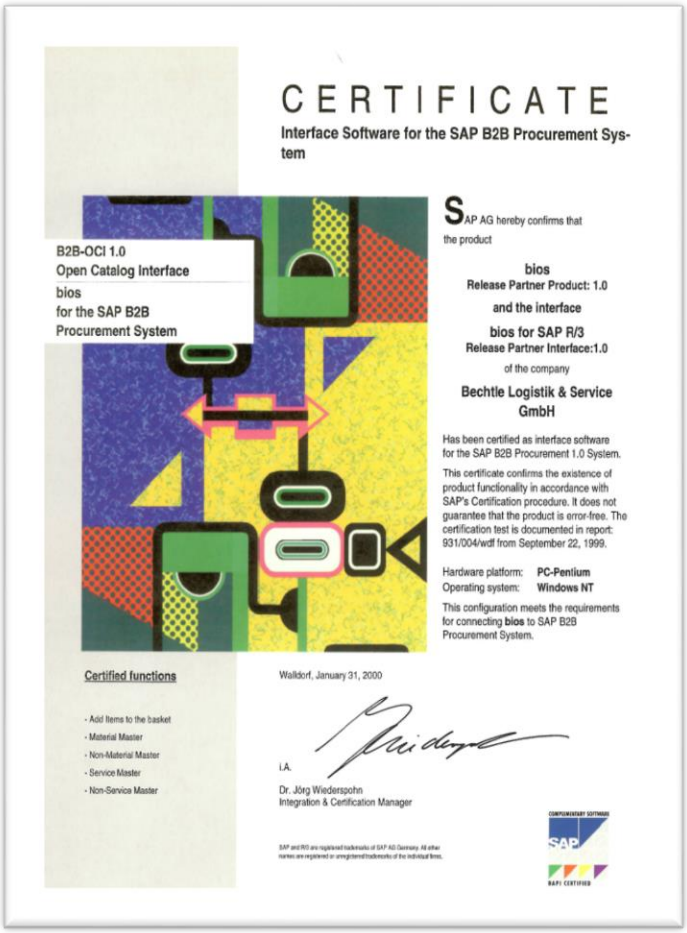
Integrating Bechtle’s E-procurement Solution with ERP Systems and Market Places

Bechtle Information and Ordering System

Introduction

Bechtle first launched its e-commerce and e-procurement business in 1993, and in 1999 was among the first companies in Germany to be SAP-certified for integrating procurement applications using SAP's PunchOut interface, OCI (Open Catalogue Interface).



CERTIFICATE

Interface Software for the SAP B2B Procurement System

B2B-OCI 1.0
Open Catalog Interface
bios
for the SAP B2B
Procurement System

SAP AG hereby confirms that the product

bios
Release Partner Product: 1.0
and the interface
bios for SAP R/3
Release Partner Interface:1.0
of the company
Bechtle Logistik & Service GmbH

Has been certified as interface software for the SAP B2B Procurement 1.0 System.

This certificate confirms the existence of product functionality in accordance with SAP's Certification procedure. It does not guarantee that the product is error-free. The certification test is documented in report: 931/004/wdf from September 22, 1999.

Hardware platform: PC-Pentium
Operating system: Windows NT

This configuration meets the requirements for connecting bios to SAP B2B Procurement System.

Certified functions

- Add Items to the basket
- Material Master
- Non-Material Master
- Service Master
- Non-Service Master

Walldorf, January 31, 2000

I.A.
Dr. Jörg Wiederspohn
Integration & Certification Manager

25 years later, over half of our customers tap into our e-procurement solutions, with many connecting via industry-standard catalogue interfaces. A complete end-to-end procurement solution integrating bios® and customer applications can typically be implemented in a matter of days.

The following process description can be applied to both SAP and other ERP systems.

1 Basics

1.1 What is bios®?

bios® is a highly customisable online procurement system designed to unlock dramatic time and cost savings by streamlining procurement processes and maximising the use of framework agreements across organisations, with over 70,000 IT products from more than 300 manufacturers available online. Purchasers can pick from a tailored and pre-approved selection which may include anything from printer supplies to software licences to custom-configured workstations. Authorised users shop required items with minimal clicks and at up-to-date prices in our bios® web portal or directly in your own ERP or market place system. At the same time, procurement managers have complete visibility into all procurement activities through electronic invoices, actionable statistics and custom reports.

