Personal Data of the Customer's employees who will become the system or products users of the Company which may including full name, telephone number, email address for user registration;
3. Technical information that the Company's systems may collect in connection with the use of electronic systems or of the device that the Customer uses to connect with the Company's systems, including without limitation to the IP Address, browser type, username and password information and all the log-in logs;
4. Other Personal Data that the Customer may submit to the Company during the communication made between the Customer and the Company that may include the complaint and feedback raised by the Customer; the request for any support from help desk; the Personal Data being submitted to participate in the Company's

campaign or event, including without limitation the identity documentation of the Representative or other persons that would be required for the travel reservation).

In case the Customer submit any Personal Data of any related personal under their supervision to the Company, upon the receipt of those Personal Data, the Company shall deem that the Customer represent their legitimate rights to share and disclose those Personal Data to the Company and therefore the Company shall be fully entitled to process those Personal Data pursuant to this Notice.

#### Objectives of the Personal Data Processing

All of the Personal Data of the Customer and the relevant persons shall be collected, used, and processed by the Company in order to serve the following purposes:

1. To communicate; to give the relevant information; and to coordinate with the Customer throughout the process of the negotiation and conclusion of the transaction arrangement as well as the documentation preparation and execution;
2. To perform any rights and obligations that the Company may have with the Customer under the agreement entered into, including the provisions of the installation, advisory or maintenance services, the payment confirmation, the delivery services; and any the performance of any other duties that the Company may have in any campaign or event that the Company may host for the Customer in accordance with any agreement to be made between the Company and the relevant Customer;
3. To protect the Company's legitimate right in case that the Company may need to enforce their right against the non-complying Customer as defined under the relevant agreement and in the legal proceeding;
4. To improve the good relationship between the Company and the Customer from the individual or on the overall perspective, for instance: to plan the product and service development or improvement that would match the Customer's interest and requirements; to train the Company's employees; to manage the compliant and feedback made by the Customer; to prepare the internal audit process; or to prepare the Company's report summarizing the business performance of the Company, both in the identifiable and non-identifiable statistic information of the relevant Customer;
5. To serve any other particular purposes that the Customer may give specific consent to the Company to process, including without limitation to contact for marketing

purposes.

#### Retention Period of the Personal Data

The Company may need to retain the Personal Data throughout the period of time that Company would need to serve the defined objectives under this Notice, in particular for the following retention period: (A) throughout the time that the Company still have the business relationship with the relevant Customer; (B) for the period of time necessary for the Company to protect our legitimate rights in the legal proceedings at the maximum prescription period of 10 years; (C) the period of time that the Company would have the legal obligations to perform; (D) for the period of time necessary for the business operation of the Company without causing excessive impact on the Customer's rights; and (E) in case any Personal Data processing is executed with the consent granted, the Company would retain the Personal Data until the time that the Customer may withdraw their consent.

#### Disclosure of the Personal Data

Generally, the Personal Data will not be disclosed to any third party, except in these necessary circumstances that the Company may need to disclose and/or share the Personal Data to the following persons:

1. To third-party service providers of the Company, including without limitation the Company's affiliates, subcontractors, consulting company or audit company, being engaged by the Company to support the Company's performance of any obligations or to support its business operation; provided that the Company shall disclose the Personal Data only on the necessary basis under the data processing agreement between the Company and such third-party service providers; and
2. To any government authorities that the Company is obliged under the relevant laws or the judgement or order of government authorities to disclose such Personal Data to; provided that the Company shall only disclose Personal Data on the necessary to perform such statutory obligations solely.

In case that the Company will be disclosing or sharing the Personal Data to any person residing or operating in any country other than Thailand, the Company commits to do so in strict compliance with the Personal Data Protection Act B.E. 2562.

#### Customer's Right as a Data Subject

The Company respect the Customer's statutory rights as the data subject under the relevant laws that the Customer shall be entitled to exercise any of the following rights in accordance with the conditions in the applicable laws

1. **Right to withdraw consent** if the Customer have given the consent to the Company to collect, use and disclose the Personal Data (whether the consent received before or after the effective date of the relevant laws) at any time that the Company still possess the Personal Data;
2. **Right to request for access to Personal Data** that are in the Company's possession and request for the copy thereof;
3. **Right to request for data portability** in case the Company storing such Personal Data in the format which is readable or commonly used by ways of automatic tools or equipment and request for data portability of such Personal Data to other data controller at any time unless the technical problems;
4. **Right to object to any processing of the Personal Data** if the collection, usage, and disclosure of the Personal Data is processed for the legitimate interest and the Customer can prove that such process causes impact to the Customer's fundamental rights;
5. **Right to request for the deletion or de-identification** if the Customer believe that the Personal Data are collected, used and disclosed illegally; or the Company do not have any necessity to process their Personal Data or when the Customer exercise the right to withdraw the consent;
6. **Right to request the Company to suspend the Personal Data processing**, in case the Company is in the process of reviewing the relevant request from the Customer relating to the Personal Data or in any circumstance that the Company have no further necessity to process such Personal Data;
7. **Right to request to rectify** the Personal Data to be correct, updated and complete; and
8. **Right to complain** to any authorities if the Customer believe that the collection, usage and disclosure of the Personal Data by the Company do not comply with the relevant laws.

