YesCart
pure e-commerce

White Paper

Yes Cart E-commerce Platform v3.3.x

Powered by

Java spring HIBERNATE Lucene APACHEWICKET ANGULARJS EHCACHE

1. Yes Cart e-commerce platform and its goals

E-commerce had been rapidly growing in the past decade. In fact such famous example as Amazon and E-bay are considered to be the cause of shrinking high street retail industry sector. Online shopping became part of everyday life for many consumers and therefore must be taken very seriously by retailers who wish to prevail in this highly competitive environment.

Yes Cart (or simply YC) aims to provide foundation for businesses that wish to capture this opportunity and expand their operations into the cyber space. Imagine a platform that is built using best e-commerce practices addressing product information management (PIM), search engine optimisation (SEO), multi channel and multi store capabilities, full text search indexing, web site branding, merchandising features, order management and fulfilment, payment gateways integrations to name a few. All this backed up by service oriented architecture (SOA) built on top of java technology, carefully optimised for heavy duty and high availability sites.

Of course one may say that there are lots of alternatives, which give the same promise. So what makes YC different and how this promise is kept?

Business e-commerce needs	YC promise
Disconnected sites:	
Many businesses hold a number of disconnected e-commerce sites creating discrepancies in information management, company policies as well as creating additional challenges for third party integrations and software management.	YC storefront server (or simply YeS) provides a central hub capable of hosting a cluster of independent sites accessing data from a unified source and using shared business services ensuring the integrity of business processes.

Site branding:

Some platforms provide multi site capabilities but are too inflexible to easily support single site branding and personalisation features

YeS themes framework fully decouples data and business logic from the presentation layer. This gives flexibility in creating site independent designs that can be shared by sites in the cluster. Switching between one look to another is as easy as changing a single configuration parameter.

Site and Content Management:

Site management often involves expensive professional involvement. Maintenance is a challenging process.

Yes cart admin application (or JAM) is the cluster mission control that gives full control to the business user via user-friendly graphical user interface (GUI). YC content management system (CMS) allows easy process for creation of microsites and personalising templates that can be edited in real time.

Lack of multi channel integration:

When on-line shopping trends shift (e.g. growing popularity of mobile channel) businesses miss opportunities as they cannot easily adjust their sites for use with new channels

YeS responsive themes can easily adapt look and feel as well as give alternative presentation enabling implementation of new channels a trivial task. The business layer can be fully reused by the new web store instance shortening development time and ensuring unified approach to core business functions.

Inconsistent branding:

Companies experience difficulties in consistently distributing media, content, promotions and applying marketing strategies across channels

YC provides unified access to resources and data that can be shared between channels

Search and Navigation:

Around 95% of purchases come from searched items. Most e-commerce solutions limit navigation to category browsing and simple database exact match querying.

YC has out of the box full text search engine support that allows superior configurable navigation capabilities that includes: custom attribute, brand and price navigation to complement category browsing and enhances regular keywords search as well using search refinements feature and fuzzy searches to maximise conversion.

SEO capabilities:

SEO support in most solutions is fairly limited due to mandatory system parameters that cannot be excluded from URLs or there is poor meta data support for business objects.

YC allows user to configure any SEO friendly URL for categories and products as well as automatically generate meta tags information inside pages. In addition to this all images have full SEO support out of the box.

Flexible catalog structure:

Most systems provide inflexible catalog structures that are fixed and therefore not easily adapted to provide alternative structures in multi channel or multi site environment.

JAM provides GUI for easy assignment of category structures to store instances. It does not matter if this is a single category or a branch, if this it a top-level or sub level category

– any case is fully supported. In addition to this catalog structure allows unlimited nesting level of categories.

Promotions and targeted selling:

Promotion engines of many e-commerce platforms present user with a fixed and complex UI that dictates how targeted selling is accomplished thus ignoring the specific needs of the business.

YC provides an "Eligibility Condition – Action" framework which sets the foundation for catalog, cart and shipping promotions as well as encompasses customer segmentation through tagging mechanism. This framework is easily extendable to provide specific implementation required by the business thus allowing translation of business rules in its original form to the e-commerce site.

