Open source ERP for e-commerce with Odoo

odoo

Smile
OPEN SOURCE SOLUTIONS

1. PREAMBLE

1.1. SMILE

Smile is a **company of engineers specialising** in the implementation of open source solutions and the integration of open source based systems. Smile is a member of APRIL, the association for the promotion and defence of open source software, PLOSS, a network of open source software companies in the Ile-de-France region, and CNLL, the French open source software council.

Smile has a staff of more than 700 throughout the world, more than 500 of whom are in France, making it the largest integrator of open source solutions in France and Europe.

Since 2000, **Smile has been actively monitoring technological developments**, which has enabled it to discover the most promising open source products, to qualify and assess them so as to offer its clients the most successful, robust and sustainable products.

1.2. THIS WHITE PAPER

In 2008 we carried out and published a study on existing open source ERP systems, entirely independent of any publisher. Our aim was to have exhaustive coverage, i.e. to analyse functionally and technically practically all products calling themselves open source ERP systems, in order to be sure not to miss any good solutions suited to the market, and also with a view to the durability of the solutions.

As a result of this study we produced a shortlist consisting of Odoo (formerly OpenERP), OpenBravo, Compiere, Adempiere, Neogia and ERP5. Our previous white paper on the subject gives details of this study and the functional and technical solutions provided by these ERP systems to each business management requirement.

After several years of implementation of Odoo and several successful large-scale projects, Smile has committed more strongly to the Odoo solution, on which we have built up high-level expertise and a broad experienced team.

For this white paper we also opted to concentrate on the field of e-commerce, a relatively broad subject that may need practically all the modules of an ERP, and on experience acquired from several feedback reports which we think appropriate to share here.

We have decided to centre this white paper exclusively on the Odoo solution and to include in it the developments and new features of the latest versions from the point of view of the needs of e-commerce.

1.3. AUTHORS

This white paper has been drawn up by Corentin Pouhet-Brunerie, Samir Rachedi and Badr Chentouf.

2. GENERAL OBSERVATIONS ON ERP FOR E-COMMERCE

2.1. WHAT IS ERP FOR?

An ERP (Enterprise Resource Planning) system is a central frame of reference for managing all the data of an enterprise and all its various processes.

In the case of e-commerce, the key process is the sale of a product, which comprises the act of buying, but also the manufacture of the product or its delivery to a supplier, getting the product to the customer, recording the sale in the accounts, handling any applicable after-sales service, etc.

Everyone is acquainted, to a greater or lesser degree, with the product selling process, and yet this workflow can quickly become a complex one when the handling of exceptions, cancellations, returns and so on is included.

The attraction of an ERP system is that it responds to the needs of a specific business line (accounting, commerce, purchasing, logistics, etc.) while at the same time bringing together these functionalities in a single place, providing overall processing and an overview of the entire process, automating it as far as possible, avoiding flows of data between applications and above all user re-entries.

2.2. INTEGRATED ERP OR BEST-OF-BREED?

In contrast to the ERP approach there is a radically different one called 'best of breed', which consists of assembling the best solutions to cover the different needs, and joining them up.

The advantages of centralising information and processes via an integrated ERP system are numerous: simplicity of use with a single software application, alignment of frames of reference, possibilities for business processes to evolve more simply, the ability to use downstream data for upstream calculations, etc., not to mention the simplification from the technical point of view, with no inter-application flows.

However, the best-of-breed approach is also highly thought of in the world of e-commerce, albeit by no means exclusively. This approach is probably more common in this field, due to the fact that there are many business lines involved in running an e-commerce site, each of which is currently changing, evolving or strongly innovating, making it difficult for a single solution to follow and cover all these areas of expertise. So the best-of-breed approach responds to higher demands for each functionality, demands often linked to the size of the e-commerce organisation, but with associated implementation and maintenance costs to be taken into account.

Best of Breed	Integrated
Advantages • Deeper and industry-specific functionality • Minimizes potential for software functionality gaps • Not locked into a single vendor	**Advantages** • Quick wins and results • Simplifies the IT footprint • Reduces Total Cost of Ownership by using delivered integrations
Disadvantages • Greater Total Cost of Ownership for maintaining custom integrations • Adds complexity to the IT footprint	**Disadvantages** • Greater potential for software functionality gaps • Greater organizational change to align with general ERP functionality

Extract from the blog 'ERP the right way' [1]

2.3. ERP MODULES RELATING TO E-COMMERCE

Depending on the e-commerce system, its specialisation and business line orientation, an ERP system takes charge of the following areas:

- Sales: Accounting recognition of sales, pricing rules, quotations, invoices, payments, etc. Sales will be supported by the management of a product catalogue or of services implemented in the ERP system, with the notions of variants, complex configuration or packs.

- CRM (Customer Relation Management) for managing customer information and keeping historical records of all interactions with customers and prospects e.g. emails, orders, etc.

- Purchasing: Handles purchasing transactions and the associated accounting entries, but also supplies, in accordance with policies that have to be parametrised and/or according to needs determined by the production management. Upstream from purchases there may be a budget planning module for these purchases, as well as more or less complex rules for breaking down costs.

- Inventories: Managing inventory supply policies in line with sales and internal movements – SCM (Supply Chain Management). Inventory management also generally provides traceability, both upstream (i.e. putting together the components of the product for manufacture), and downstream (the use of the product in another formula, or its distribution to re-sellers).

- MRP (Manufacturing Resource Planning)

- In other cases ERP systems have native interfaces with sales solutions at POS (point of sale) terminals.

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[1] http://gbeaubouef.wordpress.com

In this white paper we deal with a large number of these functional areas, without however being exhaustive. In particular, CRM is not dealt with here, although it will be in a subsequent version.

2.4. THE E-COMMERCE ERP SYSTEM IN ITS ECOSYSTEM

An e-commerce ERP system forms part of a very big ecosystem, interacting with different players, internal and external.

