



**UNIVERSIDAD
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**Laboratorio virtual de
entrenamiento SAP Hybris**

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Laboratorio virtual de
entrenamiento SAP Hybris
para Keyrus

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Introduction

One of the most complicated steps in learning curves of new technologies usually is the beginning of the learning process. It's hard to learn something new and even more when you give the first steps towards more advanced concepts. Hence the importance of having good documentation, with detailed steps to follow and a solution to common problems.

The problem is that many times this information is hard to find because of lack of documentation, wrong documentation or the lack of tutorials on the subject. Which makes people lose time making them ask constant questions to their superiors, this makes them lose valuable time in the learning process.

Keyrus arrived in Colombia in 2016 and part of their labor is dedicated to develop and support business applications based on SAP Hybris and it's technologic infrastructure. While being a closed technology; SAP Hybris requires engineers, programmers and developers to get in a exclusive formation process with partners of the industry with a high cost, hence why finding the qualified people is not an easy task and this limits the growing capacity and the custom management of solutions of the company.

Because of this they take the decision of documenting the self learning of SAP Hybris and at the same time the elaboration of a guide for the future new trainees in the company so they can learn the basic needs to manage the SAP Hybris technology.

Objectives

General: Implement a virtual lab for the development of the basic knowledge in programming of SAP Hybris for new Trainee Developers of Keyrus.

Specifics:

- Identify the basic knowledge necessary for a new Back end Trainee Developer in Keyrus.
- Select the content to be studied to develop the basic knowledge required for a Back end Trainee Developer in Keyrus.
- Make the instructional design of the content for the laboratory.
- Select the needed technologies for the implementation of the laboratory.
- Implement a course in the selected technology.
- Socialize the constructed laboratory inside the university and the company.

Theoretical Framework

The world is changing constantly and that is no different for education. The quick development of technology has made the world as we know it change at a vertiginous rhythm

and education has not been a stranger to these changes. Technology has brought big changes to education and one of those is virtual learning.

Virtual learning has made the way we acquire knowledge pretty different from the traditional way of learning. This has brought its advantages and disadvantages. Although with the advancement of technology this way of learning is more common everyday but yet it was not such a common way of learning, specially in countries like Colombia.

The Covid-19 pandemic has made this type of learning the method of choice for learning. Since social distancing is something we must do, virtual learning has become more common. Virtual learning has some advantages from traditional learning.

“The integration of digital technology into university teaching and learning bears high potential to create cognitively engaging learning opportunities – not only in the current or future crisis situations (e.g., Chi et al., 2018; Chi & Wylie, 2014; Authors 1, 2020). Due to the greater temporal and spatial/geographical flexibility, online learning environments also allow more diverse students with different constraints (including parenthood, a remote place of residence, or part-time-study) to profit from potentially high-quality university instruction (e.g., Mahieu & Wolming, 2012).”[3]

A total of 537 urology residents participated in a randomized trial of on-line spaced education in 2005 that used 96 American Urological Association Self-Assessment Study Program questions as educational material. A method that consists in giving the student a highly condensed learning content repeated 3 times, with a rest time of 10 minutes in which students do distractory activities like physical ones.

“On-line spaced education can generate improvements in learning that are retained 2 years later.”[4]

Methodology

The development of the project will be executed on an agile methodology framework known as SCRUM which will let us follow a structured form of work based on the iterative and incremental development. According to this methodology we present the following definitions:

- **SCRUM:** A lightweight framework that helps people, teams and organizations generate value through adaptive solutions for complex problems

- **Release:** The process of delivering a new product, with the necessary implementations and their due updates; is a moment of the process in which you also have to plan the next and create a new version of the system.
- **Sprint:** Scrum Event that is time-boxed to one month or less, that serves as a container for the other Scrum events and activities. Sprints are done consecutively, without intermediate gaps.
- **Sprint Backlog:** Scrum Artifact that provides an overview of the development work to realize a Sprint's goal, typically a forecast of functionality and the work needed to deliver that functionality. Managed by the Developers.

There will be sprints every 2 weeks in which there will be “deliverables” at the end of these there will be a review in which will we accept or deny the Sprint and a retrospective in which we will evaluate the work that has been done, the problems that happened and what can be corrected.