Checkout:

Checkout is one of the most problematic areas as it involves a number of complex processes such as inventory reservation, order data capturing, order splitting and out of stock products handling – in short it is easy to get it wrong.

YC provides event driven framework to control order state machine. The whole process is fully automated, so all the hard and complex decisions are already solved. Event driven approach allows clean separation of logic and full encapsulation from tampering with the process. This makes the integrators job fairly easy allowing concentrating on the page flow rather than solving the complex technicalities of the order state machine.

Payment gateways:

Very few e-commerce platforms account for easy integration with payment services. In most cases this area is left unsupported.

YeS provides out of the box API which is fully integrated with order state machine framework. All that is needed is simple implementation of two java classes to achieve full payment gateway support such as authorisation, capture on shipment, cancellation of orders and refunds. In addition to this YC comes with a number of ready to use integrations such as Authorize.net, CyberSource, Paypal, Paypal Pro, LiqPay, PostFinance with many other coming soon.

Internationalisation:

Development of multilanguage sites is a difficult process with many limitations imposed by the platform

YC deals with internationalisation (i18n) at two levels: data level - through i18n fields and custom attributes; and presentation level - through language specific templates and i18n properties.

Authentication and authorisation:

Many solutions fail to deliver required level of access to data.

JAM provides flexible role based security framework built on top of Spring security. Adding new roles to fine grain business service access by JAM users can extend authorisation framework to suit any business demands.

High costs:

Feature rich systems cost a lot. Not to mention that most of them use legacy old systems that are lacking standards and hard to understand, maintain and modify.

YC main goal is to keep things simple and efficient. This is why we use well established industry-tested frameworks such as Spring, Hibernate, Ehcache, Lucene, Wicket and AngularJS. The whole development process is fully handled by maven. All of these are well know, well supported and widely accepted frameworks, which means any developer can pretty much start working with YC immediately.

Scalability:

Many systems are rock solid and are not cluster environment friendly, which is becoming de facto requirement with ever growing popularity of cloud computing.

YC SOA infrastructure built with best enterprise patterns in mind backed by Spring, Ehcache and Lucene assures that clustering or deployment to cloud is easy.

Portability and third party integration:

Integration with third parties or migration of data is complex and difficult

YC business layer is built on top of Spring, which means exposing business functions as web services is just a few lines of configuration. On top of this YC provides flexible data import/export framework that allows steaming data in bulk though CSV files out of the box. The framework can be easily extended to support other sources such as XML.

These are just a few of many advantages that make YC stand out from the crowd of other e-commerce solutions.

YC's goal is to keep things simple and efficient by employing industry wide standards and best practices or software development providing businesses with a flexible and easy to use, maintain and modify e-commerce platform.

YC is not aiming to flood its users with features that will never be used, however it does aim to provide and excellent extensible foundation that embodies e-commerce best practices.

We believe all businesses are unique so a standard approach just will not do, however insanely configurable implementations are too confusing and just make things worse.

We believe in holding the middle ground of solving e-commerce problems where we are the experts, but at the same time providing flexible extension points leaving the "uniqueness" to the YC users who are experts in their area.

2. YC Multi Channel

Channels are pre-packaged modules containing business layer facades that target specific functional areas of business. Some of them represent full applications whereas others are building blocks that enrich functionality of companion channels of the YC ecosystem.

Each channel integrates business processes with consistent and comprehensive user interface that encapsulates the complexity of the system and offers rich user experience to customers and internal business users.

Out of the box channels implementations are designed to cover most of the online commerce needs through best practices use cases. However each channel provides extension points to enrich them with business specific needs. The strength of YC is that we do not provide any "self made"

frameworks to lock you in on our technology – we build on top of standard world wide accepted frameworks, so any modern age tools can be used to work with YC code. There is no steep learning curve or restrictions on what you can do with it. This flexibility allows satisfying the most demanding business requirements with no limitations coming from the platform.

2.1. Consumer channel

Consumer channel enables business to offer goods and services online, receive orders from the customers and take payments for these orders.

Consumer channel can represent one or more web sites (storefronts) depending on the business needs, which are controlled through YC admin application (JAM).