This ERP system will be expected first and foremost to manage the frame of reference, the processing of customer orders, deliveries, invoicing and the associated accounting.

Next it will be expected to allow exchanges with online players (such as Amazon), transporters to provide traceability of packages, and of course with its own e-commerce site(s).

2.5. ADVANTAGES OF OPEN SOURCE

When choosing a management solution, whether for e-commerce or an industry, companies have to choose between so-called proprietary software applications and open source ones.

Beyond the functional characteristics intrinsic to each solution, we believe there are fundamental differences between the two models and between the two ways of looking at the world of information technology.

One of the first criteria for comparison is durability. A management solution has an estimated useful life of between five and fifteen years and users need to be assured that the solution will continue to exist throughout this period.

In this area, open source clearly leads by a length: the availability of sources shared with a community that masters the code ensures that it will always be possible to find third parties who understand the product and can maintain it and even develop it further. Even if the publisher were to decide to withdraw support one day, the community of integrators and developers would be able to continue maintaining the solution. In contrast, we have already seen proprietary publishers discontinue support of product versions or even of products, obliging customers to migrate since the code is closed or not widely shared and therefore no-one has the necessary skills to be able to maintain the product, except for the publisher, who no longer supports it.

Another great advantage of open source is its high capability for product adaptation, thanks to free access to the code and the ability to add functionalities. The functionalities may be modules appended to the core of the product, as with any product capable of managing extensions, but with open source, developers can add different functionalities to the actual core of the product as and when necessary.

Compliance with standards is a very widely generalised feature of the world of open source, notably thanks to the reuse of numerous open source bricks and libraries that de facto propagate these standards. Very often it is the open source itself that is the standard to be complied with by proprietary

software applications, as in the case of JSR applications and their reference open source implementations.

Choosing an open source software application also ensures that there are no hidden costs. The product is taken in its entirety, and cannot be sliced up, due to the viral open source licence. In the proprietary world, we have all come up against incomprehensible descriptions of available functionalities that are or are not available in an entry-level version. Moreover, who knows how many users of this application there will be in one, two or five year's time? An open source product does not have a price linked to the number of users, unlike a professional support of an open source product, which may take account of this in its pricing formula.

As for security, it goes without saying that access to the source code is the only guarantee that security vulnerability will not be covered up by a particular company for its own purposes, and that it will be identified and corrected. With a closed, non-disseminated source software application, the guarantee of security relies solely on the publisher's word, and who is to say whether any number of security audits will be enough?

Open source has other advantages too, such as the absence of an integrator lock-in, freedom of use, innovation, etc.

3. INTRODUCTION TO ODOO

3.1. A BELGIAN PUBLISHER, AN INTERNATIONAL COMMUNITY

Odoo, now called Odoo, is a Belgian company with a presence in India, the United States and Asia.

Odoo has strong product capabilities and as aggressive roadmap, publishing a major upgrade every 12 or 18 months.

3.2. ERP, AVAILABLE BUSINESS APPLICATIONS AND MODULES

Odoo is an ERP system. It comprises all the functionalities necessary for running a business (including accounting), completely interlinked.

Odoo has a completely modular approach, with a catalogue of modules that can be installed. There are in fact thousands produced by the community and made available in open source, and about 200 developed and maintained by the publisher.

The result is an array of modules, ready to install and available to cover one or more functionalities. Some cover an entire function while others are more modest add-ons modifying the workings of existing functionalities.

With a simple click, the administrator can deploy a CRM application, a sales management module, or an invoice management module, etc.

The market for business applications is even bigger than the ERP market, and Odoo is well aware of this, focusing its marketing on business apps rather than ERP, to allow businesses to create applications based on Odoo for a specific department or need, without calling into question longstanding ERP systems.

3.3. OPEN SOURCE AND BUSINESS MODELS

Odoo/Odoo is distributed under the GPL v3 licence and is entirely free of charge to use. There is no 'enterprise' version with a different code or with additional functionalities, distributed in return for paying for support as is the case with several open source solutions. Odoo has only one version of its software application, completely open source and completely free of charge to use.

Odoo's business model is based on two pillars: the sale of warranty and service contracts associated with its software application, and subscriptions for users of Odoo's SaaS.

3.4. TECHNOLOGIES

Odoo is based on modern technologies, with very powerful ORM and workflow engines, closely linked to the choice of the dynamic language Python.

All the same, it is regrettable that the ORM and BPM workflow engines are not well-known standards. Developers will therefore have to acquire specific knowledge about them, and it will not be possible to replace them or have them interoperate with the technologies that are widespread in the Java open source world such as Hibernate or JBPM.

Odoo's integration costs are low, thanks to its highly advanced parametrisation and the general simplicity of the code.

Database

The database used by Odoo is PostGreSQL.

Today, PostGreSQL is a community-developed open source database with numerous technical strong points such as multi-core functioning and management of relational integrity. The absence of an enterprise version with payment for support or additional functionalities is consistent with Odoo's open source orientation.

Other ERP publishers will have opted to move relational integrity management into the application itself. This decision is also entirely respectable, but for Odoo, all the functionalities are accessible through web services, even the core of the application, and only integrity at database level could guarantee compliance.

Web Services

All the business functionalities are natively exposed as web services - an eloquent token of interoperability for the whole enterprise with an existing software application that has to dialogue with its ERP.

Note that the web services natively exposed are XML/RPC and JSON/RPC but not SOAP.

4. MANAGEMENT OF THE REFERENTIAL

4.1. PRODUCTS

The most basic data structures of an ERP system are the products. Odoo uses a broad interpretation of products, which includes distributed goods as well as manufactured products and services.

Parametrisation will allow the behaviour of these products to be differentiated.

Products can be reserved to purchases, or to sales, and they may be consumables or services.

For example a service will be associated with a project as a task, whereas a physical product will trigger supplies or production orders.