Activity Chronogram

Task	Initial Date	Finishing date
Presentation of proposal	12/04/21	12/04/21
Approval of the proposal by the university and the company	09/04/21	15/04/21
Identification of training topics and training objectives of a Keyrus Back end Trainee Developer	15/04/21	25/04/21
Preparation of the instructional design of the course	25/04/21	30/04/21
Selection of technology for laboratory setup	30/04/21	05/05/21
Information search and training content writing	05/05/21	30/05/21
Design and solution of training exercises	30/05/21	15/06/21
Design and solution of evaluation exercises	05/06/21	15/06/21
Design of audiovisual material	15/06/21	25/06/21
Search for support material	25/06/21	30/06/21
Assembly of the course in the selected technology	30/06/21	10/07/21
Socialize and deliver the product	10/07/21	10/07/21

Expected results

With the above, it is expected to have a tool for Keyrus to facilitate the training of new back end trainees in SAP Hybris. Focusing specifically on the knowledge required for it. Also reducing the time they take to learn this knowledge and reducing the need to constantly consult their superiors.

This would be done with a web content platform that contains the knowledge required by Keyrus for a SAP Hybris developer trainee so that they can acquire the necessary knowledge virtually, in a clearer way and without much difficulty.

- Instructional design of the course.
- Thematic content of the course.
- Audiovisual material of the course.
- Training workshops.
- Evaluation workshops.
- Supporting or complementary material.
- Article type report on the construction of the laboratory and the proofs of concept for said course.
- Socialization in the company and university of the laboratory.

Budget

HEADINGS	Sources		TOTAL
	<i>UdeA</i>	<i>Keyrus</i>	
Student		Monthly payment	1.800.000 COP
Devices		1 Laptopl, 24" screen, keyboard and mouse	6.000.000 COP
Internet and administrative spendings			3.000.000 COP
Internal advisor	480.000 COP		480.000 COP
External advisor		3.000.000 COP	3.000.000 COP
TOTAL			14.280.000 COP

Product development

Below are the products built within the business practice.

- Instructional Design:

Section 1: About SAP Hybris (About 10 minutes)

This section contains a quiz with multiple options.

Section 2: SAP Hybris Commerce (About 30 minutes)

This section contains a quiz with multiple options.

Section 3: Installation (About 2 hours)

This section does not contain any quiz or exercise as it's just an installation guide.

Section 4: Extensions (About 10 minutes)

This section contains a quiz with multiple options.

Section 5: Data Models (About 1 hour)

This section contains a quiz with multiple options. This section contains an exercise so the student learns more about Data Models.

Section 6: ImpEx (About 30 minutes)

This section contains a quiz with multiple options. This section contains an exercise so the student learns more about ImpEx.

Section 7: Service (About 3 hours)

This section contains a quiz with multiple options. This section contains an exercise so the student learns more about the Service layer.

Section 8: Facade (About 3 hours)

This section contains a quiz with multiple options. This section contains a quiz with multiple options. This section contains an exercise so the student learns more about the Facade layer.

Section 9: Converters & Populators (About 1 hour)

This section contains a quiz with multiple options. This section contains a quiz with multiple options. This section contains an exercise so the student learns more about converters & populators.

Section 10: Front End (About 1 hour)

This section contains a quiz with multiple options. This section contains a quiz with multiple options. This section contains an exercise so the student learns more about the Front End layer.

Section 11: Backoffice (About 30 minutes)

This section contains a quiz with multiple options. This section contains a quiz with multiple options.

Quizzes: <https://forms.gle/hVajF6TyeWfFj3pt7>

Final Project: The course encourages students to make their own store from scratch.

- Thematic content of the course.

Section 1: About SAP Hybris

SAP Hybris is the helping tool you need for your e-commerce needs.

In this section you will learn the basics about SAP Hybris. You will learn some bit of history and some basic knowledge about the SAP Hybris family products.

On April 1, 1972, five former IBM employees – Dietmar Hopp, Hasso Plattner, Claus Wellenreuther, Klaus Tschira, and Hans-Werner Hector – started the company SystemAnalyse Programmentwicklung (System Analysis and Program Development).

Section 2: SAP Hybris Commerce

In this section you will learn specifically about SAP Hybris commerce which is the main focus of this course. You will learn about SAP Hybris commerce and the different tools it has to help you.

What is SAP Hybris Commerce

SAP Hybris is also known as SAP Commerce Cloud and it's essentially the same e-commerce platform.

SAP Commerce Cloud is the most effective and proven tool to engage customers online in the world of the internet. It supports businesses with customer engagement and personalization through its excellent e-commerce experience.

Section 3: Installation

In this section you will learn about the installation of SAP Hybris. You will learn what you need to do before installing SAP Hybris on a system using Linux OS and how to download and install SAP Hybris on it.

Installing Hybris is not a hard task. This will guide you through so you can do it easily.

