dynamicWEB®

Integrating your ecommerce with ERP

White paper on how to gain
operational efficiency for your
online business with integration

Content

1. Why read this whitepaper?

Integration is complex and requires deep knowledge and experience in order to succeed and build scalable solution architecture. With more than 4,000 customers, Dynamicweb has the needed experience, and knowledge gained from practice, to successfully integrate ecommerce with ERP systems.

This whitepaper provides a detailed overview of what our customers have done and why. Our objective here is to share our experience and empower you to understand and evaluate the important topics that determine how ecommerce is integrated with the ERP system.

With the right integration setup, most businesses will gain operational efficiency and have newly unleashed potential to grow revenue. This whitepaper covers both Return on Investment (ROI) scenarios and which type of integration is best for different scenarios. The last part of the whitepaper addresses more practical topics including which data is best to integrate.

2.   What is integration?

Integration is basically about getting two IT systems to interoperate, where data and/or logic in one system is needed in the other system. This whitepaper focuses on how to integrate ecommerce with the ERP system.
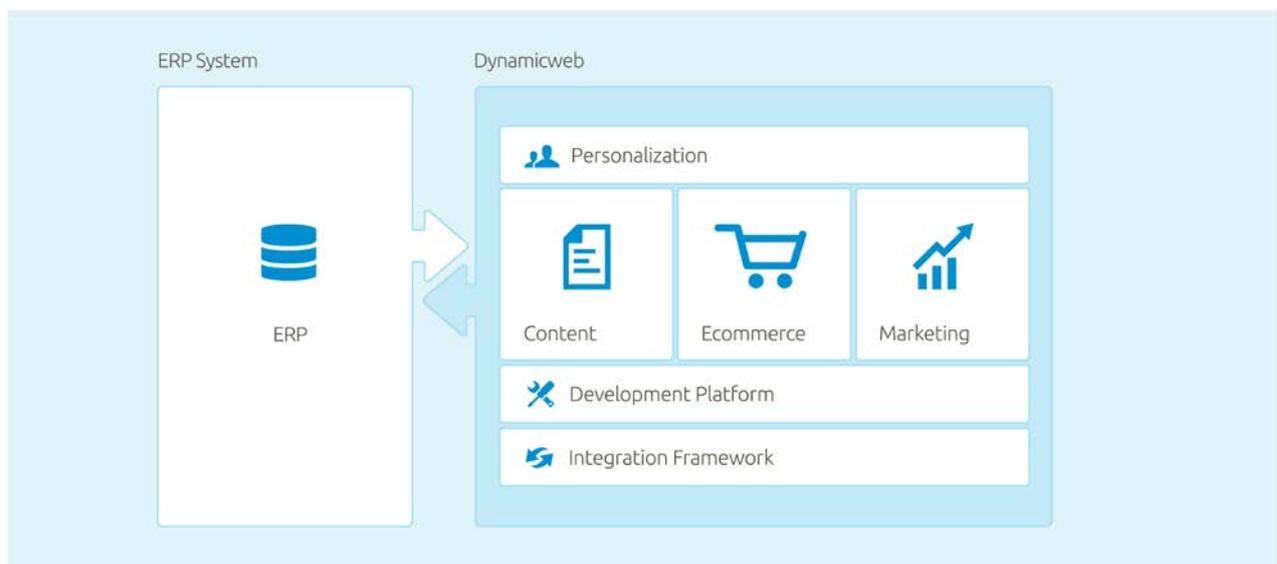
An integrated solution establishes a secure and reliable connection between the two systems so that they can share data and offer flexible tools to manage the process.

Integration can be done by moving data from one system to another, and storing them there for later use (Batch). More complex scenarios might require direct requests (Live) from the ecommerce to the ERP system, when data and/or logic are needed. Typical examples include if the ecommerce looks up quantity in stock before confirming delivery to a customer etc.

3.   Why Integrate?

There are several good reasons for integrating your ecommerce with your ERP system. Most important is, of course, generating more revenue through your online channel and optimizing your operational costs.

Main advantages are that you can:

- Deliver a good customer experience by ensuring data consistency across your channels
- Prepare your business to scale and save manual resources for re-entering data that already exist in one system
- Offer better 24-7 customer service
- Eliminate risk of typing errors and inconsistent data

One of the main savings with integration is of course to optimize the resources spent with typically daily tasks like:

- Maintaining product data in the ecommerce solution
- Maintaining price and inventory levels in the ecommerce solution
- Maintaining customer information in both systems
- Calculating discounts, freight, VAT, etc.
- Getting online orders into the ERP system

Integration will partly or fully eliminate the daily tasks associated with tasks mentioned above. So one key questions should be "Is the investment in integration worth it?'