To simplify input, Odoo offers model-based creation options, or with fields filled in with default values suggested on the basis of the contents of the other fields.

Odoo also features a system of products with variants, i.e. a group of products similar in every respect except for a few isolated parameters that can be overwritten locally, for example the colour or size of a T-Shirt, or a price supplement. By default, these products are subject to the same price and manufacturing rules.

List of variants

Details of a variant

4.2. MULTI-COMPANY

An ERP system is multi-company if it allows several companies to be managed separately but with some common elements.

One of the common elements concerns everything forming the potentially transverse product referential, but also users who for example need to access several countries, as well as the customer and supplier database. An ERP system also simplifies intragroup management if it allows purchases and sales between managed companies to be offset automatically, as with cash flows and automatic reconciliation of invoices.

Basically, a multi-company ERP system is expected to be able to manage several accounting systems, and to ensure that the regulatory consolidation function can be carried out simply.

Odoo has been multi-company since v6, and allows the different referentials to be shared or isolated.

Multi-company management is very useful in the following cases: several e-commerce activities with one website per company, several companies brought together under the same business management but with several invoicing systems and associated brands.

4.3. E-COMMERCE ORIENTED CATALOGUE

The catalogue forms the basis for managing the sales of the business. The ERP system already has a catalogue of products on sale, with the ability to include complex or configurable products.

However online sales require a catalogue with information over and above that needed just for a management application. A fuller description is required, together with one or more pictures, a technical description, etc.

It is possible to manage this additional information using the e-commerce management tool associated with its ERP, but it will probably be simpler to manage them directly in the ERP system, in one centralised place, so as to have a single product referential for the enterprise, that can subsequently be deployed for multi-channel: B2B, e-commerce, white label, etc.

The ERP system will then be expected to be able to add all the necessary description fields, with texts, rich texts, images, etc., and also to be multilingual, with a view to international publication.

Here, Odoo responds perfectly to these requirements, with the administrator being able to add any fields he wishes, and with the possibility of having rich texts, images, attachments, in short anything that will provide a description for the web.
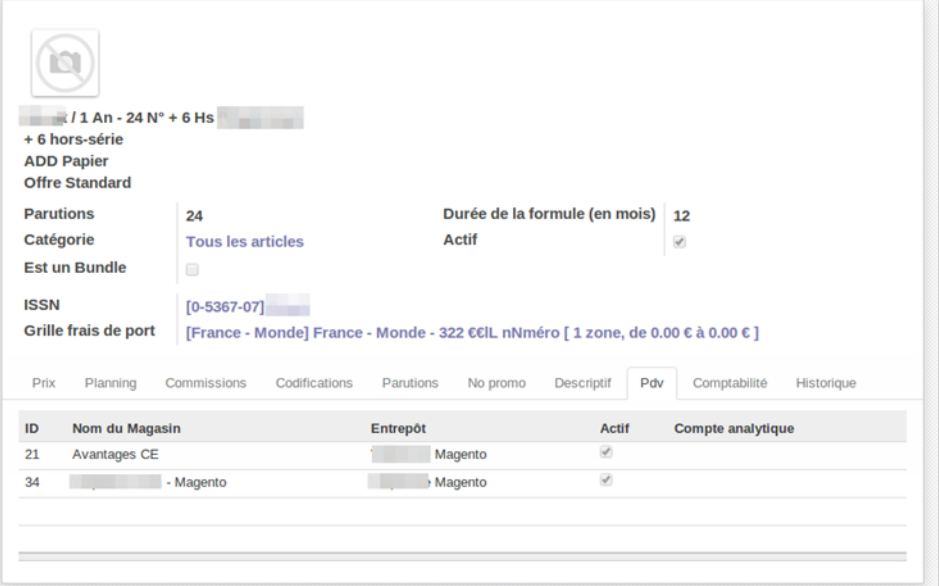
Beyond the description of the products for the web, a recurring need in e-commerce is the programmed uploading of a catalogue, for example for clearance sales or for a new collection. The new catalogue has to be online at the right time, possibly replacing the previous version.

In the ERP system, it is necessary to be able to manage two catalogues in parallel, and also to plan publication.

Odoo allows several product catalogues to be managed in the form of product categories, not to mention the possibility of managing different price lists for the same product, by date or customer type.

Another functionality required for managing e-commerce catalogues is to be able to publish different prices for different websites (different brands, white labels), with separate or shared inventories.

For this, Smile has developed a module that enables not just the price but also the availability of products to be managed by point of sale, a point of sale being a distinct website.

4.4. PRODUCT REFERENTIAL

One of the prime functions of the ERP system is to centralise all the product data necessary for sales, purchase or manufacturing.

However, when the channels of distribution are diversified (online shop, mobile application, printed catalogue), sales information accumulates more or less detailed descriptions, photos, videos, translations, etc.

It is also quite common to want different categorisations for the e-commerce website and the marketplace on which the products are sold. This categorisation by target introduces complexity into the day-to-day management of the data.

Odoo manages product multi-categorisation, but not by target. Smile has had the opportunity to complete this relatively simple but very useful functionality.

In the most advanced or demanding cases, the e-trader even has to work on his catalogue continuously, with several versions being prepared in parallel to manage the clearance sale catalogue and prepare the winter catalogue while at the same time working on the catalogue for the marketplaces.

Although it is possible to respond to this need by using several instances of Odoo and uploading them via the module system, it is one of the key points that might justify having a complementary PIM (product information management) solution to provide flexibility in managing products, as well as the interfaces designed for this sales or marketing coordination.

In certain cases, it may be advisable to install a dedicated PIM for the sales and marketing teams in the core of the IS business line, giving them an overall view.

At the same time a prudent approach should be taken to adding a PIM, since it involves putting additional data synchronisation in place between the PIM, the ERP system and the e-commerce system, with the consequent associated costs.

