MIGRATING FROM ORACLE ATG COMMERCE TO COMMERCETOOLS

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Introduction

Empirically driven commerce is the imperative for the new age of retail systems. Architectural decisions and technical stacks of e-commerce platforms are being driven by the ability to deliver consistent customer experience and derive data insights and analytics as well as to ensure rapid and frequent releases of new features to the market. There is evidence of a shift from monolithic platforms like Oracle ATG Commerce to more modern systems like commercetools.

This Infosys paper outlines the key focus areas and migration aspects to be considered while moving from Oracle ATG Commerce to commercetools. These aspects are derived from our extensive experience in client migration programs, industry best practices and lessons learnt while executing platform transformations for enterprises.

5 Compelling Reasons to Migrate from Oracle ATG Commerce (ATG) to commercetools

Enterprises are seeking to migrate from monolithic platforms to modern systems for a variety of reasons. The key triggers are:

> **Visionary enterprises focus future investments on modernization and re-platforming instead of shoehorning aging or retired platforms onto the cloud.**

1. ATG has reached end-of-life

Oracle ATG has reached end-of-life with no future roadmap to address the needs of digital retail. The premier support period for all 11.0.x–11.2.x versions of the Oracle ATG Commerce product suite (Oracle ATG Commerce Platform and Oracle ATG Commerce Guided Search) has ended as of February 2019. The product suite entered sustaining support after this date.

2. Cloud-ready: Designed for quick scaling and speedy implementation

commercetools offers a highly scalable and completely cloud-native platform with a core flexible commerce API that supports a modern microservices-based architecture along with a wide range of integrations.

Oracle ATG, on the other hand, is a legacy system with no cloud-native support. Enterprises on ATG are ensnared in a vicious cycle of maintaining and managing rigid structures and adhering to elaborate release schedules. Due to its monolithic nature, upgrades prove to be expensive as changes to one part of the system cause a ripple effect on other components.

3. Best-in-class commerce capabilities: Dynamic and flexible web stores

Enterprises today aspire to move to best-in-class commerce platforms across various aspects like search, personalization, order capture, post-sales management, customer service, and merchandising. commercetools provides faster time to market and lower TCO with many native best-in-class commerce features.

Apart from the high implementation cost involved, Oracle ATG Commerce has been unable to effectively meet critical requirements for personalized omni-channel commerce.

4. Headless and microservice architecture

Headless and microservice architectures enable agility in adapting to desired user experiences across multiple digital touchpoints. The retail systems of the future aim to include best of breed solutions and are considering proven players like commercetools for their niche business needs.

5. SaaS-based cloud solution embracing open-source technologies for behavior extensibility

Customizations done can be clearly demarcated from commercetools (CT) out-of-the-box (OOTB) as they are maintained in a separate layer outside the core cloud CT offering. While migrating the business customizations, the custom business functionality goes into the microservices layer. CT provides software development kits (SDKs) in multiple programming languages that can be leveraged to build this layer. Further, CT facilitates synchronous and asynchronous systems integration through custom wrappers and subscriptions.

Oracle ATG however does not run in the cloud and does not support on-demand provisioning of environments. Its proprietary configuration and build process do not allow one-click deployment through a DevOps pipeline.

> **commercetools is a lightweight commerce solution supporting the composable commerce paradigm and is ideal for enterprises aiming to deploy best-of-breed solutions across their e-commerce landscape.**
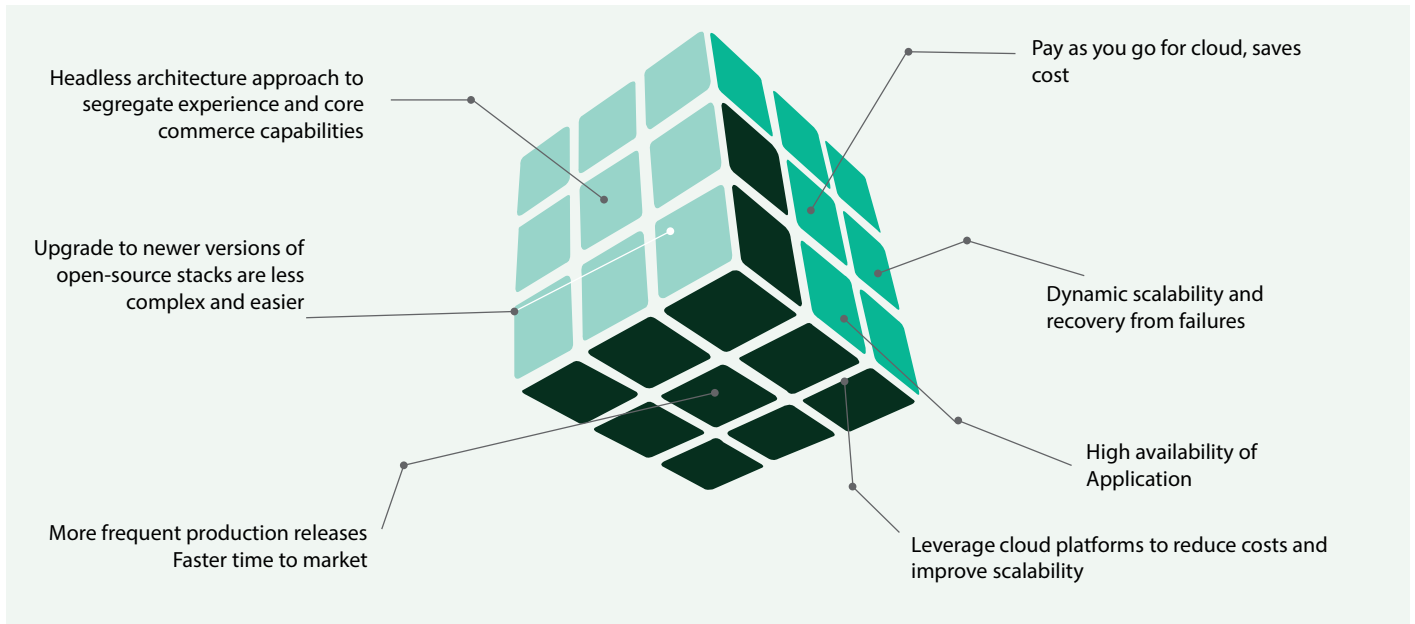
- Headless architecture approach to segregate experience and core commerce capabilities
- Upgrade to newer versions of open-source stacks are less complex and easier
- More frequent production releases Faster time to market
- Pay as you go for cloud, saves cost
- Dynamic scalability and recovery from failures
- High availability of Application
- Leverage cloud platforms to reduce costs and improve scalability