Consumer storefront

Consumer storefront is a front-end application that enables businesses to sell directly to consumers. It offers a number of features:

Product searching and browsing

Searching is the most important customer conversion driver therefore YC provides extensive capabilities in this area. Products can be searched via normal browsing, keyword search, tag searches, custom attributes navigation, brands navigation, price-range search, as well as full text searches that account for misspelling, business thesauri and fuzzy logic. YC searching capabilities will ensure the best rate of conversion through provision of *relevant* search result. Since YC uses full text search engine it is also possible to tweak the priorities to define business critical attributes of products and prioritise results to achieve maximum relevancy.

Recommendations and product associations

Products can be linked either manually to provide strong links such as accessories, spare parts etc or soft links through custom search queries. These relations can be encapsulated within reusable components that can be placed on storefront pages to provide continuous feedback to the consumer on their interactions thus enabling business to communicate alternative products and best deals to maximise conversion.

Promotions and customer segmentation

Promotions can be set at item level for discounts on specific products; order level for discounts on the overall item total; shipping promotions for cost of delivery; as well as gifts. Flexible eligibility-action framework is capable of targeting individual customers and customer segments. This mechanism is

capable of accommodating the most complex conditions for promotions to suit any business needs.

Customer Information

Customers are able to register and manage their personal information as well as view their order history. Out of the box implementation provides flexible registration flow that can be easily extended to include business specific data through custom attributes right from the admin application.

Checkout and Orders

Storefront includes checkout flow that enables capturing of order details including product information, invoice and delivery address and payment. The distinctive feature of YC checkout implementation is that it is event driven which means that what happens to orders is defined by their state rather than page flow of checkout. This makes modification to the checkout flow easy and enables businesses to enforce their unique approach to checkout to streamline the process.

JAM capabilities

Catalog and Product Information Management (PIM)

JAM provides functionality to manage catalog structure and product information such as product details, associations and category assignments through GUI or via import process. Each category can be configured to define product view templates and product type critical attributes. Products reside in YC independently to category structure and can be assigned to one or more categories. Web stores access master catalog data through category assignments thus enabling diverse independent web store catalog specific structures.

Consumer management

JAM enables business user to manage customer information as well as sharing this information between web stores. This is especially useful for businesses with chain of stores by providing customers with a "single sign in" capability thus sharing the profile details automatically and making checkout in a multi site environment even faster.

Search configuration

Search configuration involves definition of search engine behaviour at the category level. Business user is capable of adding or removing search capabilities with couple of clicks in admin application.

Checkout and Order management

Payment capabilities of storefront are fully controlled though JAM allowing business user to configure online payment gateways or divert orders to external systems for later payment acquisition. JAM provides full order management capabilities such as viewing order details; updating order fulfilment status; capture funds; cancellation of orders; and refunds.

Online marketing

This involves configuration of promotions, customer segmentation conditions and setup of special seasonal price lists as well as quantity price tiers for customers buying in bulk or customers that have special purchasing agreements configured via pricing policy extension.