The following is a simple ROI calculation where average costs for handling product changes, orders and customer queries are multiplied with the daily number of occurrences, and an estimated improvement per cent in efficiency is used to calculate the gain.

Product Integration

Product handling cost per new/change	10	EUR
Number of product change per day	10	
Integration Efficiency improvement per cent	50%	
Saving on Product Handling per year	**18,250**	EUR

Order Integration

Order Handling cost per order	10	EUR
Number of orders per day	100	
Integration Efficiency improvement	50%	
Saving in Order Handling per year	**182,500**	EUR

Customer Integration

Handling cost per customer query	7	EUR
Number of customer queries per day	10	
Integration Efficiency improvement per cent	80%	
Saving in Customer query Handling per year	**20,440**	EUR

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Yearly Savings on Ecommerce integration	**221,190**	EUR

In this example with the listed assumptions there is a **saving of 221,190 EUR every year**. The ROI calculation only focuses at the cost savings and not the additional revenue many companies see from ecommerce.

4. Integration methods

When integrating an ecommerce solution with an ERP system, there are different levels of functionality and different levels of complexity. A high-level distinction between different methods could be defined as "Batch", "Live" and "Hybrid".

Simple ROI calculation where average costs for handling product changes, orders and customer queries are multiplied with the daily number of occurrences, and an estimated efficiency improvement in per cent
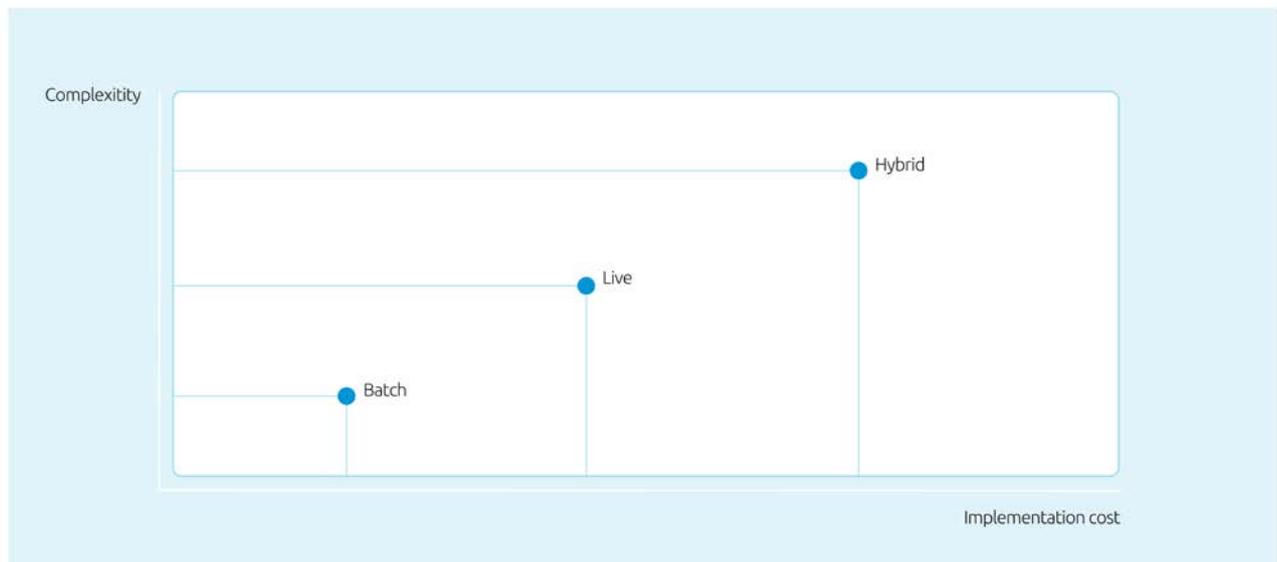
4.1 Batch

Many companies can gain operational efficiency with batch integration. They periodically upload product and customer information from the ERP system to the ecommerce and download the orders into the ERP. Batch integration ensure re-use of master data already entered and it ensure that you have the products created correctly in ERP system before you start selling it online.

Batch integration is the simplest and least complex integration.

4.2 Live
Live integration is when the ecommerce connects real time into the ERP system when the visitor is on your website. This could be for customer specific prices, discount calculation, credit max check, real-time stock level etc.