Fig 1: commercetools as a driver for retail innovation

commercetools offers a multi-tenant, highly flexible commerce solution providing core commerce functionality via cloud-based APIs. They offer marketplace support on integrations needed for customers' unique business needs, to build innovative shopping experiences across all digital touchpoints. **More on Integrations marketplace at** https://commercetools.com/integrations

Product Offerings: Through the Lens of Functional Capabilities

The central focus of a commerce application built with commercetools is addressing the business needs and the desired customer experiences. Subsequently, the way to migrate to commercetools requires deciphering the product offerings at a capability level and planning discrete approaches of designing the customizations, extensions and integrations needed.

The ATG commerce platform is used across multiple stages of an e-commerce lifecycle with modules for order capture, customer experience, merchandising, workflow management, customer service, and post-order management. commercetools' MACH paradigm ensures synergies with best-in-class products to achieve the optimum digital experience and provides core commerce capabilities focusing on journey elements needed for order capture.
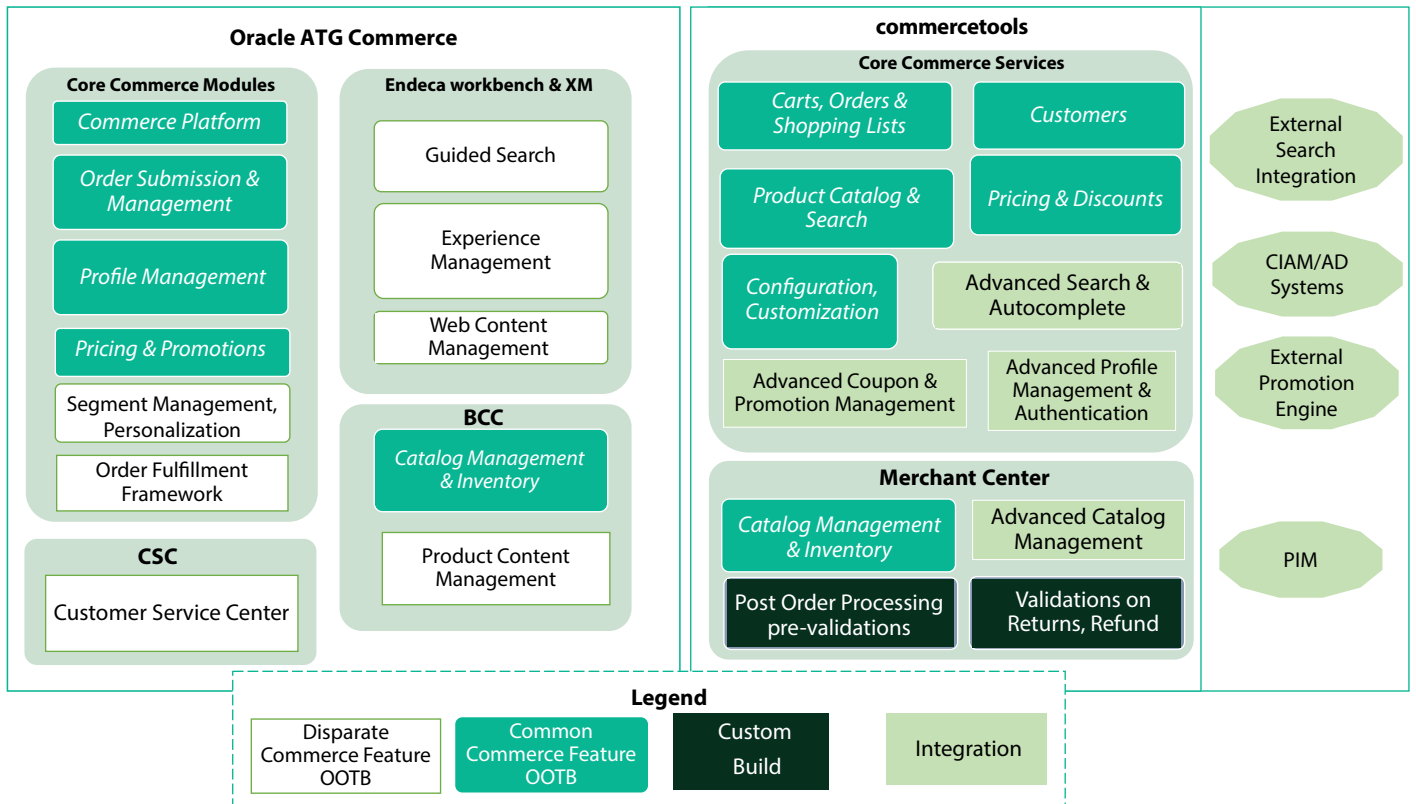
Oracle ATG Commerce

Core Commerce Modules
- Commerce Platform
- Order Submission & Management
- Profile Management
- Pricing & Promotions
- Segment Management, Personalization
- Order Fulfillment Framework

CSC
- Customer Service Center

Endeca workbench & XM
- Guided Search
- Experience Management
- Web Content Management

BCC
- Catalog Management & Inventory
- Product Content Management

commercetools

Core Commerce Services
- Carts, Orders & Shopping Lists
- Customers
- Product Catalog & Search
- Pricing & Discounts
- Configuration, Customization
- Advanced Search & Autocomplete
- Advanced Coupon & Promotion Management
- Advanced Profile Management & Authentication

Merchant Center
- Catalog Management & Inventory
- Advanced Catalog Management
- Post Order Processing pre-validations
- Validations on Returns, Refund

- External Search Integration
- CIAM/AD Systems
- External Promotion Engine
- PIM

Legend

Disparate Commerce Feature OOTB	Common Commerce Feature OOTB	Custom Build	Integration

