

Customized eCommerce

Development Services



Creating a Seamless Experience from Search to Checkout

Our eCommerce development service helps businesses make the most of their eCommerce investments with flexibility, extensibility, and complete control over aspects such as architecture, functionality, design, and flow.

Overview

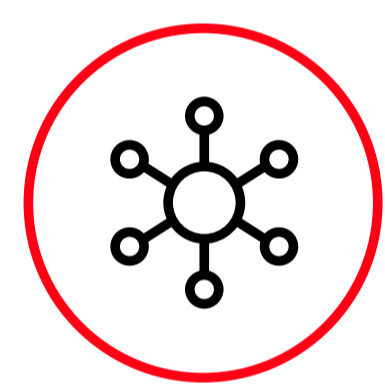
Before embarking on an eCommerce journey, businesses need to carefully evaluate options to ensure sustainability and marketability.

An ideal eCommerce installation should

- ⬡ Deliver consistently high response time
- ⬡ Offer an environment where shoppers can perform transactions securely
- ⬡ Manage unexpected surge in demand and seasonal spikes in traffic

eCommerce Trends

The eCommerce industry is evolving at a tremendous pace and businesses need to keep up with the latest market trends to stay competitive. Let's take a look at some of the trends driving eCommerce this year.



Omnichannel Commerce

Companies that have adopted the omnichannel eCommerce strategy are thriving. We provide businesses the ability to service shoppers across touchpoints such as mobile, social, and web, ensuring a seamless experience between online and physical stores.



Augmented Reality

With Augmented Reality, customers have the freedom to make informed buying decisions from anywhere, anytime. For example, it helps reduce pre-purchase indecision by enabling the customer to visualize how a chair would look in their living room or how a pair of glasses would look on their face. Reports* indicate that buyers are more loyal to retailers who offer augmented reality as part of their shopping experience.



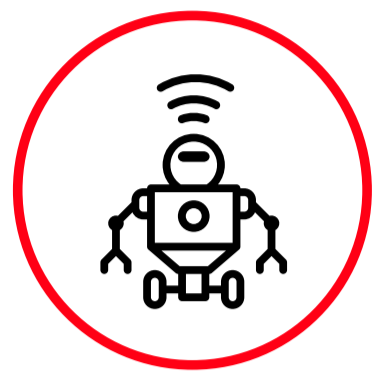
Artificial Intelligence (AI) and Machine Learning (ML)

AI/ML is a critical differentiator in the highly competitive eCommerce space. AI/ML is used to create personalized recommendations, customer service chatbots, and to enhance search functionality. AI/ML can also improve in-store experience through cognitive mobile tools such as a 'virtual shopping assistant' that enables shoppers to zero in on products based on preferences.



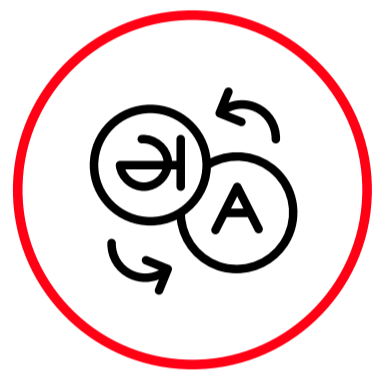
Personalization

Personalization is a critical competitive differentiator and, if implemented correctly, has the potential to significantly increase user engagement, brand loyalty, and revenue. We enable businesses to serve personalized content based on aspects such as interest, purchase patterns, purchase history, real-time intent, and location.



Internet of Things (IoT)

The true potential of IoT in retail is yet to be fully realized. If used smartly, there are multiple applications of Bluetooth Low Energy (BLE), Radio Frequency (RF) and other IoT technologies that can transform retail operations. The use of proximity marketing solutions such as smart shelves/surfaces, smart lighting, and contactless checkout are now being used to increase customer satisfaction and sales.



Multi-country and multi-language support

Multi-country and multilingual custom developed solutions help to meet the expansion goals of eCommerce businesses that aspire to expand their reach to a global level. Multi-region deployments require expertise in implementing functionalities that cater to currency, taxation, and shipping requirements of various regions.

eCommerce Trends

Open and subscription-based eCommerce engines are packed with a host of third-party plugins that could potentially compromise security and user experience. Prebuilt templates and restricted access to code significantly limits the potential to introduce new functionality.

Custom eCommerce development offers businesses the opportunity to implement a solution that is tailored to their needs with the flexibility to meet changing market demands. With significant investments required for an eCommerce implementation, businesses should choose a future-proof approach that ensures sustained growth.



Custom eCommerce

— the Way Forward

Complete Control

With a custom solution, businesses have complete control over every aspect of the online store with a high level of flexibility while setting up product grids, storefronts, shopping carts, checkout flows, and security features.

Flexibility

As eCommerce evolves, keeping up with technology and market trends is critical. Simplifying and streamlining processes such as payments and checkouts, significantly enhances user experience. Compared to hosted eCommerce platforms that offer standardized offerings, custom solutions make it easier to execute changes. For example, simplification of checkout process and search feature enhancements is much easier to execute on a custom solution.

Seamless Integration with Business Systems

Custom solutions can be built to integrate seamlessly with existing Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), and Business Intelligence (BI) systems to ensure all services are centralized and easily accessible.

Custom Content Management System (CMS)

Premade CMSs follow a one-size-fits-all approach, whereas a custom CMS can be tweaked and organized to match unique businesses needs. Extensibility, personalization options, and custom workflows lend greater impact in capturing business opportunities.

Improved Marketing and Search Engine Optimization (SEO)

While most eCommerce platforms offer standardized SEO and marketing capabilities, custom eCommerce solutions provide marketing professionals with the flexibility to incorporate SEO features that are relevant to their needs, ensuring optimal results.