Live integration requires a fast connection from the ERP system to the ecommerce system since the visitor on the website will be "waiting" for every request. With the development in internet technologies and bandwidth this is possible in most areas – alternatively the online platform and the ERP system should be placed on the same network (close to each other).

Live Integration is more complex than Batch and will typically have higher cost associated with the implementation. Solutions with Live integration will normally also include some Batch integration.

4.3 Hybrid
Not only is bandwidth is a potential bottleneck. A high number of visitors will generate many requests to the ERP system and some larger installations decide to implement business logic in the ecommerce to limit the load on the ERP system. This could be a solution where product data and customer price data is loaded from the ERP to the ecommerce solution every night. Customer prices are then calculated in the ecommerce when prices are displayed to the visitor and any discount is calculated in the ERP when the visitor confirms the order. This becomes a hybrid solution with batch load of products, customer price calculation in the ecommerce, and discount calculation from the ERP. This setup provides a fast and consistent customer experience and it does not query the ERP system every time a user display a product. However it does require the replication of data/logic to the ecommerce solution for calculating the customer specific prices.

The Hybrid solution will have both the cost of doing Batch and Live, but also the cost of re-creating the application logic on the ecommerce solution.

4.4 Data integration or Business Logic integration
ERP systems and ecommerce solutions both store data and have an application component where the specific business logic is implemented. Integration can be done both at the data level and at the business logic level.

Data Integration
Integration at the database layer is either directly with the databases or via exchange of files. If it's simple data in simple relationships, this is the preferred way. But you lack the business logic, which often is needed to get value out of data and to ensure data consistency.

Business Logic Integration
Integration at the business logic layer is often more complex and needs to be done via a given system's defined interface (API). For example "creating a new product" includes many tasks like ensuring a unique product ID, ensure correct unit of measurement, price, inventory information etc. It's often done within the business logic to ensure data consistency for all products.

Therefore integration at the business logic layer is preferred in more complex scenarios. Especially when there is an existing brick and mortar business, that already creates many of the data and already has much of the business logic implemented in the ERP system.

4.5 Ecommerce in your ERP system
An alternative to integrating an ERP system and ecommerce system is a solution where the ecommerce is built on top of the ERP system. This eliminates the need for integration, but has not proven to be a practical solution in real life since the two systems serve different purposes and are built for different processing, are quite complex on their own and use different technology.

Beware of limitations
There are some ERP vendors that have added ecommerce functionality to their feature list and some third party ISV's that have built add-on modules. However it is often limited in ecommerce capabilities because it is built on the ERP system and lacks the ability to customize the front-end interface to increase the user experience, which becomes increasingly important.

Finally the ERP-based ecommerce solutions do not include the rest of the online tools like Content Management System, Email Marketing and Online Marketing Optimization.

5.   What Data to Integrate

Most data needed for ecommerce is already in the ERP system. Generally we
see the following data integrated in most solutions:

- Product information
- Price and Inventory information
- Customer Information
- Order Information
- Customer history
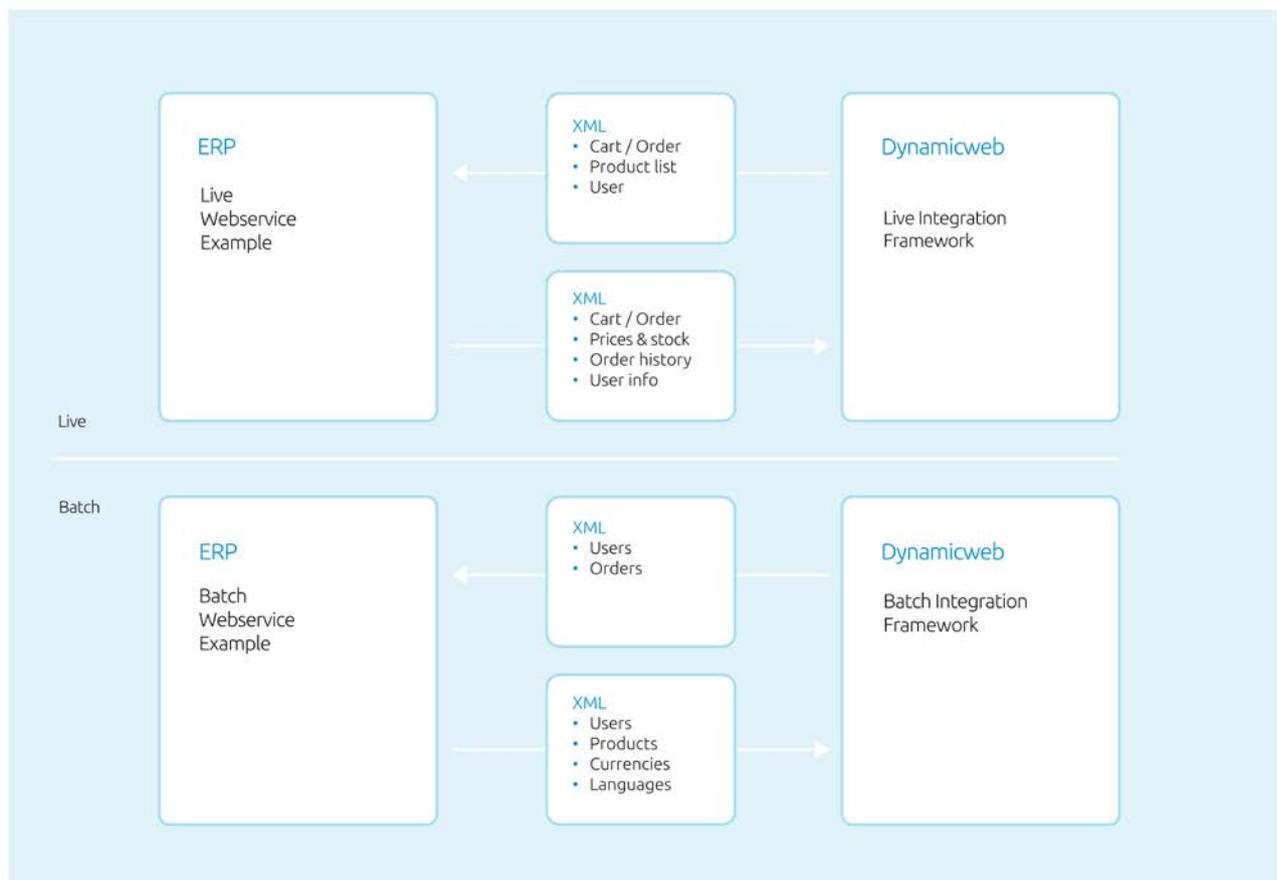
5.1 Product Information

The typical product information that can be integrated from the ERP to the ecommerce is listed to the right.

Key challenges are:

Item groups and categories in the ERP are often used in a different structure on the web in order to help the visitor to find the products easily.

Item variances typically need some kind of configuration logic in the ecommerce interface to help the visitor select a valid variance and get the price calculated correctly.

Number of products/updates. The more the product data changes, in frequency and structure, the more complex and time consuming each update will be.

Some product information, like images, drawings, SEO tags, etc. are often not stored in the ERP system, but placed in files/folders from different applications – like Word, Excel, PDF, .PNG and CAD. This information should be stored or linked to in the ecommerce to provide the visitor with all the relevant and correct information about a given product. In general this means that master data are often maintained in the ERP system and replicated to the online platform, where they are enriched with more unstructured and web related information.

For some companies, the ERP system is not the only place where product data already exists and is maintained. Systems like a Product Information Management system (PIM), and others, use external sources like their vendors systems to gain specific product information. The ecommerce solution will also gain value from integrating with these systems both in operational savings and in better customer experience.

5.2 Prices and Inventory level

For some businesses, real-time pricing & inventory levels are important for the way they do business. The prices may be frequently affected by changes in exchange rate or vendor prices. Inventory level needs to be accurate to ensure delivery and to optimize stock purchase/production.

Real-time prices and inventory are often implemented with live integration to reuse business logic in the ERP system and ensure real-time numbers.

Product Master Data

- Item ID
- Item Description (incl. different language version)
- Item Group/Category
- Item Unit Of Measures
- Item Standard price (incl. different currency prices)
- Item Dimensions (weight, length, height…)
- Quantity on hand
- Item Variances (incl. currency prices and language descriptions)
- Related/cross sell items

The Dynamicweb integration framework consists of a collection of components that can be used as an advanced starting point when developing integrations.

5.3 Customer Information

For B2B sites the customer is often known in the ERP system before visiting the ecommerce solution. This customer information should be integrated from the ERP system to the ecommerce solution, to ensure a consistent and better customer experience. The customer should not have to re-enter address information and the credit max should be validated both in the ERP system and in the ecommerce solution.

On many B2C sites the visitor can create them self as customers directly on the site. This customer information should be send back to the ERP system for further order handling and book keeping purposes.