Fig 2: Feature set: Oracle ATG Commerce and commercetools

Evolving E-commerce Applications Landscape

Business and customer demands are changing fast, with the consequent need for e-commerce solutions to be scalable, secure, engaging, and quick when responding to transactions. E-commerce application landscapes and architectures are transforming as a further manifestation of this significant shift in business needs.
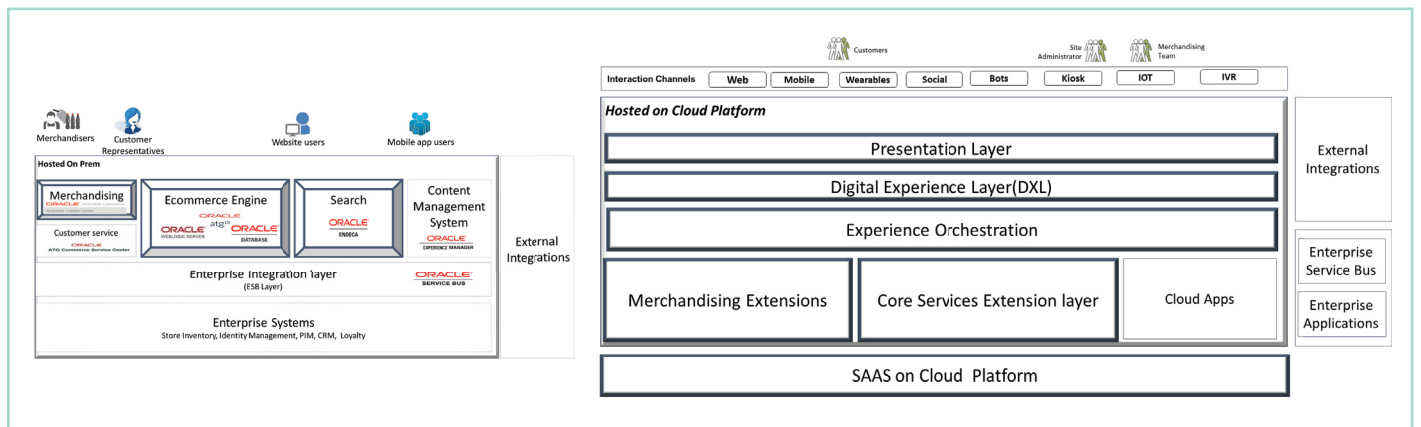

Fig 3: Logical architecture transformation

Presentation and Digital Experience Layers

commercetools in the MACH ecosystem enables innovative e-commerce web shops by providing support for assembled and scalable systems. Migration to commercetools necessitates a decoupled UI as a pre-requisite, i.e., the experience layer needs to be separate to interact with the commerce functionality using standard REST APIs. With Oracle ATG Commerce, REST APIs carry the burden of the monolithic architecture with just the APIs being added on top. It is recommended to bring in a separate experience layer for implementation with commercetools as the commerce engine. Based on the design requirements of the enterprise, this can be done by adopting a digital experience platform (DXP) for experience-led architecture or deploying custom-built micro front-ends using the latest technologies.

commercetools provides commerce connectors with leading DXP players like Adobe Experience Manager, Bloomreach, and ContentStack for consumption by e-commerce systems. They also recommend partners from the MACH alliance for content management products like Amplience and Contentful. For accelerated e-commerce initiatives that do not require a DXP, commercetools recommends Vue Storefront as an open-source front-end for quick launching PWAs (progressive web app) in as little as 2 weeks. commercetools is also one of the first commerce platforms which provide GraphQL API to help speedily build front-ends.

Experience Orchestration

Experience orchestration plays a pivotal role in assimilating customer journeys and guiding them proactively. It enables radical improvements in customer engagement and business by creating a customized and personalized user journey, minimizing user effort for future actions. These omni-channel customer journeys aim at consistent features across channels optimized for each digital touchpoint. Businesses that need multiple digital touchpoints to offer unique user journeys and channel-specific content can benefit from leveraging the experience orchestration layer.

Commerce Extensions and Customizations

The unique needs of different businesses add to the complexity of commerce implementations. The core offering of commercetools is a closed cloud solution embracing open-source technologies. It has SDKs provided in multiple programming languages like Node, Java, PHP, and Scala. For behavior extensibility, commercetools provides API extensions, custom wrappers using microservices, subscriptions, and merchant center extensions as different ways to extend or customize OOTB commerce features. Any customizations carried out can be clearly demarcated from CT OOTB as they are maintained in a separate layer outside the core cloud CT offering. While migrating business customizations, the custom business functionality goes into the microservices layer which are custom wrappers and subscription feature of commercetools helps with systems integration leveraging public cloud managed enterprise integration message brokers. API extensions leverage cloud functions to hook into the backend processing and extend the API functionality. As these options provided by CT use cloud components, they are easy to manage and scale.

Service Orchestration

For the microservices-based approach of extension, distributed transaction management and service orchestration needs to be addressed effectively depending upon the programming language used. A shift to event-based orchestration or choreography is preordained in contrast with the typical centralized orchestration pattern of Oracle ATG Commerce that coordinates service processes for different application systems (the pipeline for SubmitOrder, for instance).
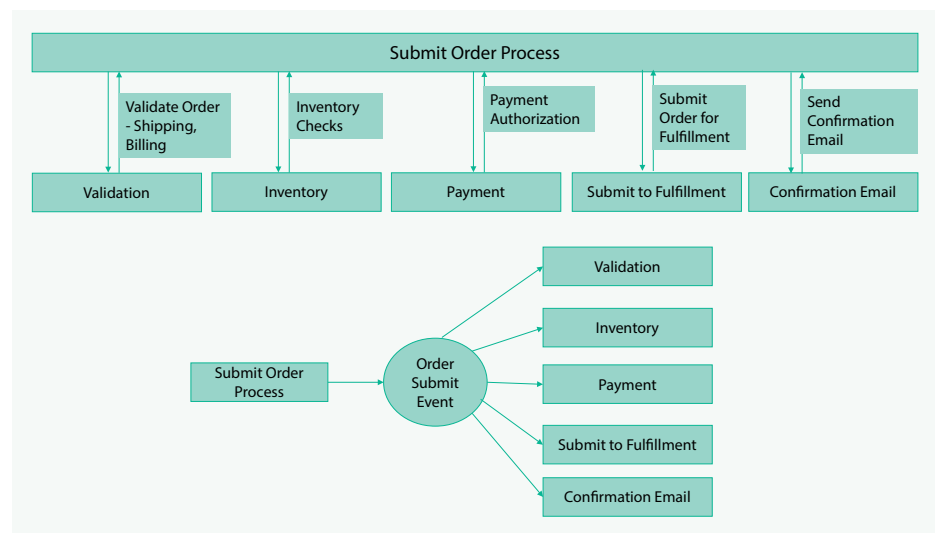