Nevertheless it may be worth the effort and cost, all the more so as dedicated PIMs include ETL (extract, transform, load) functionalities that simplify the work of integration.

Another limitation of ERP systems concerns technical data such as 2D or 3D design documents, terms of reference at the end of their life cycle and nomenclatures and associated ranges obtained from these design models.

This technical data is not traditionally managed by PIM solutions, or even by ERP systems, and require a PLM (product life-cycle management) solution.

In open source, for example OpenPLM offers a link to Odoo allowing OpenPLM BOMs to be exported to Odoo.

5. FRONT-OFFICE MANAGEMENT

5.1. ONLINE SALE OF THE PRODUCTS IN THE ERP SYSTEM

There are various technical approaches available. It is possible to link the ERP system to a specialised e-commerce system, synchronising them in terms of customers, orders, payments, after-sales service, etc., just as it is possible to construct an e-commerce website that would read and write the data directly from the ERP system by accessing a database or web service.

With Odoo, both these approaches are possible. On the one hand, Odoo can easily be connected via its complete exposure in web services to Drupal Commerce or eZPublish, and especially to Magento, the leader in the field, thanks to a generic, extendible connector.

On the other hand, from version 8 onwards it is possible to publish a catalogue directly on an e-commerce website integrated with Odoo.

5.2. SALES VIA PARTNERS

Similarly to the interface with the e-commerce website, Odoo allows synchronisation with partner sites (e.g. Amazon), with which it is practically essential to work nowadays.

There are several problems regarding this remote management of sales.

The first concerns management of inventories. With several physical or virtual points of sale the challenge is to allocate the right level of stocks to each one, given that the overall stocks are at only one physical location, or at the very least are not in the hands of the selling partners.

Several strategies are possible:

- Defining a dedicated stock for each point of sale, which is often impossible for slow-moving products with high storage costs, or perishable products.

- The products are always available but with a delivery lead-time calculated upon validation of the basket on the partner site, which may involve an additional lead-time for any necessary restocking.

- Real-time synchronisation of stocks (or at least with a greater frequency than that of sales in the case of products with stocks close to the alert threshold) when the partner allows it from the IT point of view.

The second problem concerns calculating commissions in order to ensure the correct margin and to pay the correct commissions, irrespective of sale price.

5.3. SYNCHRONISATION OF ODOO AND MAGENTO

There are several possibilities for synchronisation between Magento and Odoo. The important point is for this synchronisation to exist, and for the master of the data to be clearly defined.

We often recommend that the master (in terms of product catalogue) should be the ERP system, but certain cases require the master to be on the e-commerce side.

For carrying out this synchronisation of products, and also of orders, invoices, customers and dispatches, there is a parametrisable and above all extendible connector.

The standard functioning is as follows: once the categories, means of payment and other parameters have been matched between Magento and Odoo, the ERP system is then used to manage the product and price catalogue.

The e-commerce front-end catalogue is regularly updated from the catalogue in the ERP system. Products, descriptive fact sheets, prices and stocks are thus imported via an automated job.

Furthermore, on each sale the e-commerce front end calls up a web service notifying the ERP system of the sale so that it is taken into consideration for accounting and stock management.

The connector does not natively envisage handling information on dispatches. Odoo can used for this, with email alerts produced automatically as the order progresses logistically.

Note that the connector also ensures compliance with the regulations and that the customers are not debited until delivery of the merchandise in the case of partial processing of orders.

The connector allows the user to force the export of a product to Magento so as not to have to wait for the planned execution of the update.

In the case of standard products in Magento and Odoo, the connector will be immediately operational following a quick installation.

For complex or specific products, or for processes diverging from the e-commerce standard, it will be necessary to adapt the functioning of the connector through development.

5.4. SYNCHRONISATION OF ODOO AND DRUPAL COMMERCE

Odoo's association with DrupalCommerce makes even more sense in that DrupalCommerce does not have a back-office for managing orders, and therefore an associated back-office must mandatorily be deployed.

As before, the generic connector will allow information to be synchronised between Odoo and DrupalCommerce, ultimately with exactly the same flows to be put in place.

5.5. E-COMMERCE FRONT-END INTEGRATED WITH ODOO

Since version 8.0, Odoo has offered a CMS module and an e-commerce module, completely integrated into the software application.

This is a significant new feature, that is technically complex to achieve, and which will make life easier for many businesses.

Once installed, the module allows you to create a 'Shop' page accessible online without identification.

The products posted there are those defined in the back-office, including description, price and picture.

By default, all products are masked, and they have to be published to make them visible to visitors.

The certain advantage of the direct integration of an e-commerce front office in the ERP system is that the products are published online, with no handling other than activation by the administrator (and even this can be automated).
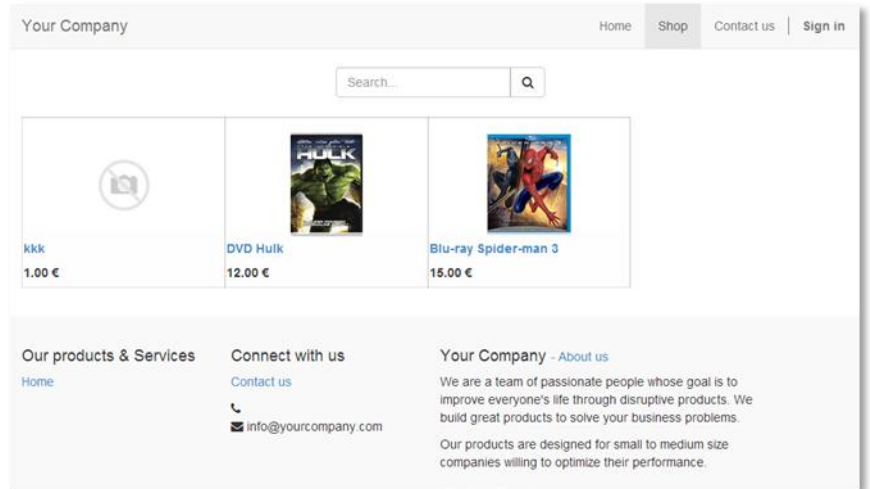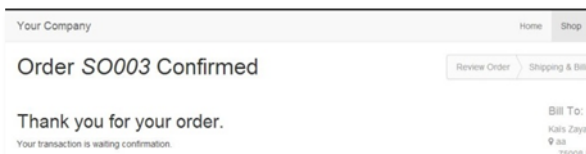