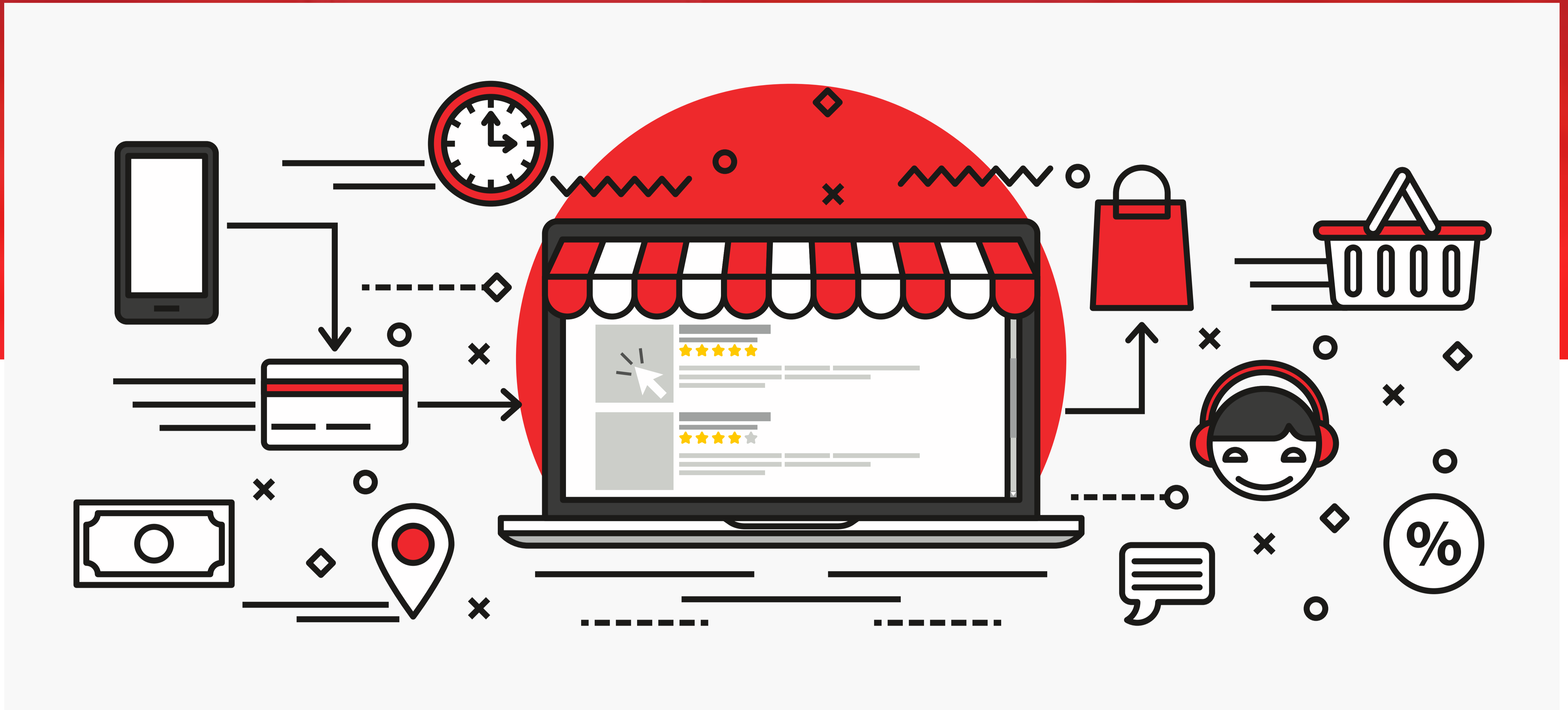
Improved Return on Investment (ROI) and Long-term Viability

Subscription-based enterprise platforms are available at a standard fee; however, recurring expenses towards licensing, upgrade, maintenance, support, hosting, and database services can turn out to be unsustainable in the long run. With a hired development team to manage the implementation, work processes and schedules can be adjusted based on business needs. Alternatively, custom development ensures a phased approach that helps to distribute costs over time.

eCommerce Architecture

— the Key

Architecture is one of the most important aspect of an eCommerce solution. A well-thought-out and precisely implemented architecture can reduce time to market and help businesses keep up with changes in consumer behavior.



Microservices Architecture (MSA)

Our custom eCommerce solutions are built on MSA that has been proven to facilitate faster and agile development of eCommerce solutions.

In an MSA, the entire system is broken down into small modular services that communicate with each other using APIs. Each business capability is encapsulated into individual services, which are isolated from the other. Each service runs a unique business process and usually manages its own database. They can be built, tested, deployed, and managed independently. Microservices Architecture helps break up a complex system into smaller and manageable modules.

Using a Microservices Architecture:

- Technological innovations can be implemented faster
- Significantly cuts down development cycles for new functionalities
- Different microservices can be written in different programming languages
- Modules can be deployed quickly and independently
- Different services can be managed by different teams
- Production problems can be isolated and rectified quickly
- Scaling challenges can be identified and resolved faster *(Microservices can easily be scaled up vertically)*

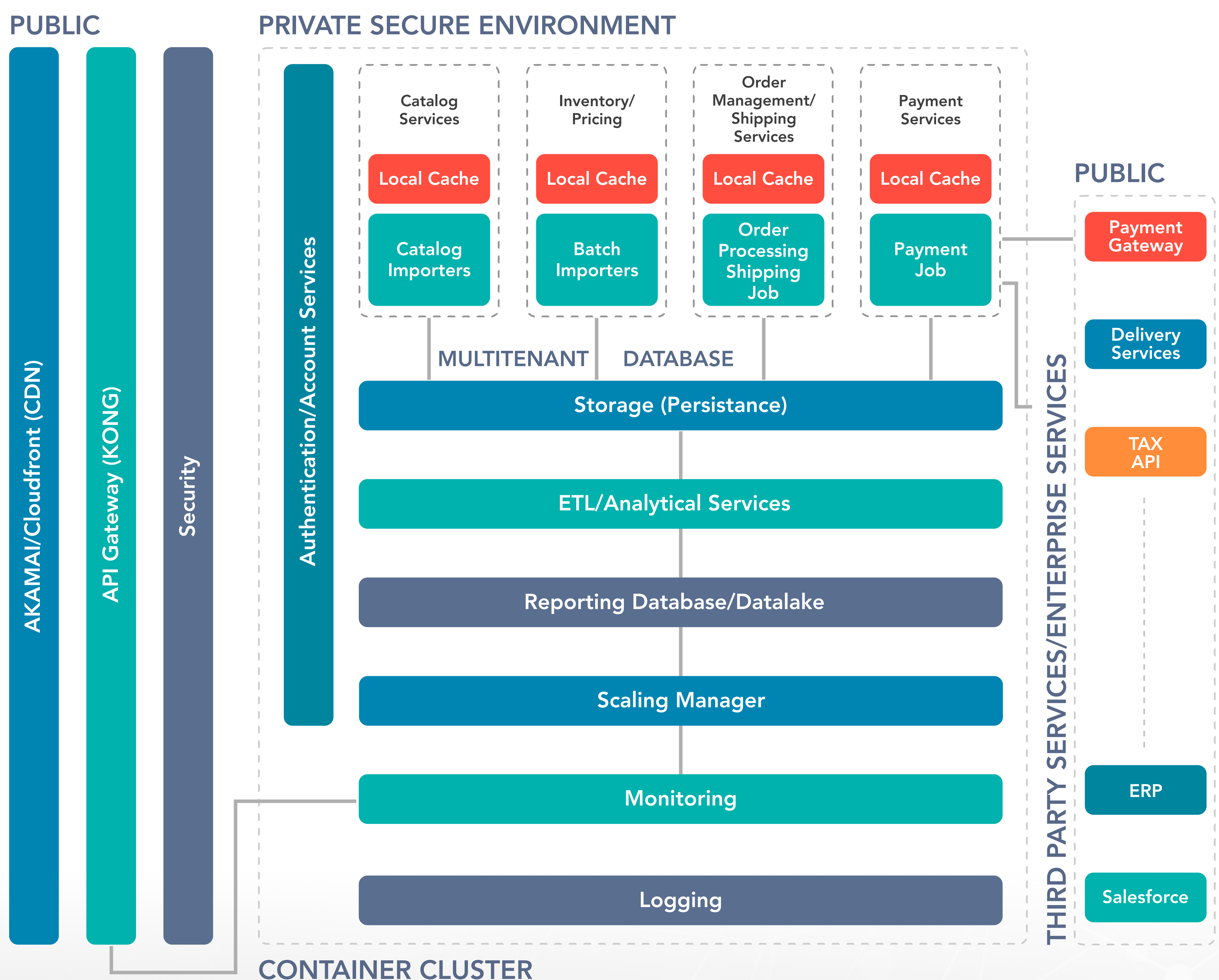
Want to migrate to an MSA architecture?