Fig 4: SubmitOrder pipeline

Platform transformation is an organizational change journey that has impact to Business, Technology and Operations - impacting entire way of working of the organizations. With enterprises focusing on quick launch, it is critical to ensure that we create a foundation for long term digital journey! At Infosys, we have a five-strategy approach to be part of your platform transformation journey which can be customized based on your unique business needs.
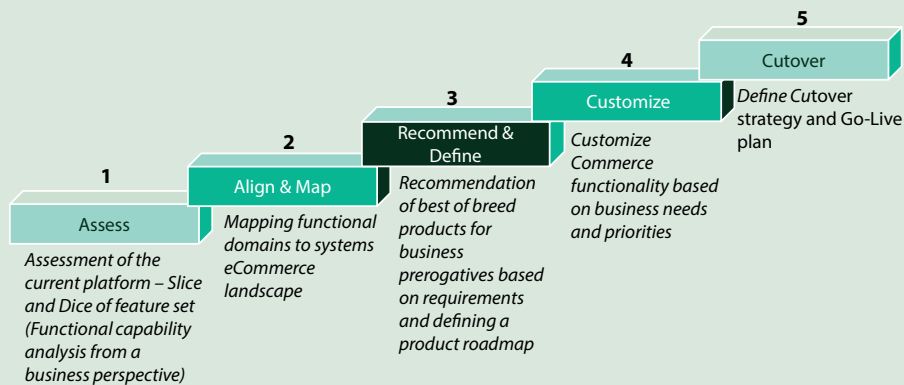
1 Assess
Assessment of the current platform – Slice and Dice of feature set (Functional capability analysis from a business perspective)

2 Align & Map
Mapping functional domains to systems eCommerce landscape

3 Recommend & Define
Recommendation of best of breed products for business prerogatives based on requirements and defining a product roadmap

4 Customize
Customize Commerce functionality based on business needs and priorities

5 Cutover
Define Cutover strategy and Go-Live plan

Fig 5: Strategic approach to platform transformation

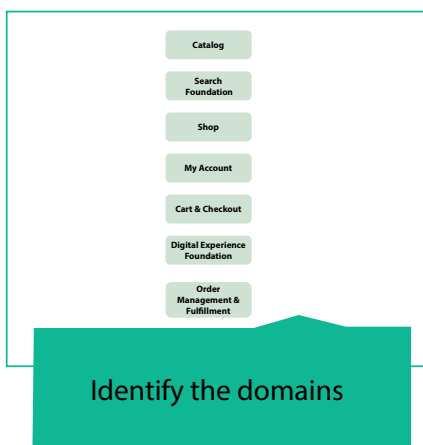## Migration of eCommerce Functionalities

The primary drivers for the platform transformation journey of an enterprise are its business and strategic needs. E-commerce business volume and future growth requirements make a paradigm shift imperative. Modernizing commerce solutions and adopting cloud-native application and microservices architecture are vital to reap the benefits of scalability, availability, and speed. Commerce implementations embracing domain-driven design lay a strong foundation for an autonomous, self-sufficient, and inter-operable microservices-based system. Each of the functional components needs to be designed based on business requirements. commercetools provides different ways for business extensibility using custom state machines, subscriptions, and API extensions which can be tailored for business needs

Migration Approach

The framework Infosys recommends for migration from ATG to commercetools consists of 4 steps:

1. **Define business priorities and desired strategic outcomes** in order to develop a clear roadmap for smooth transition.

2. **Identify all the domains and enlist all the functional capabilities** of the existing ATG Commerce application. Techniques like domain-driven design

(DDD) should be used to capture the building blocks of the e-commerce application and identify its subdomains considering all the functional capabilities of both the existing and to-be systems.

3. **Map the domain journey** of each of the functional components, identify the inter-domain dependencies,

and consider business priorities to be designed for migration based on business requirements. This is critical to ensure smooth migration of the e-commerce features.

4. **Map functional capabilities to define the subsystem for each of the domain(s)** and migration for each of the functional domains to the systems identified.

Identify the domains

Mapping of the Domain Journey

Inter Domain Dependencies Identified

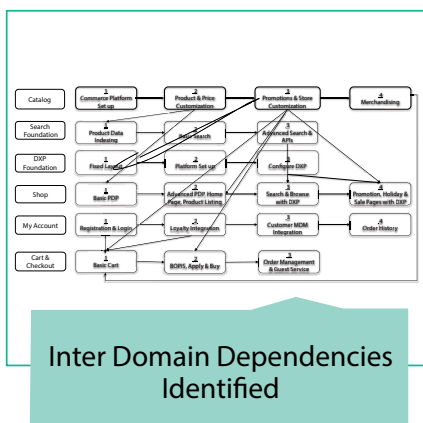Business Prerogatives, Priorities and Strategic considerations

Fig 6: Migration approach

Migration Strategy

Enterprises have a basic premise of feature parity between the existing and new systems in a migration. However, this is never the sole objective. It is the benefits the new platform brings that are of prime importance. A migration involves the effective introduction of the new system with improvements and new features without disruption in business. This can be achieved by meticulous management of different systems and teams in an optimized manner. Big Bang or incremental approaches can be chosen based on the integrated needs across the e-commerce landscape.

An incremental approach, which aims at replacing pieces of the application in a phased manner, could use strategies like strangler and anti-corruption patterns. The strangler approach allows us to deploy functionality incrementally over an extended timeline to minimize overall risk and deliver business value sooner. However, there is the caveat of huge operational demands involved in maintaining two systems (existing and new), data synchronization between them, and also decision points on planning the transactional flow between the systems.

Enterprises with a pressing need for platform replacement usually choose the Big Bang option. Deployment strategies like Blue-Green, Canary releases, and feature toggles give the flexibility of switching between the old and new systems and provide an interim validation phase. This allows the organization to cautiously collect insights on the performance of the new platform and improvise, before sunset for the old platform.