5.4 Customer specific prices and discounts

Many companies have customer specific prices or discount calculation defined in their ERP system. They benefit from live integration between the ecommerce and the ERP system, where the ecommerce platform reuses the same logic/rules, which is used when creating an order directly in the ERP system. This ensures a consistent customer experience and lower on-going maintenance of the logic as the business changes.

5.5 Order information

When the ecommerce visitor has confirmed the purchase, it needs to be captured in the ERP system for further order processing like invoicing, bookkeeping and shipping.

For some customers the order can be changed in the ERP system if specific calculations or products that were not in stock as expected. These order changes need to be integrated to the ecommerce and the customer needs to be notified about the change – either via email or some other means.

5.6 Customer history and self service

Often companies also offer some kind of customer self-service functionality, which requires Orders, Credit notes, Invoices and Shipping status. These data will typically be integrated from the ERP system where the information originates by either Live- or batch integration.

Customer Master Data

- Customer ID
- Customer Name
- Customer Bill To Address
- Customer Ship To Address (one or more)
- Customer Currency
- Customer Users (one or more)
- Other segmentation attributes

Customer/Product data

- Customer ID/Item ID assortment
- Customer ID/Item ID/Quantity prices

Order Data

- Reference number/Order ID
- Customer ID
- Billing & Shipping addresses
- Order/Delivery/shipping date
- Payment Information
- Order line details (Item Id, Quantity, UoM, price, discount, VAT…)
- Order value, discount, VAT…

About Dynamicweb

Dynamicweb is a leading software company developing products that help you grow and optimize your online business. Our All-in-One Business Platform combines Content Management, Ecommerce and Marketing capabilities to create powerful customer experiences across all channels, which increases conversions and optimizes customer lifetime value.

Today, thousands of businesses run more than 12,000 websites with Dynamicweb. We are expanding our services internationally in close corporation with 200 certified partners in 13 countries.
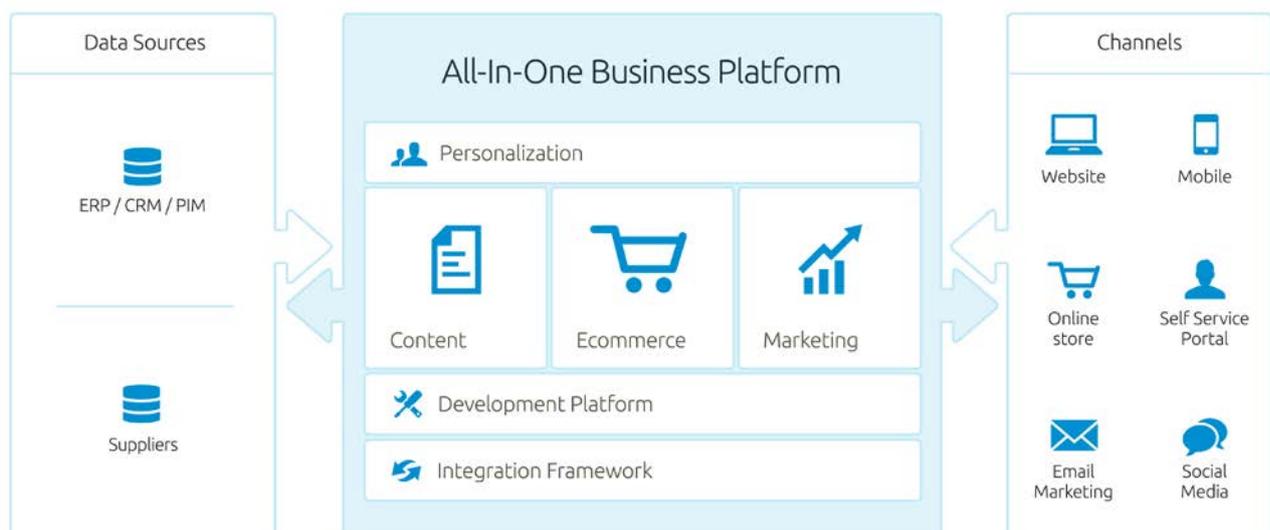
One platform for your (whole) digital world

Dynamicweb's All-in-One Business Platform brings the digital world together in one powerful platform. It empowers you to deliver great online experiences across channels.

The Dynamicweb difference means that all you need for Web Content Management, Ecommerce and Marketing is available in just one platform. With Dynamicweb, all your content can be reused and personalized – your customers get the benefit!

Find out more www.dynamicweb.com.