Conventional, monolithic eCommerce applications are often overly complex, making simple changes and updates difficult. They are also not flexible in adapting to evolving eCommerce trends.

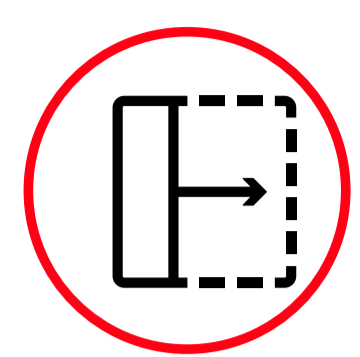
The best option in such cases is to move to an MSA.

Migrating eCommerce systems from the traditional architecture to an API-driven MSA architecture in one go is not recommended. It is safer to adopt a phased approach to microservices. Businesses could start off by moving standalone/independent modules such as shopping cart to the new architecture and then gradually move the entire system to an MSA architecture.

A typical Microservices Architecture for one of our eCommerce solutions



Technical Features



Scalability

- Systems are designed to automatically distribute the entire transaction processing load across multiple servers
- MSA provides the flexibility to scale each microservice independently, depending on the requirement
- Caching servers are utilized to reduce load on the origin servers
- Sharding is used to enable horizontal database scaling
- Docker containers are used to bring up instances quickly in an autoscaling environment



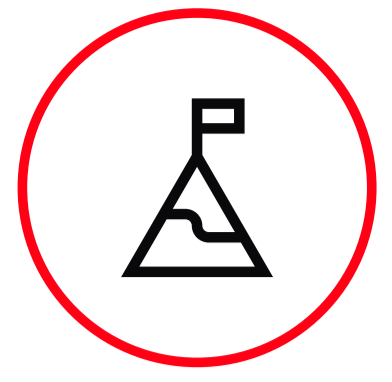
Cache

- Caching is enabled at multiple levels
- Caching implemented at the frontend utilizes browser or device capabilities
- Microservice level caching is enabled to ensure rapid response times and reduced load on database
- Content Delivery Networks (CDNs) are utilized to cache content and serve it to users from the servers closest to them



Security

- OAuth and OpenID is used for user authentication
- Enhanced OAuth security for mobile applications with PKCE
- An API gateway is the single entry point for client requests
- SSL encryption is used to establish secure communication between the frontend application and microservices
- All critical customer data is stored in encrypted format
- Applications are typically deployed on Virtual Private Cloud (VPC)
- VPN servers are used to restrict access to the VPC
- Access tokens and other sensitive information that should not be exposed to the public are handled on a backend proxy layer
- HMAC based authentication is used to ensure integrity and authenticity of data during inter service communication
- OWASP-ZAP is used for automated security testing and Faraday is used for security report generation



Persistence

- Transactional data is handled using RDBMS such as PostgreSQL, MySQL
- Transaction history, reporting and analytics are managed using NoSQL databases such as MongoDB, DynamoDB, Cassandra, and HBase
- Archiving is done using storage management services such as S3 and Glacier from AWS
- Enhanced search capabilities are enabled using Elasticsearch cluster
- Multi-tenant database design supports operations in multiple countries



Availability

- MSA supports individual application modules to be modified and deployed independently without bringing down the entire application, ensuring high availability for users
- Effective data backup with database replication
- Blue-Green deployment strategy eliminates downtime during deployment
- Backend services are hosted on multiple availability zones
- Capability to scale infrastructure across multiple hosting providers
- Individual services and database have active failover mechanism



Monitoring

- Our monitoring solutions are designed to ensure 24X7 service availability
- A combination of monitoring tools are used to continuously monitor systems and individual services to identify bottlenecks and improve performance of the infrastructure
- Monitoring tools such as Nagios, New Relic, AWS Cloudwatch are used for monitoring purposes
- Additionally, healthcheck APIs are configured to monitor different microservices — this is called at regular intervals to confirm that the application is available at all times
- Email or chat notifications are enabled based on the need and the monitoring solution implemented



Enterprise Ready

- Our applications are built to integrate smoothly with existing platforms/systems such as ERP, BI, and CRM solutions such as Salesforce
- Solutions can be extended at any time by creating plugins that enable connection with additional platforms

Performance Matters

- ◊ Pinterest rebuilt their pages for performance realizing a 40% reduction in perceived wait times, thus increasing both search engine traffic and sign-ups by 15%.
- ◊ By cutting average page load time by 850 milliseconds, COOK found they were able to increase conversions by 7%, decrease bounce rates by 7%, and increase pages per session by 10%.



Online shoppers, especially those shopping using mobile devices are known to be highly impatient. Every second of load time can impact a purchase decision. By efficiently using the latest technologies and strategies, our team of developers optimizes user experience and performance to speed up the checkout process.

Some techniques to enhance performance are listed below:

- 🛒 App shell architecture is used to build Progressive Web Apps that reliably and instantly load content for users
- 🛒 Asynchronous script loading is used so that web pages render quickly
- 🛒 Lazy loading technique is used for loading web resources only when needed — this reduces page load time
- 🛒 Minifying JS and CSS, compression of resources and optimization of images is done to save on data that needs to be downloaded
- 🛒 Caching implemented at multiple levels (browser level and microservice level) to retrieve content faster
- 🛒 Content Delivery Network (CDN) is used to cache and serve content to users from the server closest to them, reducing latency and improving performance
- 🛒 Static resources such as Images, JavaScripts, CSS files, and API responses are cached on CDNs
- 🛒 Continuous monitoring of APIs is done to ensure high availability and performance
- 🛒 Mobile-first development approach for better user experience and performance
- 🛒 Newer image formats are leveraged to enhance image delivery
- 🛒 Images are delivered responsively to ensure they render perfectly on multiple devices

We leverage cloud hosting, load balancing, and autoscaling to manage spikes in demand

The cloud makes it possible to easily scale up infrastructure when needed.

Enabling Elastic Load Balancing and autoscaling on the cloud ensures scaling of resources.