We also have the classic functionalities of an e-commerce website: basket, product search, cross-selling depending on categories, and online payment.
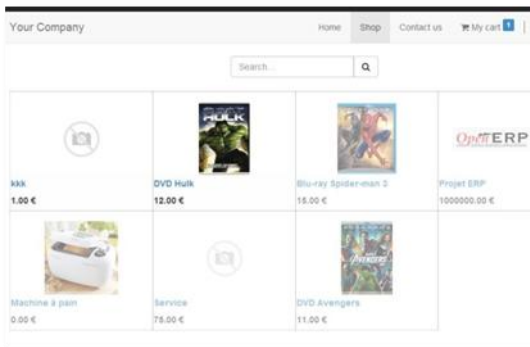
List of products. As administrator, I can see the deactivated products and I can activate them.
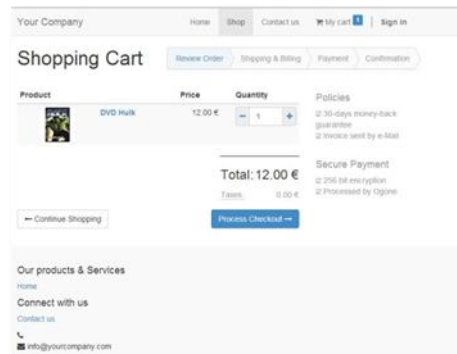
Order basket

Order confirmed on the website

Management of prices

E-commerce is all about selling, and therefore price, and mastering sale prices, with specific promotions, is the key to success.

Management of selling prices is guided by the Odoo price lists, allowing you to do whatever you wish in terms of promotion rules, well beyond any tool specialising in e-commerce websites.

For example, let us create a rule applying a 10% discount on all products.

Let's say this rule applies on 23 March only.
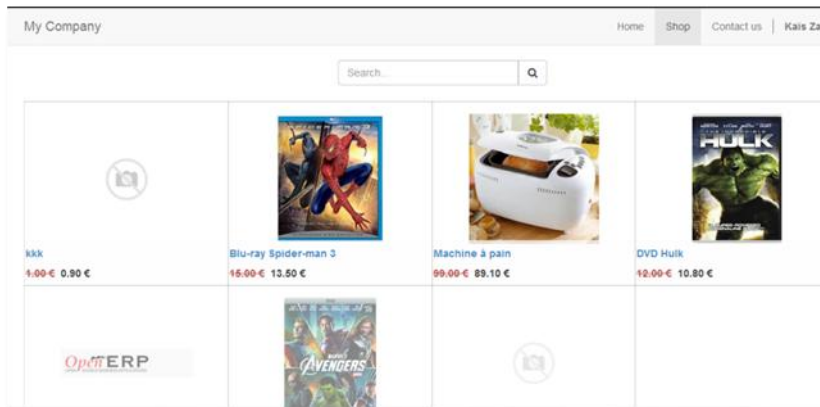
The result is immediately online, and the promotion clearly visible.

Note that product variants configured in the back-office are shown on the website, here in the form of a list of options, with a price difference posted directly.

This functionality, which is very simple to use, is going to make e-traders very happy!
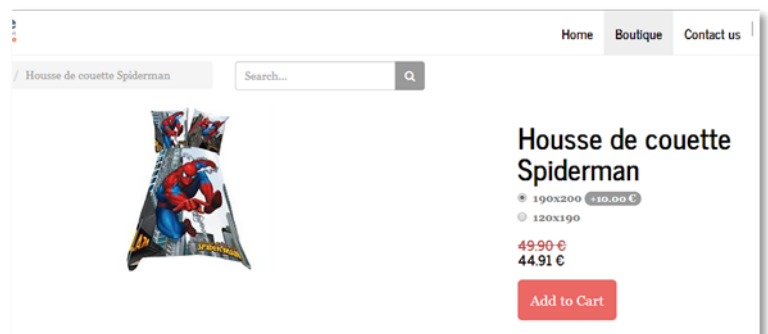
Order processing
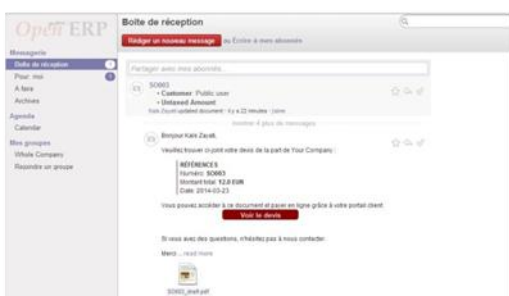
The processing of the online order is then carried out in the back-office, where we find all the functionalities of Odoo coming into play: the sales administrator must validate the

order, manage the dispatch, issue the invoice and record the payment.

Personalisation of the website

To personalise the design of the e-commerce site, the publisher has developed a system of themes and the possibility of modifying the content and the pages directly in the front-office.

The themes themselves can be modified and made available to contributors, and it is possible to develop new display snipplets.

Write-back

One of the original features of the integrated e-commerce front-office is the users' ability to modify the information directly in the front-office, with these modifications naturally being reflected in the back-office.

This functionality is not relevant to all administrative practices of e-commerce shops, for example when there are thousands of products and a product catalogue that is fed automatically. But it does have the advantage of simplicity for users, and it responds to the need for immediate correction in case of error.