While no one size fits all, the figure below depicts key patterns in the industry. A specific discovery phase is needed to determine what strategy would suit a business to help maximize value.
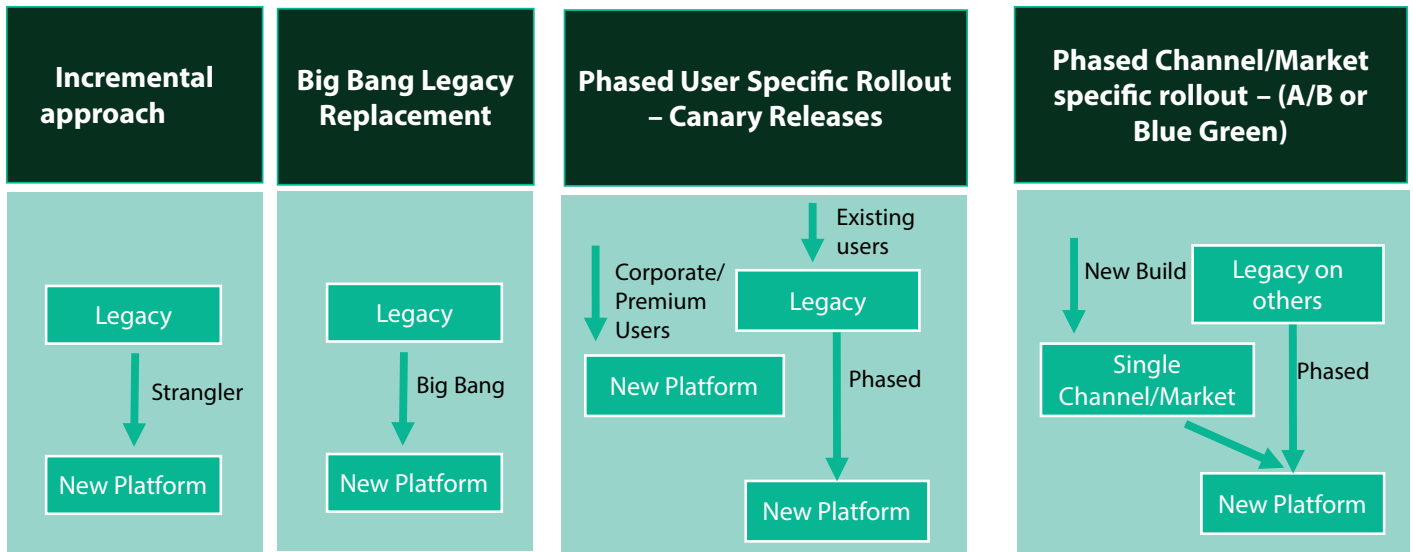

Fig 7: Various approaches to platform migration

Recommended Migration Patterns

Product Catalog

In Oracle ATG Commerce, the product data is maintained in the Oracle ATG Commerce Repository. The source of truth for product data is typically a PIM system that provides product feeds to be consumed and loaded to the catalog repository.

Commercetools, on its part, provides a bare-bones product catalog model.

	Oracle ATG Commerce			commercetools		
Product Catalog	Define / Model			Define/Model		
	Product Catalog Repository			Product Type		
	Extend / Customize		Integrate with External PIM	Extend, Customize		Integrate with External PIM
Promotion	Promotions, GWP, BOGO		Custom Promotions	Product, Discount, Cart Discounts, Discount Codes		Custom Promotions
Customer Data	Profile		Personalization (Segments, Scenarios)	Customer		Personalization
Pricing	Pricelist with List and Sale Prices		Bulk, Tiered Pricing	Array of Prices in Product, Scoped Price, Price selector		
						Bulk, Tiered Pricing
Inventory	Inventory Management	Inventory Administration	Inventory Update Notifications	Inventory Management	Inventory Administration	Inventory Update Notifications

Fig 8: Migration aspects across functional domains

The data model in commercetools can be customized using the product-type extension model. Migration patterns vary between the options of using commercetools as the PIM or direct integrations built between the PIM and commercetools. A one-time migration can be done using the GUI IMPEX tool that commercetools provides. Incremental and async updates involve using cloud components like cloud pub-sub, schedulers, Cloud DB, and Import API provided by commercetools to upload data to commercetools asynchronously. Enterprises can also choose to have a centralized hub of the product data source in Cloud DB for data to be distributed to all cloud apps (like product recommendation engine and personalized search engine).

Promotions

commercetools offers a promotion engine for cloud commerce platforms with product discounts, cart discounts and discount codes, promotion stacking rules, and advanced promotion modeling. This makes it possible to set up all the different promotion definitions that can be set up in Oracle ATG Commerce OOTB. The migration approach for promotions would involve analyzing the active promotions in ATG and mapping them as Product Discounts or Cart Discounts in commercetools. These would then have to be re-defined in commercetools or integrated with the promotion and coupon engines if required.