2.2. Business channel

Business channel enables business users to manage data, customer information and orders. It offers a business perspective to the online commerce process to orchestrate the events of the consumer channel.
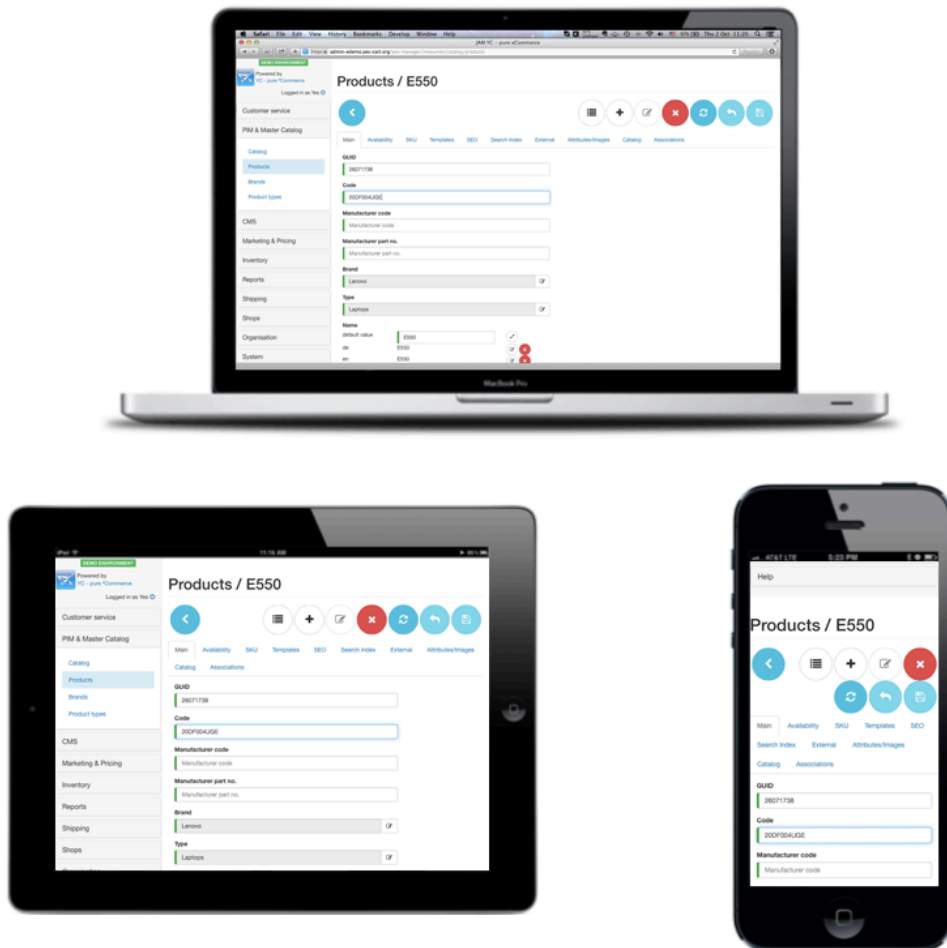
JAM is the central point for the business channel that provides full feature access to business at your fingertips on any device anywhere. Authorisation for data access is based on user roles assigned to business users of JAM.

JAM adapts to current user's roles and displays only relevant information thus keeping focus and simplicity to hide the complexity of the business operations. JAM is built on the same core as any other YC application so it is possibly to create specialised admin applications with ease as well.

Some of the key features of JAM business channel are:

Business User management and Security

User management section of JAM allows setting up business user accounts and granting access to business functions through role assignments mechanism. YC provides a number of roles out of the box. Extending this model by introducing new business specific roles to fine grain data access is a trivial task.

Catalog and Product Information Management (PIM)

JAM provides full access to catalog structure and product information. Managing this information can be achieved through use of GUI editor or via comprehensive import functionality.

Content Management

Content management system has simple and intuitive mechanism for updating content on stores. The CMS provides flexible mechanism that can be used for enrichment of theme templates and creating micro sites, which will suite both non-technical and advanced users.

Inventory Management

Inventory is managed through fulfilment centres inventory records. Each web store can be assigned one or more fulfilment centres. Inventory at these centres will ultimately define the available stock at any single web store and how the order will be split for fulfilment purposes if necessary. Managing inventory can be achieved via Inventory section of JAM that allows quick updates or via bulk import.

Marketing Management

Marketing section of JAM allows easy and speedy access to price lists. Setting up discounts or marketing campaigns is very easy in YC though temporal price lists. Business user can setup any number of price lists and set active dates for each. YC storefront will automatically perform the complex calculations to provide the actual effective price and current effective discount

for each product. In addition to this price lists provide price tiers functionality to better support B2B pricing models for customers buying in bulk.

Shipping methods

Shipping methods section contains configurations for shipping methods available to web stores allowing business user specify the available options as well as pricing scheme for the delivery methods.

Payment methods

Payment section contains configuration for payment gateways that are available to web stores. YC is very flexible in terms of the types of gateways it supports and provides a range of out of the box implementations such as Authorize.net, CyberSource, LiqPay, Paypal Pro, Paypal Express and NPV, PostFinance and external manual payment acquisition configuration. Furthermore YC provides a comprehensive API, which makes adding additional gateways a trivial task.

Customer and Order Management

Customer and Order management provides comprehensive functionality that allows customer personal details management, viewing customer order history, searching individual orders, managing orders though order status updates, payment capture and cancellations. These sections of JAM are effectively full-featured call centre application.