- ★ Forecast traffic expected for holidays, flash sales, and seasonal promotions
- ★ Conduct load test to assess the preparedness for surge in traffic and plan required hardware capacity and server configurations
- ★ Enable and configure load balancing and auto scaling of the infrastructure
- ★ Define rules based on which autoscaling setup would bring up server instances and shut them down
- ★ Configure the minimum and maximum number of instances to be used
- ★ Pre-configured additional server instances are automatically deployed in the event of a surge in demand
- ★ Additional server instances are automatically shut down in the event of a drop in demand

Core eCommerce Modules



Product Catalog

- Supports unlimited number of products and categories
- Supports logical grouping of categories to cater to business requirements
- Robust backend system ensures all category and product information gets updated in real time
- Supports different types of offers, coupons, and discounts on products
- Supports product import and export functionalities



Cart and Checkout

- Supports various delivery methods including pick up at the retail store or at a convenient store of choice
- Supports split delivery of orders

- ◊ Supports various shipping options — standard, expedited or on date pick by customer
- ◊ Alert notifications for out of stock products
- ◊ Supports redemption of coupons and application of discounts
- ◊ Integrates multiple payment gateways such as Apple Pay, Adyen, Bluegate, Authorize.net, and Google Wallet
- ◊ Additional options to send order as a gift, change default packaging



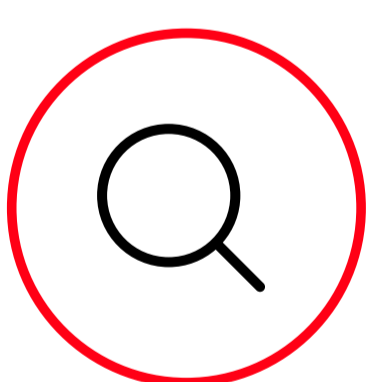
Product Recommendation

- ◊ Tracks and records user behavior
- ◊ Returns a set of product suggestions for each user, based on their profile preferences
- ◊ Recommendations can be based on:
 - ◆ Previous behavior such as purchases, ratings, wishlist, recommendations
 - ◆ Behavior on similar items
 - ◆ Behaviors of similar users
 - ◆ Random predictions on user preferences
 - ◆ Latest items available on site



Data Analytics

- ◊ Supports systematically harnessing insights from user activity on an eCommerce site
- ◊ Consolidates data from sites distributed across platforms and countries
- ◊ Helps visualize the processed data and gather insights using tools such as Tableau



Search

- ◊ Supports search for store when a particular product is not available online
- ◊ Advanced filter options for products — by subcategory, color, size, tags, and offers
- ◊ Infinite scroll to view products
- ◊ Switch between different views on the product listing pages such as Option to bookmark and share search results
- ◊ Integration with caching platforms such as ElastiCache, Redis, Memcache to make searches faster for end users
- ◊ In-store search capability using native mobile application
- ◊ Search results displayed based on browsing/purchase history and predefined profile preferences



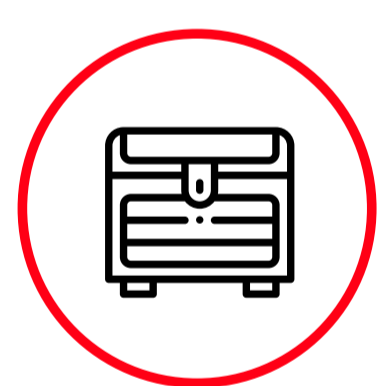
Product Review Management

- Supports comments, rating, and image attachments for reviews
- Supports sentiment analysis and classification of reviews
- Simple admin UI for review management
- Admin can respond to reviews
- Triggers follow-up mail after purchase to prompt users for reviews
- Supports user evaluation of reviews
- Options for users to evaluate as well as sort and filter reviews



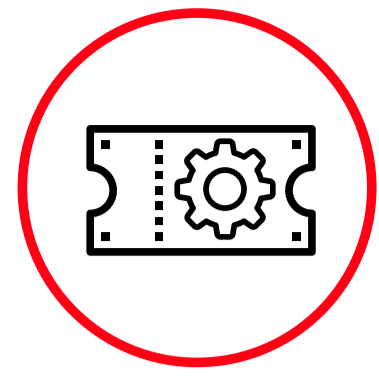
Order Management

- Efficiently handles sales order related process flows
- Supports confirmation, cancelation, and returns
- Consolidates data from online and offline stores across regions
- Admin dashboard to manage saved orders
- Enables users to view/delete purchase history
- Integrates with Inventory Management Systems
- Integrates with Warehouse Management Systems for shipping instructions, confirmation, and shipment updates



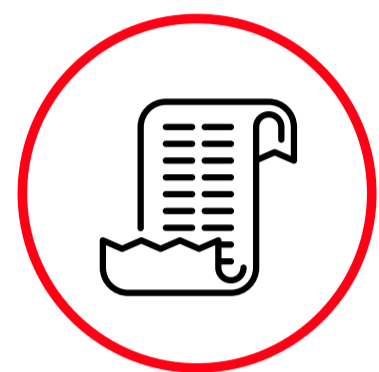
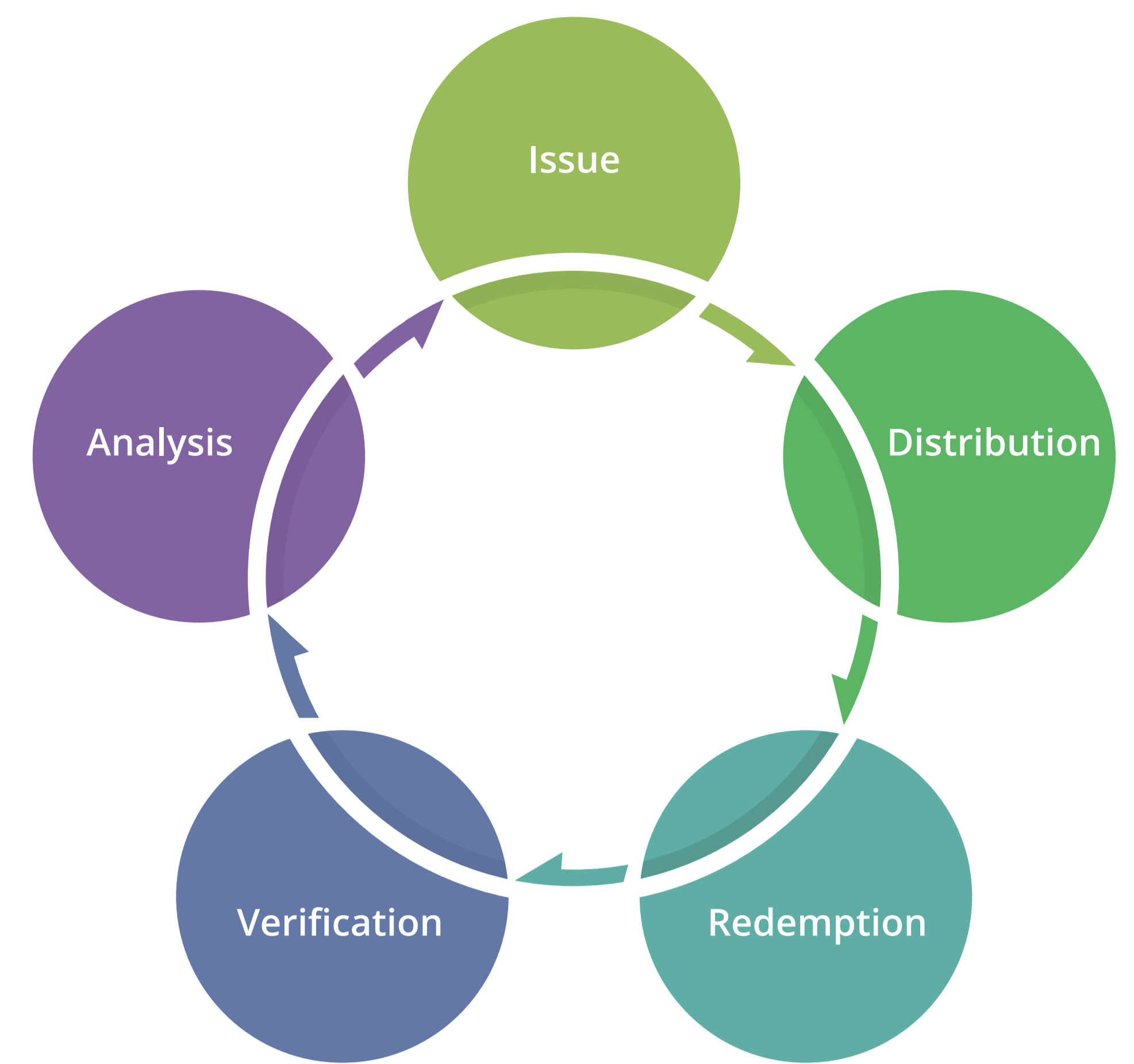
Inventory Management