Section 4: Extensions

In this section you will learn about extensions. Extensions are what you use to modify the commerce site with your own store needs like your own catalog of products, storefront, etc. SAP Commerce has a modular architecture, where new business logic is developed in separate, function-specific modules called extensions.

An extension is an encapsulated piece of SAP Commerce functionality that can contain business logic, type definitions, a web application, and back-office configuration functionality. Depending on your business needs, your solution will have a varying number of extensions, all wired into the core SAP Commerce platform via the Spring dependency injection model.

Section 5: Data Models

In this section you will learn about data models. This is where you will learn how SAP Hybris handles their item types and how you can add new ones and give them the attributes you need.

The data model underlying SAP Commerce is defined in XML files. New data types for extensions, called item types, are defined in <extension-name>-items.xml files.

New functionality you add to SAP Commerce may require additions to the SAP Commerce data model. For example, you need consoles and games items to model the videogames company's business requirements.

Section 6: ImpEx

SAP Commerce ships with a powerful text-based import and export functionality called ImpEx.

ImpEx files are essentially comma-separated files (CSVs) that allow for compact, human-readable, import and export of data to and from SAP Commerce. They can be manually executed through the SAP Commerce Administration Console, or automatically executed every time you initialize the system by saving the ImpEx file according to a simple convention, and in a specific location.

Section 7: Service

In this section you will learn about the service layer. This is the layer where you will have all the methods you need to access and manipulate your data models.

When implementing new business logic, you separate the business code into java classes called services. Each service implements a specific, well-defined requirement.

Services form part of the ServiceLayer. This layer is a logical tier between the client and persistence layer. Each service has its own java interface that lists the public methods that can be called by clients and other services.

Section 8: Facade

A facade is an abstraction layer that provides a simplified interface to the underlying implementation.

In previous sections, you saw that SAP Commerce generates Java model classes that represent the different types of items that are stored in the database. These model classes are what you pass as arguments to the different Java services in the SAP Commerce service layer. Nevertheless, there are occasions when the model classes become unwieldy:

- When you need a simpler or more convenient format for some of the data to display in JSPs
- When you need a serializable set of objects to send to another system
- When you want to prevent client code from modifying attributes in a model class object directly

Section 9: Converters & Populators

Converters and Populators are what will help you transform models into DTO's and DTO's into models.

Converters create new instances of Data objects and call Populators to populate these data objects. This is useful because most of the time we don't want to use all the attributes of a

model. For example, when you are displaying a list of products or the shopping cart you might want to show things like the description of a product because like this, you would have to load a bunch of unnecessary data.

Section 10: Front End

In this section you will learn about the front end. This is where you can display your data on a browser. You will learn about the basic connection between this layer and the previous back end ones.

Once you have a model and business logic in place, you can develop a suitable front-end web application. When building your front end, use the Spring MVC framework to separate the model, the view, and the controller parts.

Section 11: Backoffice

In this section you will learn about the backoffice. The backoffice is where you will manage all the important things from the store. Data, pages, stores, prices, catalogs, etc.

Backoffice Administration Cockpit is a user-friendly, browser-based, user interface for viewing, creating, and manipulating data within SAP Commerce.

- Pruebas de concepto a dicho curso.

As a proof of concept my own experience is taken on account. As I used a similar tutorial to learn about SAP Hybris and after working on it, this are the basics and most used concepts when developing for Hybris.

Conclusions

- Developing a course is not easy, even when you have a baseline and summarize information. It is something that requires high experience and knowledge of a subject.
- My experience as such in the company was quite good, it gave me many lessons. In college there are things that are learned but never really evidenced. For example, true teamwork and good communication are much more noticeable in a company, agile development using SCRUM, how important it is to have an open and curious mind, and take on challenges and responsibilities.
- Soft skills are very important, beyond the constant effort of teachers for us to improve this and performance in presentations. A team without communication does not work. Either due to misunderstandings, personal differences or difficulties understanding how to do certain tasks. It is very important to know how to communicate.

- The experience gained in programming as such is also of the utmost importance. In large projects is when we understand how important it is to do things right. A single line of code can compromise large parts of a project. It is important to know well what we are doing before doing it and to follow good practices when doing it so that this does not generate problems or confusion in the future.
- Hybris is a complicated tool. Although it greatly facilitates the development of e-commerce platforms. This makes it a large and complex tool with a somewhat complicated learning curve. There is little information online about this. That makes even this experience difficult. This course will help to get a basic understanding of the most used Hybris stuff and the approach to take when developing with Hybris.
- For future jobs this is a great experience, not only because of the knowledge gained from Hybris but also learning about how a large project works and how teamwork works in the business environment.

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