B2B and Marketplace

JAM shop configuration panel can be used to configure a simple shop or a sophisticated network of B2B shops or a Marketplace. Data federation API will ensure that users of JAM will only have access to data they are authorised for thus making coordinated B2B/Marketplace operations simple.

2.3. Content channel

Content channel enables enriching consumer channel with non-transactional content. This content takes shape in two forms: business data and storefront themes.

Business Data

YC supports business data through localisation options and custom attributes. Custom attributes allow business user to extend YC domain model and associate unlimited range of additional data with categories and products. Product types model gives semantics to these custom attributes by allowing using them for business functions such as attributes navigation. Additionally catalog domain model provides localised fields for Categories and Products enabling business user to craft region specific information.

Themes

Storefront theme is the presentation layer of the web store or simply put - it is a named collection of templates that defines look and feel of a storefront application. Each template is a component that can represent a full page or a part thereof. Templates can be collaged to produce full web pages in a generic and independent way thus providing flexible and easy to manage approach for applying different look and feel to already existing business layer facade. To make this process even simpler themes have built in failover mechanism allowing developer to override only those templates that have different appearance thus reducing the development time to changing only few templates.

Themes can go far beyond than just providing different style to web stores. It is possible to alter page flows and how the information is laid out thus giving the possibility of extending the storefront application to other specific purpose web applications such as "Call Centres" or b2b web stores and supplier channel web applications etc.

3. Technical background

3.1. Overview

New and efficient

The world of technology is constantly evolving uncovering better and more efficient ways of solving common problems. We at YC recognise this and embrace the innovation. That is why YC technology stack includes latest versions of world wide accepted frameworks.
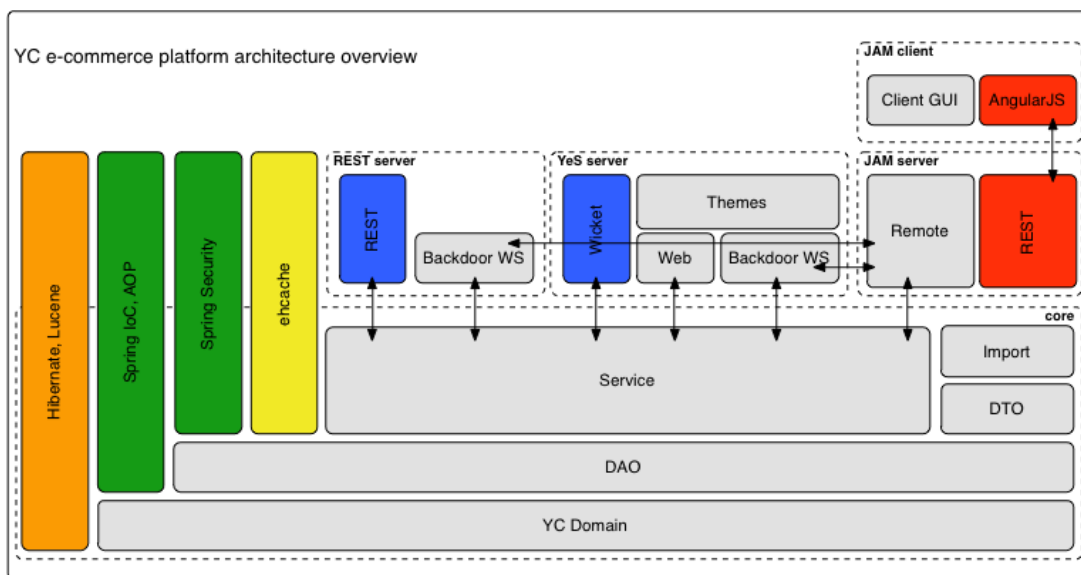
The core is built on top of Spring that provides excellent inversion of control (IoC) container and promotes SOLID principles of software development. YC is fully integrated with Spring Security to ensure that access to data is given only via secure channels to authorised users. Hibernate ORM provides perfect support for DAO layer and the domain model, Lucene full text search engine enables superior searching capabilities and minimises database lags. Storefront functionality is supported by Wicket web framework that provides easy and controlled way of rendering data in html templates. JAM client is using AngulaJS to provide superior and easy to use GUI that is supported by REST API. Lastly YC extensively uses Ehcache to maximise throughput of the system.