The Customer may exercise those defined rights by completing the request form and submit to the Company via the designated channels; provided that it should be noted that certain request may be subject to legal restriction and in certain circumstances, the Company may reject or object to the rights requested and the Company shall notify the

Customer of the legal justification.

Data Protection officer

The Company have appointed the Data Protection Officer (DPO) to supervise and monitor the Company's operation regarding the collection, use and disclosure of the Personal Data to ensure the full compliance with the Personal Data Protection Act B.E. 2562 and other relevant laws.

In case the Customer have any inquiries about the Personal Data, please feel free to contact the Company at:

Name: Bluebik Vulcan Company Limited

Email: [dpo@vulcan.bluebik.com](mailto:dpo@vulcan.bluebik.com)

Data Subject Rights Request Form : [Click here](#)

# Vendor Privacy Notice

## Additional Information About Vendor Privacy Notice

In order for Bluebik Vulcan Company Limited (the “Company”) to proceed with the procurement of your quotation and proposal, please kindly study this privacy notice before submitting your quotation and proposal. The Company represents the information security measures of all of your personal data in strict compliance with the applicable laws.

### Your personal data to be processed

During the procurement process, the Company may receive the personal data of you as the individual or your representative of the corporate entity (collectively referred to as “You”) directly from the quotation, the communication or our interview; or indirectly from a third party that may refer You to the Company. The personal data being processed hereunder include

1. Name, surname, ID card information of natural person vendor or the authorized director, assignee, or representatives of vendor who is a juristic person, contact information (such as address, contact location, telephone, numbers, and e-mail), and may include identity documentation of such representatives.
2. Payment information for natural person vendor such as bank account, disbursement history.
3. Work experience, performance assessment and test, including other personal data submitted or disclosed by You which is part of the obligation that You need to perform within the framework of the agreement between the Company and You.

In addition to your personal data, You may submit personal data of other relevant person to the Company, including but not limited to name list of their employee who request to provide services and perform other duties in the Company’s premise. , Upon the receipt of those personal data from You, the Company shall deem that You have the legitimate rights and/or get the consent from those parties to disclose these personal data to the Company in this procurement process and the Company shall, therefore, be entitled to process the personal data of those parties rightfully under this Privacy Notice.

### Objectives for Personal Data Process and the Retention Period

The Company would need to collect, compile, and use your personal data for the following purpose

1. To verify your identity and all information that You has given to the Company, assess whether or not you meet all the qualifications defined, and contact or coordinate with You during the procurement process until the entry into the relevant agreement between You and the Company. Even though you are not selected to enter into the agreement with the Company, the Company would reserve the rights to store your personal data for the ease of coordination and management of the Company's procurement in the future as well as for the audit purpose of the procurement process undertaken for the period of 1 calendar years from the completion of procurement process;
2. To perform the Company's duties during the operation under this contract, such as the vendor's performance evaluation in order to calculate the payment, and the enforcement of other rights and duties under such agreement; provided that the processing of personal data for such purposes may include the processing of personal data of the vendor's employees, person under the vendor affiliation, and the vendor's third-party service providers that you may submit to the Company;
3. To perform any legal obligations that the Company may have, especially for the tax and accounting legal obligations;
4. To protect the Company's legitimate rights to claim the right against the vendor that may breach or violate their duties under the relevant agreement between You and the Company, including the use to file the lawsuit.

For such purpose of processing the personal data, the Company would need to retain those personal data that You has given to the Company as long as duration of the relevant agreement between each vendor and the Company. In addition to protect the rights of the Company under the relevant contracts, the Company reserve the right to retain all of those personal data as long as the reasonable prescription period to protect the Company's right in any dispute (generally prescription period is up to 10 years). In case that the Company have a legal obligation to process your personal data, the Company shall retain those personal data within a reasonable period of time under the applicable laws.

#### Disclosure of the Personal Data

If necessary, the Company may disclose an/or transfer the your personal data to these groups of persons, including (1) to Customer or other Company's vendor that the Company would need to disclose personal data to perform and provide services for such customer, vendor, or third party service provider (including but not limited to affiliates, advisory company, or external audit) that have been hired by the Company in order to support the

Company's performance of duties, especially for the procurement process; provided that the disclosure shall only be made on the necessary basis pursuant to the data processing agreement to be entered into; and (2) to the governance authorities that the Company shall be obliged under the relevant laws or in the case that the Company is subjected to judgment or any other government authorities order, the Company only disclose your personal data on the necessary in accordance with the Company's duties.

#### Data Subject Rights.

The Company respects your right as the data subject that You shall be entitled to under the applicable laws and You can contact the Company to exercise any of the rights as follows: the right to withdraw consent, to get access and request for a copy, to revise your personal data, and to request for data portability. In case the Company conducts personal data in a readable form or generally used by equipment and automatic tools. including the right to transfer personal data in these form to other data controllers, the right to object to any process of their personal data, the right to request for deletion or de-identification of the personal data once there is no further necessity, the right to request for the suspension of the personal data processing or the right to complain. Please feel free contact us email: [dpo@vulcan.bluebik.com](mailto:dpo@vulcan.bluebik.com)