Most migration patterns see commercetools being used as the promotion engine. In case of need for heavy promotion customizations, the ability of commercetools to integrate with an external promotion engine can be leveraged. Infosys provides adapters and ready-built integrations with external promotion engines as well as touchpoints provided for PDP, cart, and checkout use cases.
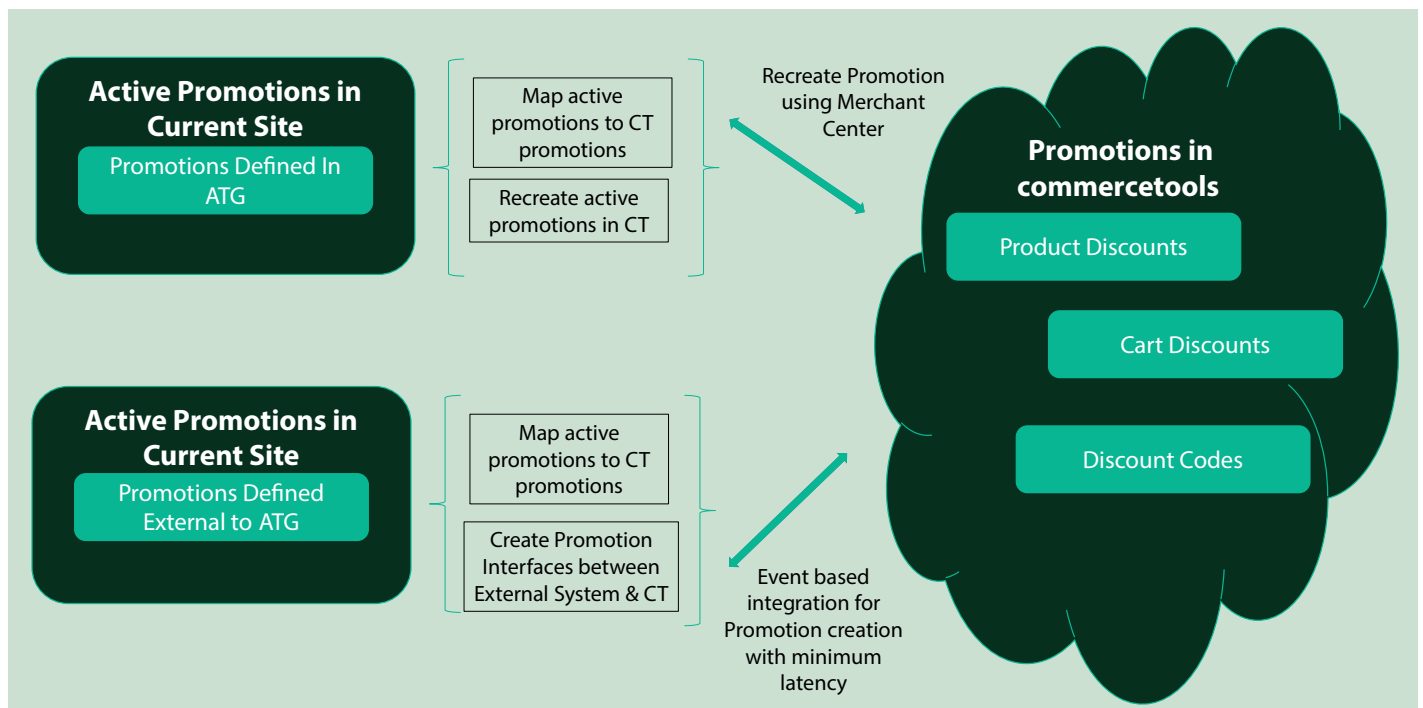

Fig 9: Migration approach for promotions

Customer Data

New age stores seek a holistic view of customers, i.e., they need to have 360° customer data made available to a wide range of applications in order to serve the connected customer. Oracle ATG Commerce has a personalization module to work with user profiles providing an extensive profile data model with the flexibility to create global and store-specific customers. commercetools enables enterprises to maintain customer reference data and map it to commerce entities like orders, carts, and products to address specific customers or custom groups. Retailers have various options that include migrating customer data to commercetools or choosing an enterprise CRM tool for this purpose. Further, they can have the customer data migrated from Oracle ATG Commerce to CRM based on the chosen approach and maintain customer headers in commercetools.

Inventory

Inventory Master is a system in OMS external to the e-commerce platform. commercetools provides a data model to give access to inventory, i.e., a local copy of inventory data needed for commerce use cases dependent on inventory checks. This inventory data is usually cached for quick and frequent access.

Inventory data requires extensive updates where data changes frequently with large volumes of changes based on the business model of the enterprise. Using commercetools APIs to make these updates would be cumbersome as it would add to network latency. Some retailers choose a dedicated inventory data store set-up external to commercetools. For real-time inventory needs, data is usually cached in an external near cache which is leveraged by the product, cart, and checkout APIs. This is used for inventory validation on product pages, store pick-up, pre-orders, and other use cases where real-time validation is required.

Simple inventory data access needs are handled by the migration of inventory data into commercetools by the creation of inventory entry per SKU and per supply channel (optionally). Also, multiple update actions provided on inventory entry are used to sync inventory data.

Cart, Checkout, and Orders

A core feature for online shops is the handling of carts, the checkout journey, and orders. commercetools provides extensive APIs which are feature-rich on cart and checkout operations. The platform provides complete ease of use for cart, checkout, and order implementations and extensions.

Search

commercetools comes packaged with a core set of search features, which include full text search, filtering, and faceting. Every change made to the product catalog is automatically indexed and the faceted search helps provide advanced search and navigation capabilities. Search APIs can be readily consumed as soon as the product catalog data is ingested into CT. Additional configurations such as search keywords and slugs can be defined and managed using Merchant Center if they cannot be made available as part of the product catalog feed.

Modern e-commerce systems, which have a need for multi-site search requirements, personalized search, image search, and voice search, must consider including a modern standalone search engine in their landscape that supports these capabilities.

It offers user-based OAuth tokens for authentication and authorization and can be used to convert anonymous checkout flows to signed-in journeys. Another variation is to have a tailor-made elaborate implementation using JWT and cookie-based authentication for enhanced session management capabilities.

Price Lists

Oracle ATG Commerce has the option of defining multiple price lists, allowing retailers to target a specific set of prices at a specific group of customers. commercetools does not have a concept of price lists as a standalone entity. It does support product prices as an attribute under product entity where multiple prices like list price, sale price, and customer-specific price can be defined

Merchandising and Product Workflows

Oracle ATG Commerce provides a default set of workflow elements to author, review, approve, and deploy commerce assets. This workflow is also customizable in order to define multiple content review cycles with project workflow options that enable deployment to production or staging instances. The Merchant Center application in commercetools allows us to perform basic product enrichments. This tool is however not as exhaustive as Oracle ATG Commerce BCC with regard to versioning and complex workflow management. However, commercetools allows modeling states of commerce entities and provides business extensibility by enabling the commerce objects to model custom states wherein transition in states attributes to business workflow.

Retailers can choose to define workflows in commercetools using custom state machines or opt to move all merchandising capabilities to be handled inside PIM.

under a product. However, unlike Oracle ATG Commerce, there is a limit on the number of prices that can be defined per product. A maximum number of 100 prices can be specified on a product variant.

Migration of price lists can be approached in a similar fashion as products. B2B stores require customer-specific pricing and commercetools provides channel/customer group specific pricing. The maximum number of customer groups that can be added to a project is 1000. Infosys commercetools B2B store accelerators help achieve faster time to market and can be easily customized for businesses.

Post Sales Management and Customer Service

Oracle ATG Commerce has Customer Service Center while commercetools does not intend to use the Merchant Center for customer service features. Admin users can perform primitive order modifications like cancellations and have returns captured using the Merchant Center. Extensive customizations are needed to perform validations on order updates and returns.