Widely accepted and well understood

There is another reason for the chosen technology stack – wide acceptance and understanding of the frameworks. Spring, Hibernate, Lucene, Ehcache, Wicket and AngularJS as frameworks had been maturing for years and now are highly respected and loved within developers community. This popularity is a merit of the successful implementation of these technologies. By using this technology stack not only we use "the best" but we also provide the integrators of YC with "the known" thus allowing rapid software development with minimal learning curve.

Robust platform

As previously discussed YC is built on top of good foundation. In addition to this it is developed using best practices of Test Driver Development (TDD). The source code contains comprehensive unit and integrations test suites covering all functionality and ensuring that the platform is clear of bugs and produces expected results.

Efficient platform

YC was always built with performance in mind. We followed best practices of SOA, multi threaded environments, data caching and web page caching techniques to deliver a platform that outperforms most demanding expectations.

3.2. Service Oriented Architecture (SOA)

YC embodies a truly service driven model by clearly separating business concerns into reusable well-defined business services. Service layer encapsulates business logic applied to domain entities delivered through data access objects (DAO) layer and transforms the data into data transfer objects (DTO) ready to be streamlined to presentation layer of storefront or delivered via remoting to client applications such as JAM.

Why is this important? It gives a modular system that is easy to understand and modify. Each service delivers specific function encapsulating concerns of domain constraints, transaction boundaries, business logic and security. These services can be grouped together to deliver business purpose specific applications such as JAM and YeS. This enables YC integrators develop other business specific applications that facet YC service layer to better suit specific business area needs, such as Supplier channel applications for extending Inventory model, B2B specific storefront that is better suited for bulk buyers, or specialised Call Centre applications etc.

3.3. Model-View-Controller (MVC) architecture of storefront

Storefront application design is probably one of the most important concerns of the platform due to anticipated frequent changes. Most of these changes would be around the look and feel of web stores and therefore following MVC pattern provides perfect fit isolating majority of changes to the view layer only.

Web layer controls the services to provide ready to use data models to be pushed to the view layer. The view layer is supported by the Wicket framework out of the box, which provides flexible template mechanism through extended html by introducing named tags for the components provided by web layer. YC themes framework enhances this template mechanism by introducing flexible template repository location discovery and failover mechanism. Themes allow creation of template repositories that provide alternative look and feel. JAM provides GUI for the business user to specify which theme (or template repository) to target.

Ultimately this means that creating new web store instance is as easy as defining store in JAM and assigning correct theme to it.

3.3. Integration points

YC realises that every business is unique and every business will need to extend or adapt YC to suit own internal processes.

YC SOA ensures that any service can be enhanced with new functionality in isolation without making any disruptions to the rest of the system. If there is complex business logic present services may be grouped into facades that orchestrate them to deliver greater business value.

Clear definition of services provides clean and easy to use model that can be exposed as web services through Spring remoting capabilities giving a natural way of integrating YC platform with other third party system.

Finally an import service in conjunction with Spring schedules provides flexible way for continuous data updates to the system.

There really is no limit where you can take YC.

4. Where to go from here?

If you are interested in more detailed information about how YC works we have a comprehensive user manual as well as video workshops to guide you through some of the common configurations and use cases. These resources will also give some ideas how YC can be used for more than only e-commerce.

Our team is always happy to help if you have any further questions, so please do not hesitate to contact us.

We also recommend trying out our live demos to get acquainted with the frontend. You can request access for the admin to see JAM in action by contacting us directly.

For more curious - YC source code is publicly available on GitHub.

5. Links to Resources and Contact information

If you have any further queries regarding YC please do not hesitate to contact us using our online feedback form:

http://www.yes-cart.org

Live demo available at:

http://demo.yes-cart.org/ (open source favour)

http://edemo.yes-cart.org/ (enterprise favour)

Detailed user documentation available at:

http://www.inspire-software.com/documentation/wiki/docyescart/

All open source code can be downloaded from our GitHub code repository:

https://github.com/inspire-software/yes-cart

News and updates are available at:

https://plus.google.com/+YesCart-pure-ecommerce

Video workshops are available at:

https://www.youtube.com/c/YesCart-pure-ecommerce