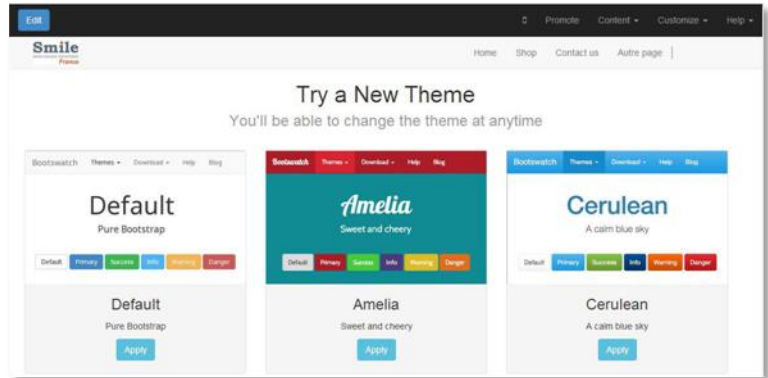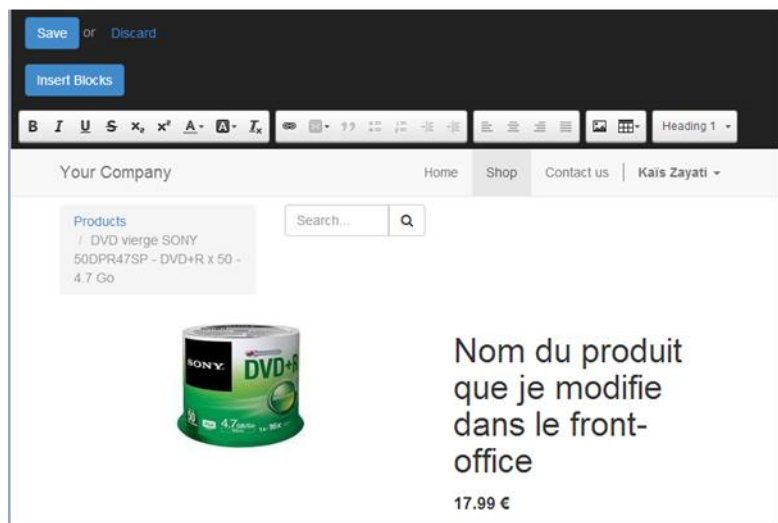The technical principle used for write-back can also be extended to any complementary development or form subsequently made available in the front-office

Integrated front office

Odoo's e-commerce front-office system has been well constructed. Because it appeared so recently, we do not yet have enough feedback to be able to ascertain its precise limitations and capabilities, but it is a very promising module, which will most certainly attract great interest.

6. SALES MANAGEMENT

6.1. MANAGEMENT OF PRICES & PROMOTIONS

When it comes to filling up the customer's shopping basket, almost anything goes, and Magento notably allows: sales drives, related product (e.g. mouse offered on the fact sheet of a computer), up-selling (e.g. offer of equivalent products on a product fact sheet), cross-selling (e.g. offer of related products based on the basket), etc.

Following the sales drives, Magento provides advanced management of promotions with multiple combinations and calculation possibilities:

- Discount on a product category, e.g. promotion on hi-fi
- Discount on a product attribute, e.g. promotion on all XXL-size men's pullovers.
- X bought, Y offered
- Management of promotional codes and coupons
- Free shipping from a certain order amount.
- Volume discount, e.g. €10 per unit, €8 from 5 purchased, €5 from 10 purchased
- Discount for a B2B category customer, e.g. 40% discount for Gold customers, 20% for Silver customers
- Free shipping from a certain order amount.

For its part Odoo offers native management of prices by shop, by product category, customer category, volume, period, margin on cost of sales, etc.

A specific module completes this price management, implementing the other promotion functionalities available with Magento.

Odoo's integrated e-commerce front end uses all this internal management of promotions.

So, if both e-commerce front-office and e-commerce back-office manage promotions in the same way, where should we handle these promotions? In each distinct e-commerce front-office, or in Odoo?

The advantage of centralisation in Odoo is obviously simplification of management and of the single web interface for users, but it does lead to a large volume and a certain complexity of flows among the various tools.

There is no single answer. It depends on each particular context.

6.2. HANDLING OF SALES TRANSACTIONS

In the distribution sector, suppliers often launch short-term promotional campaigns with very attractive prices. This is what is shown on gondola ends in supermarkets for example.

To benefit from the operation, it is often necessary to place an order with the supplier before a deadline.

In order to be proactive when deciding to take part in the operation, an in-house purchasing partner becomes necessary to better anticipate sales and supply needs.

For this functionality, demanded by some of our customers, native Odoo does not respond fully and some additional development is required.

To respond to this particular problem, Smile has developed, and made available on an open source basis, a module for gathering sales forecasts by sales channel.

These needs are then consolidated and a request for supplies is formulated, taking into account the availability of the products in stock.

6.3. DEFINING SALES OBJECTIVES AND MONITORING PERFORMANCE AGAINST THEM

One of the main attractions of an ERP system is being able to manage the activity based on unified operational data. Putting a global back-office in place, linked to all the e-commerce and other sales channels, will make this unification possible and therefore enable analyses in the ERP system and the definition of cross-channel objectives, while at the same time ensuring the reliability of the figures, which will have come from a control system.

The difficulty is then to exploit and easily transform this data so as to translate it into indicators for analysing progress against objectives at any given moment.

Odoo's response to this problem is its multi-axial analytical management module, developed by Smile. This module is based on the accounting activity for a better analysis of "Actual" in accordance with analysis criteria of one's choice: Sales by e-commerce site, by customer category or by customer, by geographical region, top ten best sales, etc.

However, in view of the economic situation and market competition, especially in e-commerce, it is not enough to analyse only the past and subsequently undergo the consequences: it is essential to have a tool for comparing activity with measurable objectives spread over time. This allows anticipation of actions to be taken if the trend is not favourable.