Infosys offers a customer service accelerator developed as a custom-built Merchant Center extension to provide enhanced customer service features for order management. Retailers with extensive customer service requirements can opt to move these entire functionalities out of the e-commerce layer into OMS.

Oracle ATG Commerce
CSC enables Customer Service Agents to

- Create and Manage Customer Profiles
- Create and Place and Manage orders also with Price overrides
- Issue Refunds, Exchanges
- Manage Returns & Process Refunds
- Access Customer Activity
- Manage Shipping/Post Order management issues
- Ticketing Management

CT Merchant center
Custom Extensions

- OOTB Create and Manage Profiles
- OOTB Create and Manage Order
- Customizations for Order Edits
- Custom Built validations on Order Modifications, Returns
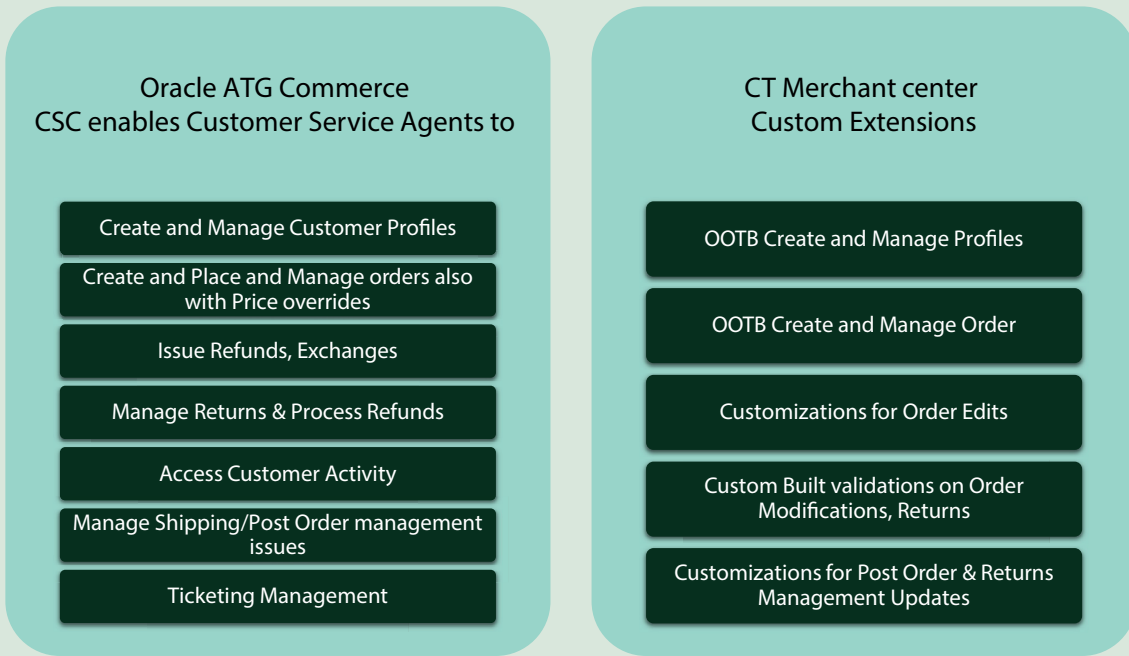- Customizations for Post Order & Returns Management Updates