- Manage multiple inventory locations on a single platform
- Generate and manage purchase orders
- Sales orders and purchase orders are synced with inventory in real time
- Based on stock reorder levels set, system can either automatically create purchase orders or send alert notifications
- Various inventory and sales reports provide real time business insights for improved decision making
- Facilitates inventory transfer between locations
- Supports integration with external systems such as accounting software, CRM, and ERP



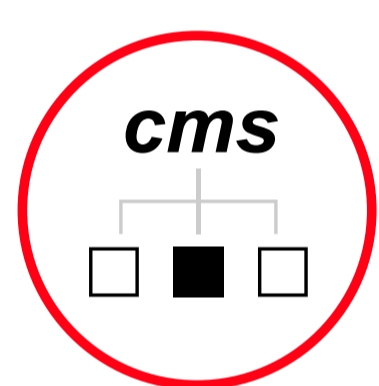
Coupon Management

- Create, distribute, track, and analyze redemption of coupons
- Simple and intuitive admin UI for managing coupons
- CMS to easily update coupon information across channels



Wishlist Management

- Favorite styles can be saved using a combination of products
- Favorite stores and frequent searches can be saved
- Details relating to product size for multiple users can be saved for quick reference
- Orders can be saved for alterations
- Records users interaction on wishlist for analysis
- Option to share wishlist



Content Management System

- Rich and intuitive editor to easily add components to a web page and manage content
- Integrate newly created web components into the CMS for use in web pages
- Preview pages in multiple resolutions — desktops and various mobile devices
- Schedule publishing and unpublishing of pages
- Schedule content and layout changes for existing pages
- Supports version control for pages
- Create multiregional and multilingual versions of a single webpage
- Supports role-based and region-based permission settings for users
- Autosave feature reduces risk of accidentally losing changes
- Edit and save images in multiple resolutions and sizes
- Sync assets with storage servers such as Amazon S3