Odoo responds with the budget management module, which allows budget planning, and the function can be broken down to define and monitor objectives.

With this module, budgets (or objectives) can be spread over a year, a month or a week for closer analysis. Users can compare actual results with objectives at any time and monitor the rate of achievement of objectives in real time as part of the management of sales activity.

The indicators for monitoring objectives and actual performance can also be used for purposes of communication, historical record-keeping and capitalisation in the business.

It should be noted that Odoo does not completely replace a third-party BI tool, which for example would enable complementary data sources such as website traffic or national sales statistics to be correlated. However, Odoo has the enormous advantage of providing analyses in real time, and not needing IT flows to be maintained.

7. HANDLING OF ORDERS

7.1. HANDLING OF PRE-ORDERS

Pre-orders are very common when it comes to technological products (latest iPhone or Samsung, etc.)

These sales are somewhat special in that they are included in the catalogue, with a launch date, but above all must not be dispatched before the official date, even though the product is already in stock several days before this date.

With appropriate parametrisation, Odoo can cover this need. For example the information on release date as well as the pre-order end date must be added to the product fact sheet. The management screens for these pre-orders must then be presented, with the associated alerts. One obvious example is the alert to avoid missing the pre-order end date with the supplier. Another is the optimisation of delivery orders so that products are received on the release date and not before.

This example, which is very pertinent from a business point of view, shows one of Odoo's winning features, namely its extendibility to cover all the needs of a project.

7.2. SALES ADMINISTRATION

Sales administration is essential in e-commerce, and will allow the management team to control and supervise sales, as well as to monitor regulations, particularly when there are payments by bank transfer or cheque.

We are not going to detail here all the functionalities of sales administration managed natively and effectively by Odoo, but we can highlight a few of them: Order taking, followed by preparation and processing of orders, then invoicing and management of the various methods of payment, customer advances, etc. We should also like to highlight Odoo's automatic reminder engine for unpaid items. Follow-ups can be preventive, by issuing reminder e-mails a set number of days before due date of invoices, or they can be follow-ups with customers who are in arrears. E-mails can be classified in different levels of "severity" depending on the number of reminders sent to a customer. This functionality meshes well with the alerts and blocking management module so that the sales administration operator can be alerted (or blocked) as soon as the customer's order is taken. This is useful for informing the operator of a customer's insolvency so that advance payment can be arranged.

Sales Analysis

Odoo's new business intelligence module provides real-time analysis of sales, by period, by type of product, etc.

Users can apply the same filters as on the other screens, and can thus obtain the statistics they wish.

Once connected to a statistical measurement tool such as Google Analytics or Piwik, its open source equivalent, the BI tool also allows the sales tunnel and the rates of transformation to be analysed,

As regards the handling of settlements, the new reconciliation module has a more ergonomic approach, with the transactions to be reconciled shown on a single screen.

The reconciliation engine, which is parametrisable and extendible, generally provides automatic reconciliation of the great majority of payments.

In the world of e-commerce, the management of online PSPs (payment service providers) chosen for the e-commerce website has to be implemented by regularly importing a flat file in Odoo. Obviously, this return must be done by PSP.

8. MANAGEMENT OF LOGISTICS

8.1. MANAGEMENT OF DELIVERY METHODS

The management of delivery methods and the calculation of charges can quickly become complicated. On the one hand, we have to handle the multitude of delivery methods possible nowadays: by express or standard post, by courier, by messenger, etc. On the other hand, the delivery charges have to be managed. If only one type of product is sold on the e-commerce website, it is indeed simpler, and a single charge can easily be applied. But a major e-commerce player has no option but to offer articles in various different categories, with delivery charges depending on the type of product: fragile, heavy, bulky, etc.

Odoo has long included functionalities for handling deliveries and the associated transporters. These were back-office functionalities, which have now been transposed to front-office use for the e-commerce module.

Odoo allows you to define as many delivery methods as you wish.

These delivery methods can be specifically associated with certain products, and in this case they will be added to the total as soon as the product in question is purchased.
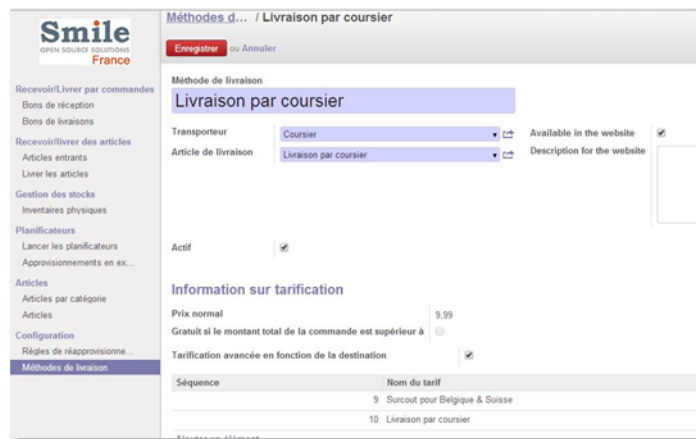
The module allows specific surcharges to be configured according to different rules: country of delivery, weight of the order, etc.