Fig 10: Merchant Center custom extensions

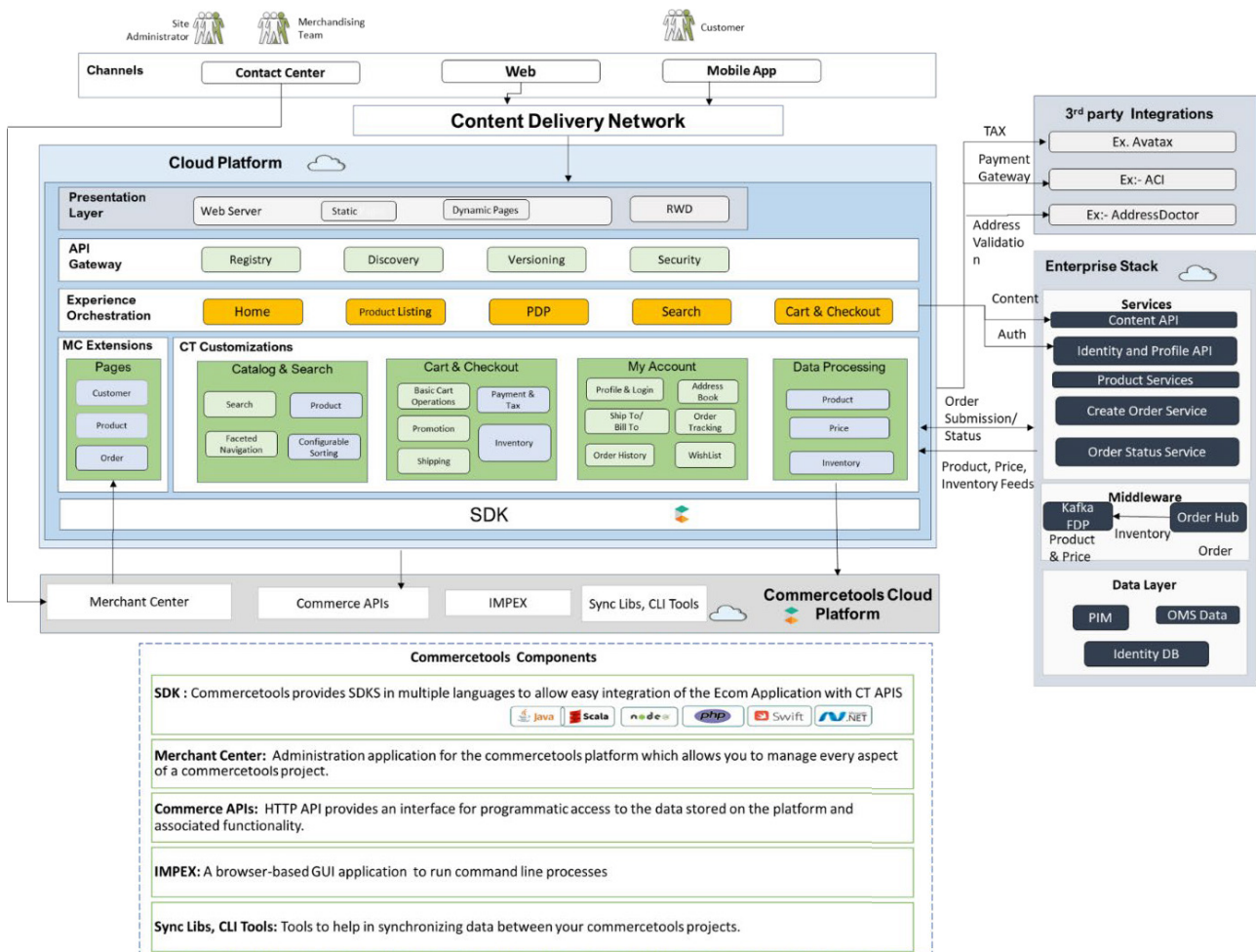# Reference Solution Architecture

Fig 11: Reference solution architecture

The Infosys Advantage

At Infosys, we strive to provide best-in-class solutions to customers driven by rich and varied expertise and tools for accelerated implementations. Infosys has extensive experience with architectural patterns catering to multiple commerce enterprises that can be used for migrations catering to different needs. Leveraging our strengths, in both B2B and B2C, organizations can speedily build commerce storefronts driven by future technologies and reach the market faster.

Modern Front-End
- Decoupled front-end based on React framework provides flexibility and complete shopping experience starting from Home Page, Category Listing, Product Details, Cart & Checkout & Order confirmation

External Promotion Engine Integration
- Generic design that facilities easy integration with any external promotion engine
- Benefits customers who want to implement omni channel promotion strategies
- Ready made adaptor for Qixol available as an accelerator

Extending Merchant Center Capabilities
- Enhance Order Modification capability by allowing editing at line-item level
- Capture Order return requests after performing necessary validations
- Enhance Order history service to consider Order modifications, Returns and Cancelations

Payment
- Allow users to apply multiple payment **groups** to an order
- Perform split payment between the payment methods in the order based on business rules
- Payment integrations with PayPal to perform authorization

Product Import Accelerators
- Import Product catalog from an external data source
- Generic design that facilitates easy integration with new data sources
- Product Enrichment capabilities

Chatbot for queries & services

Company
- Hierarchical organization structure facilitates easy setup of customer organization structure. Setup contracts, addresses once and subsidiary organizations automatically inherit them.

Pricelist
- Setup country level / customer and tier-based pricelists that can be inherited and overridden for individual customer needs

Order Approval
- Ability to set budgets for buyers in customer organization
- Auto Trigger order approval workflow for orders that are beyond buyer budget. Disallow accidentally overshooting funds allocated to Company cost-centers.

Quote
- Customer can request for a quote
- Seller can provide a suitable deal and approve the quote
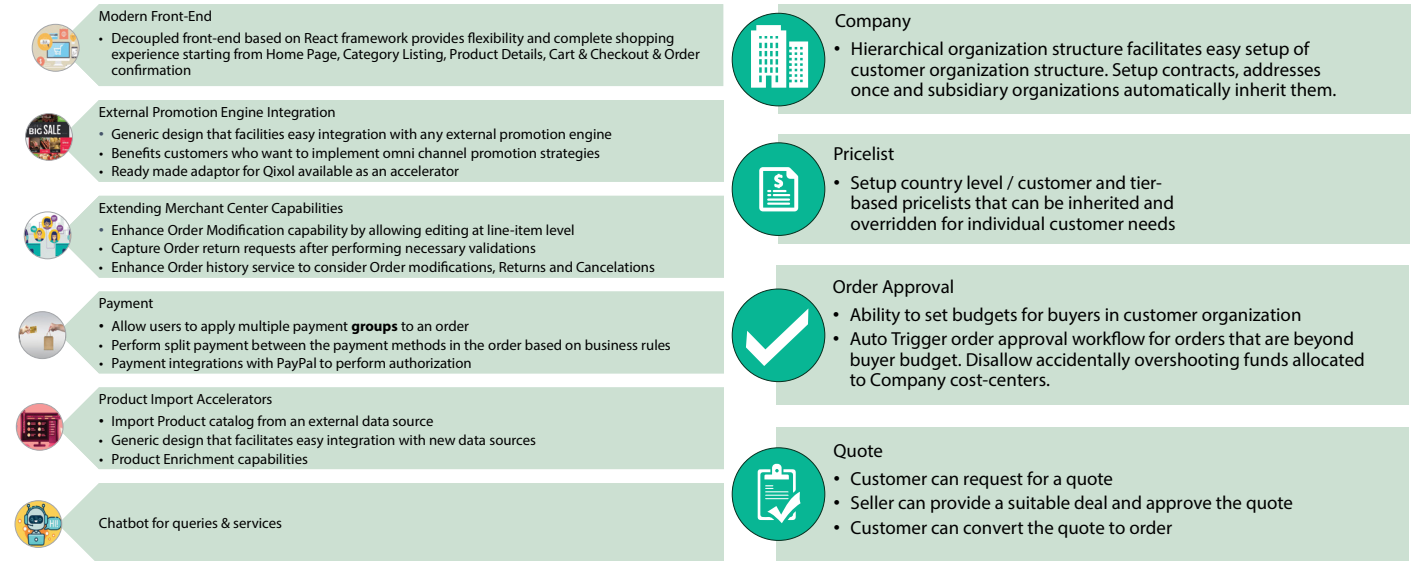- Customer can convert the quote to order

Fig 12: B2C and B2B reference store feature sets and accelerators

Infosys Agile & DevOps integrated services help you navigate the agile and DevOps lifecycle – from advisory to transformation and execution. With the Infosys DevOps Platform, we amplify the potential of our clients. Our DevOps accelerators for commercetools customization and reference stores can be readily plugged into implementations to reduce development cycles.

About the Authors

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Subhasri has 13 years of experience in information technology. She specializes in digital commerce architecture across multiple commerce platforms including Oracle ATG Commerce, commercetools, and Salesforce B2B. She has played a central role in delivering several large-scale commerce programs and led commerce transformation programs across multiple domains such as retail, manufacturing, and airlines.

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