Comparative Analysis

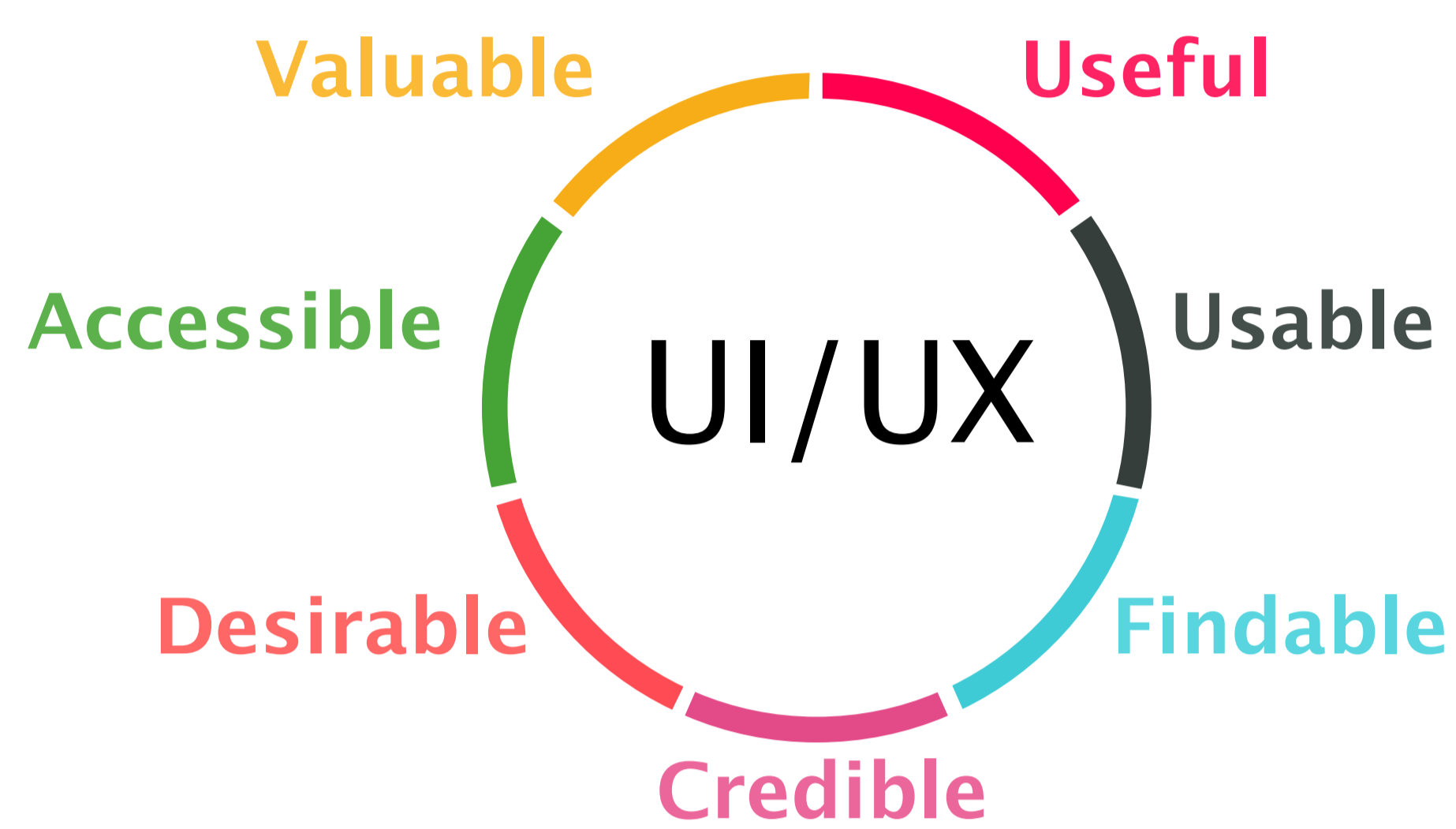
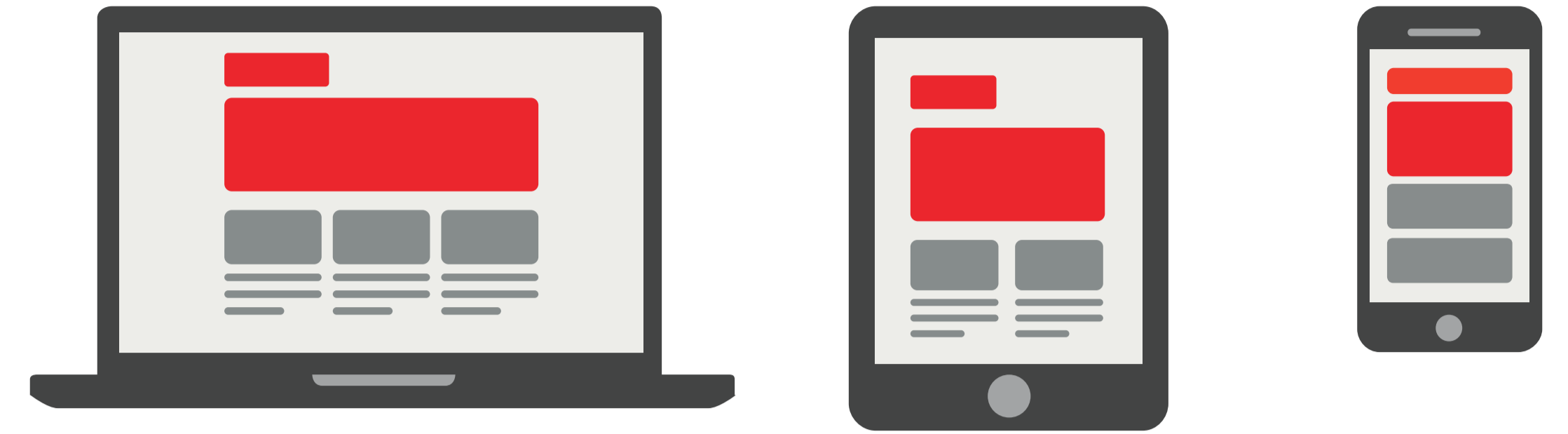
	SAP HYBRIS	DEMANDWARE (SALESFORCE COMMERCE CLOUD)	MAGENTO (ENTERPRISE CLOUD EDITION)	CUSTOM SOLUTION
About	An eCommerce software suite acquired by SAP offering B2B, B2C, and strong omnichannel capabilities.	A cloud-based SaaS eCommerce solution focusing mainly on B2C retailers in the fashion and lifestyle space.	A widely used eCommerce solution for small and medium-sized B2C businesses.	Can be custom built as a cloud-based or on-premise eCommerce solution depending on the specific business needs of the enterprise.
License Costs (Annual)	Standard licenses start at \$54,000 and increase based on services and modules required. <small>* According to CPC strategy</small>	Typically, a business with annual sales between \$20 and \$500 million can expect annual licensing fees between \$200,000 and \$700,000 plus additional charges for services. <small>* According to CPC strategy</small>	Ranges from \$40,000 - \$190,000 based on expected annual gross sales revenue.	N/A
Ongoing Cost	Yes	Yes	Yes	Depends
Technology	Java	Java	PHP	Can leverage any of the latest technologies.
Community Support	Poor	Poor	Good	Good
Developer Following	Poor	Poor	Good	Excellent

Solution Providers	Limited options. Requires SAP certified development professionals and preferably an SAP approved partner.	Limited options. Requires Demandware certified resources and Demandware approved partners.	Approx. 150,000 Magento developers worldwide. More options available for experts, partners, and solution providers. Hundreds of qualified agencies and a large number of certified developers.	Resources are easily available.
Vendor Lock-in	Yes	Yes	No	No
Customization	Good	Limited, as technology is controlled by Demandware/ Salesforce, there are limitations on features that can be implemented. Includes an approval layer, which adds a time overhead to site changes and releases.	Good	Excellent
Source Code Access	Limited access to source code	Limited access to source code	Limited access to source code	Complete ownership of source code
Hosting	Self	Hosted	Hosted	Self
Ideal For	Ideal for very large enterprises with a budget of more than \$500 million.	Ideal for enterprise-level businesses that generate between \$20 million and \$500 million in sales annually.	Ideal for small and mid-sized retailers with high sales volume.	Medium to large enterprises with highly custom business processes or very specific business needs.
Implementation	Services of an SAP certified partner company is recommended.	Requires services of a partner company for effective implementation.	Requires certified resources and service of a partner company for effective implementation.	Does not require additional integrators. Integrator charges can be avoided.