All the possible configurations are in the back-office and the front-office, integrated with Odoo.
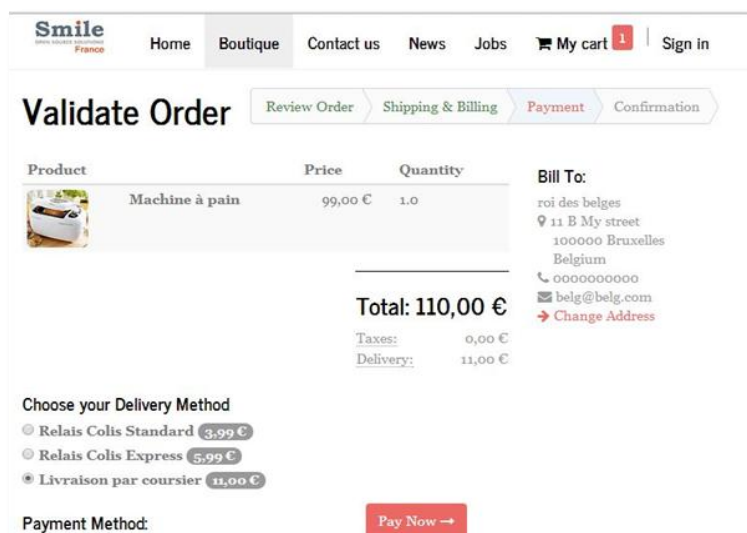
8.2.   MANAGING AN EXTERNAL LOGISTICS PROVIDER

E-traders often outsource all their logistics to an external provider having on the one hand warehouses with flexible storage space to absorb peaks, and on the other hand operational know-how for managing dispatches.
In this case, a large volume of information is going to have to be shared on an ongoing basis with the logistics company's information system.
Odoo is known for its API (application programming interface) provided natively as web services. Simple to use, it allows any third-party system to interface with Odoo.
An exchange by flat file is still possible.
Its very wide functional coverage allows it to extract and absorb all the information an external logistics provider will need.
We are not going to list all the logistical functionalities covered, but among the most frequent are:

- Sharing of product catalogue

- Transmission of orders to be prepared or received

- Recovery of orders delivered or received

- Synchronisation of the logistics provider's stock situation, recovery of information relating to package tracking, etc.)

Added to this is Odoo's ability to measure the quality of service of the logistics provider by monitoring the feedback of returned defective products resulting from the preparation of orders, inventory shortfalls or simply the average time taken to prepare orders.

The frequency of exchanges is parametrised based on Odoo's planned tasks. The handling of the message queue can also be delegated to a specialised tool such as an MOM[2] - RabbitMQ or ActiveMQ, particularly when synchronising the same message with several remote systems.

Note that the specificity of each logistics provider's management tool often obliges it to pass through special exchange flows in order to communicate with Odoo, but the principles remain the same every time.

8.3.   MANAGEMENT OF STOCKS

Whether or not use is made of an external logistics provider, the management of stock is an extremely sensitive point for an e-trader, in terms of both quality of image and profitability.
Odoo has a pertinent offer in this field, with a multi-warehouse, multi-location stock management system and new features expected and delivered with version 8.
A few clicks are enough to organise the logistical flows (push/pull).
By way of example, it is possible to configure the logistical operations to be carried out by warehouse in the case of:

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[2] Message-Oriented Middleware

- Receipt of product: should it be placed directly in stock (1 step) or must it first pass through quality control (2 steps)?

- A dispatch: is it a direct dispatch (1 step) or stock-picking then packing then dispatch (3 steps)?

- Restocking from another warehouse

The progress of the various operations configured can be followed on this logistical scorecard. Odoo also offers an interface for on-screen bar code readers.

Note that direct delivery is a method supported natively by the tool.

It is also possible to define by location:

- The stock release strategy, which can also be specified by product category and is useful for accounting valuation: FIFO (first in first out), LIFO (last in first out), FEFO (first expired first out)

- The stock entry strategy: at which location to look for such and such a product

Odoo also provides complete upstream/downstream traceability of products and components.

Managing stocks on consignment - i.e. stocks located at the customer's place of business, but still owned by the supplier until they are actually used - has a ready-made response with Odoo.

8.4. MANAGING SUPPLIES

Odoo offers advanced management of supplies using a calculation engine for needs leading to purchasing proposals and manufacturing orders.

This engine of course takes account of planned dispatches and receptions to automatically trigger orders for replenishing supplies.

An order for supplies can thus be triggered by:

- A sales order: e.g. drop shipping = the customer places his order with the e-commerce front-office, and the order is forwarded to the supplier, who handles the stocks and arranges for delivery
- A minimum stock threshold being reached, for which internal restocking is sometimes possible
- Sales forecasts
- A manual order for supplies

Note that Odoo also manages replacement products, merging of orders, requests for purchase prices before the actual purchase, etc.

8.5. MANAGEMENT OF MANUFACTURING

The products sold via the Internet site may be of several categories. There are 'buyable products, procured from suppliers, and products 'to be manufactured' for which production will be launched after sale.

Without going into the details of manufacturing, operations for personalising an object (e.g. silkscreen and other printing, etc.) are supported natively by Odoo through a comprehensive manufacturing management module which would require a white paper of its own.

9. CONCLUSION

E-commerce already accounts for more than €50 billion a year in France, and is growing by more than 20% a year. In this context, anyone who has not yet put an e-commerce strategy in place should seriously consider it.

However, it is not enough to just be online and wait for the sales. E-traders must differentiate their offer, connect with other e-commerce players, adapt continuously and also manage the operational and logistical aspects of the sales made in conformity with customer demands.

The back-office handling requirements are numerous, and the front-office solutions do not entirely meet them, making a complementary solution indispensable.

The Odoo open source solution responds perfectly to the challenges of e-commerce, with an approach that is at once comprehensive, effective and extendible.

While it is ready for use in an overall sense, the solution will require a certain amount of configuration, and of course its share of integration in terms of flows or personalisation to interoperate with all the systems.

While the solution or pairing with an e-commerce front-office is highly relevant for standard needs, it is equally relevant to specific needs. In fact, one of Odoo's strengths is its excellent capabilities as regards extension or additions to its native functions.

Odoo's integrated front-office solution is also very attractive and must be evaluated from the viewpoint of effectiveness and overall economy.

From the outset, Odoo has focused its work on being the simplest tool for end users to adopt, both in terms of administration and first-level parametrisation.

However, this simplicity of Odoo must necessarily be backed up by technological skills needed for an e-commerce back- and front-office deployment. This is still very much the work of IT specialists.