Our Approach

Mobile First

approach to tap mobile users who shop on-the-go

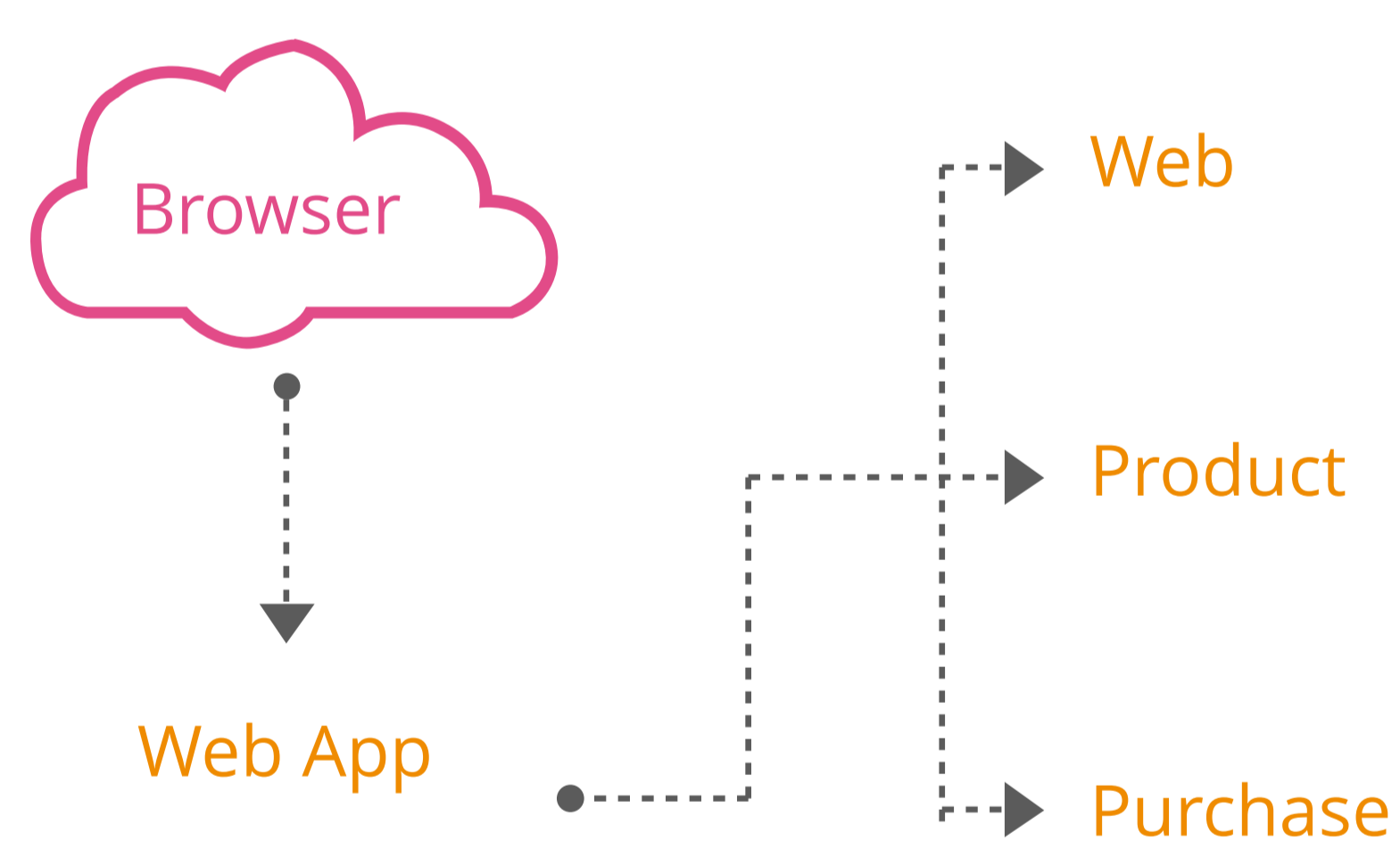
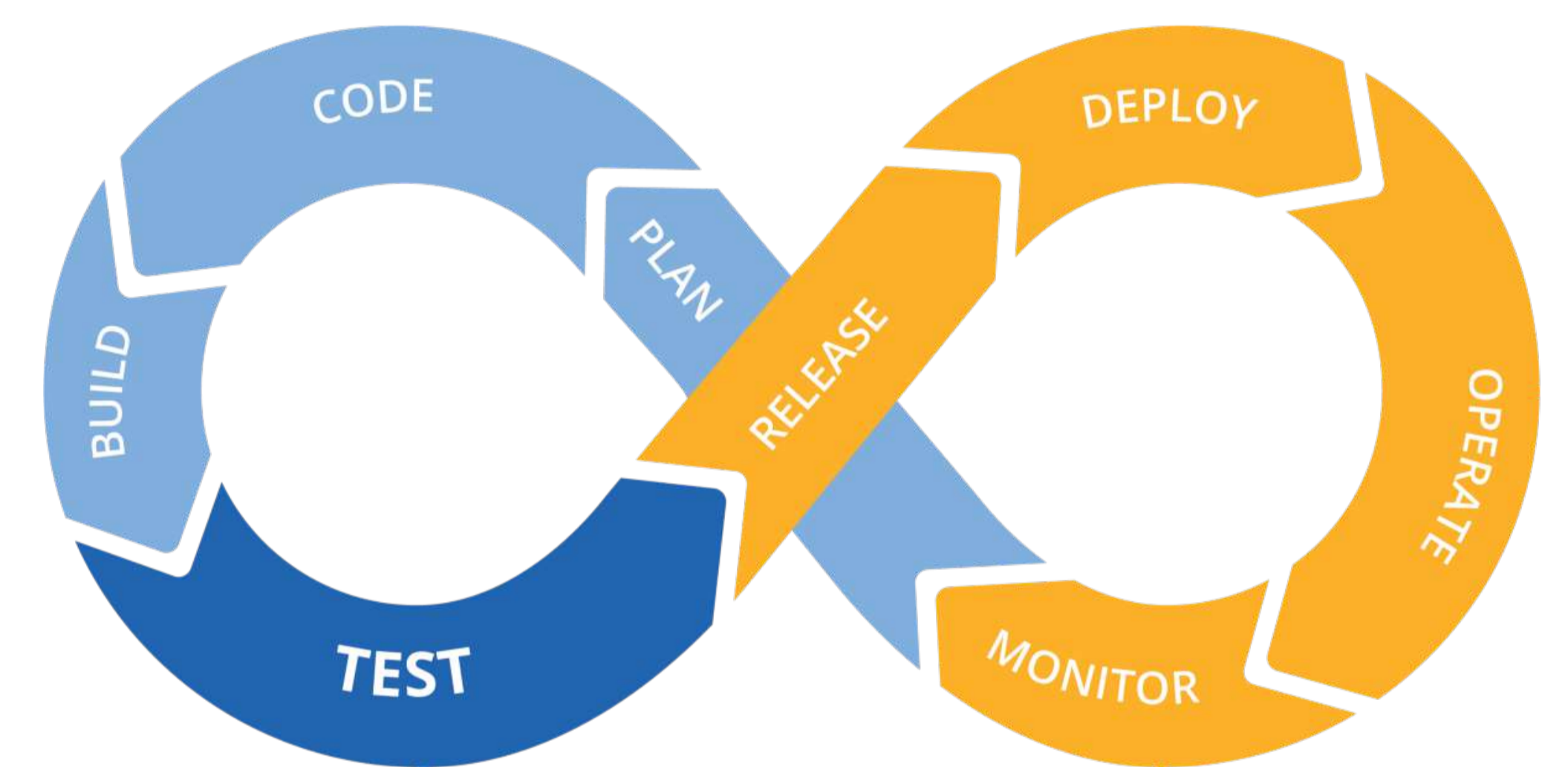


Intuitive UI designs

for better user engagement

Devops - CI/CD

Continuous Improvements > Satisfied customer

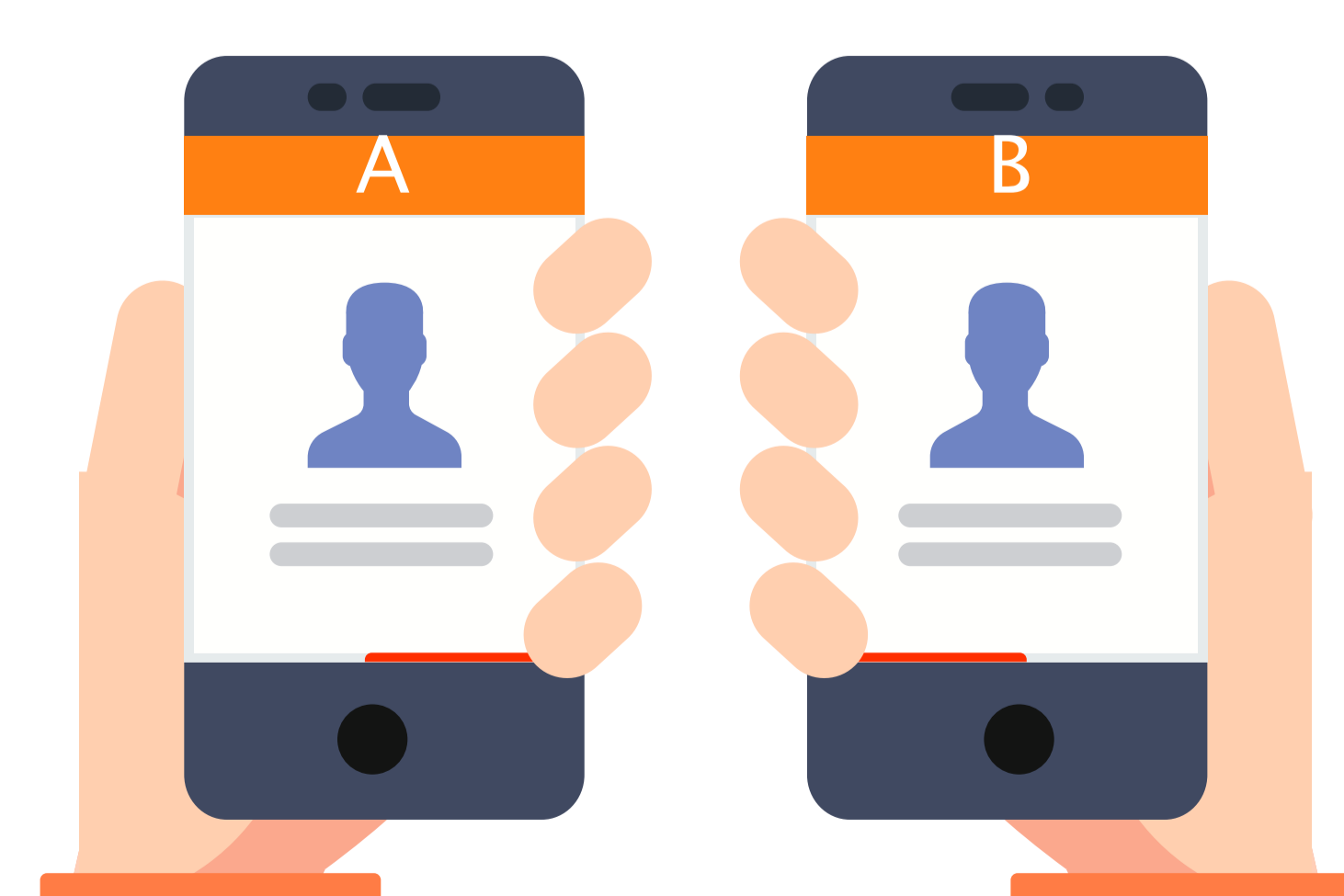
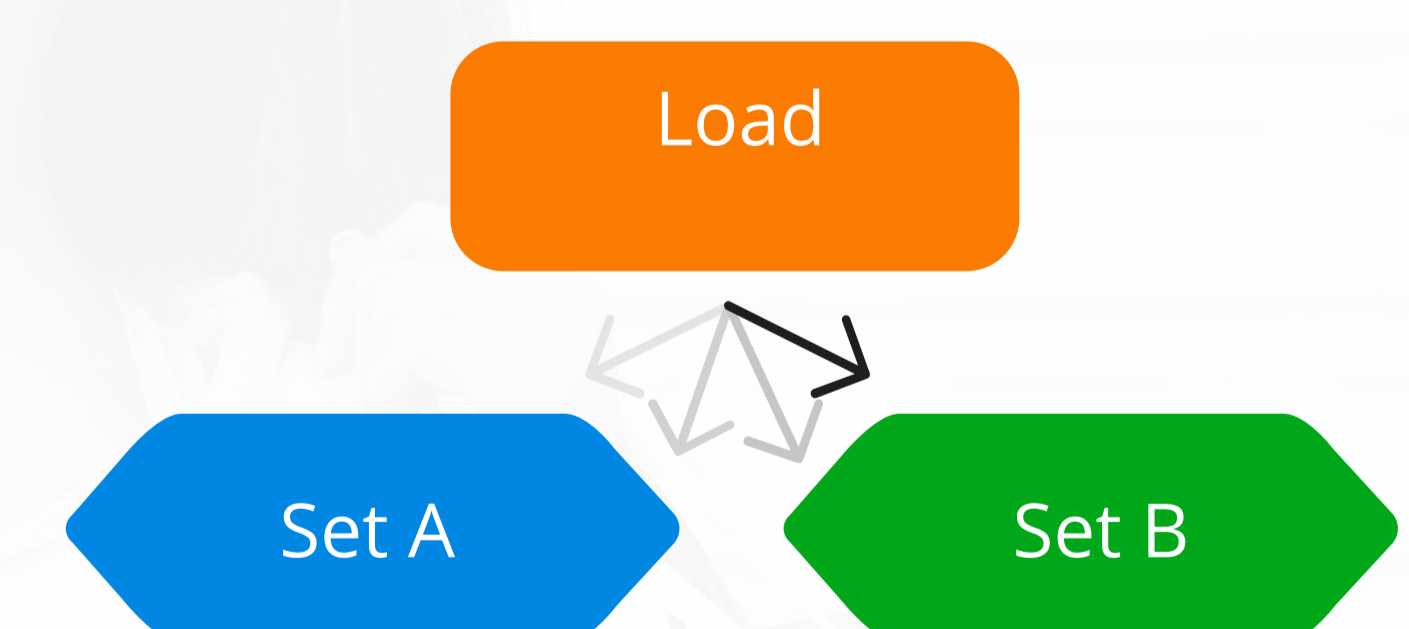


Highly Scalable Microservices

for scalability and improved performance

Blue-Green Deployment

to reduce downtime and risk



A/B testing

to understand user preferences and increase ROI

Final Thoughts

It is critical for businesses to adopt a solution that keeps pace with the highly competitive and dynamic eCommerce market. The solution should be able to help them grow their business and:

- ◻ Adapt easily to changing market trends
- ◻ Ensure maximum availability for shoppers
- ◻ Roll out updates and new features faster
- ◻ Easily integrate with other business systems
- ◻ Provide a seamless shopping experience for shoppers across sales channels

Why QBurst?

With over 14 years of expertise in delivering robust, secure, and scalable web and mobile solutions, our approach has always been to enable our clients in making the right choices throughout the development process.

Apart from guiding our clients with technology recommendations and best practices to stay competitive, we utilize web-based project management and collaboration tools such as Trac, JIRA, and Redmine to ensure transparency in project delivery. Clients are given access to these tools so that they can track progress as we design, develop, test, and deliver applications.

We follow agile methodologies such as SCRUM for product engineering and development. By breaking down projects into smaller iterations, we effectively speed up the delivery process.

As an end-to-end product development and consulting partner to global retail conglomerates, we offer well-planned and skillfully engineered eCommerce solutions to ensure business success.



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