1.2 What is OCI?

The Open Catalog Interface (OCI) is a standard access point to transfer current catalogue data between ERP systems such as SAP EBP/SRM and supplier systems using common internet protocols. It was originally developed by SAP to facilitate procurement from third-party web catalogues directly inside its ERP environment. This allows users to browse rich online catalogues such as Bechtle's B2B platform to research products and eventually place an order within the customer's SAP or other ERP or market place system in compliance with the customer's procurement policies. The process of a customer system accessing an online catalogue is often referred to as "PunchOut". Bechtle supports all official OCI versions.

1.3 Static catalogues

Hosted catalogues are regularly synced to the customer system, giving purchasers a static snapshot of the Bechtle catalogue at the time of synchronisation. Catalogue data includes product information such as names, descriptions and prices, which are accessible to purchasers and other customer stakeholders within their own procurement solution. Hosted catalogues offer a baseline integration that still requires purchasers to regularly review and validate imported data. Catalogue data can be transferred using one of several common formats such as BMEcat, JSON or SAP Ariba's CIF.

1.4 PunchOut catalogue level 1

Bechtle's bios® procurement platforms give users access to IT products and services with up-to-date descriptions and prices and a user experience that was designed from the ground up with modern purchasers in mind. Users can "punch out" of their own procurement system and connect to their exclusive bios® account via OCI or SAP Ariba's proprietary cXML format. Communication between bios® and the customer system is bidirectional, enabling granular control of customer-specific portfolios and purchasing conditions. Users can browse the connected catalogue within the Bechtle environment and add items to their shopping basket, which is then synced back to the customer's procurement system where they place the order subject to their own procurement protocol. This may include accounting, approval or any other customer-specific steps.

1.5 PunchOut catalogue level 2

The second level of PunchOut integration allows users to browse items directly within their own environment without the need to switch to an external website. This enables unified access to both static (i.e. downloaded) and external catalogues through a single procurement solution. However, users still have to punch out in order to add external catalogue items to the shopping basket.

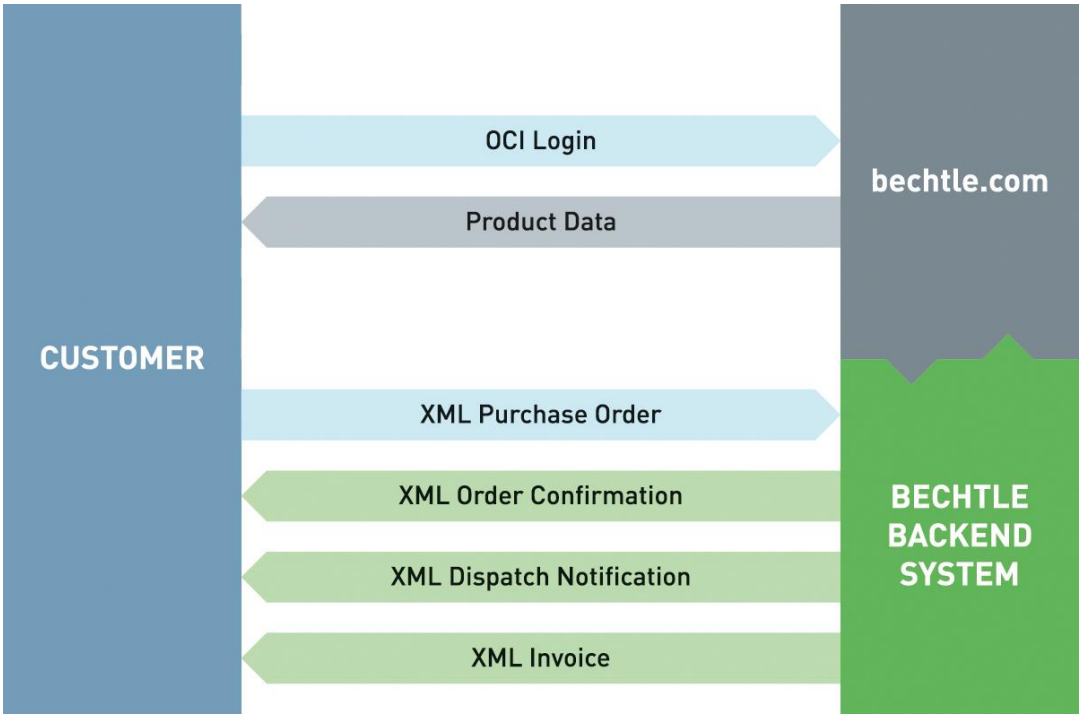
1.6 Benefits of integrated procurement

- **Fast access** to current product details.
- **Automatic handover** of product data to the customer system via PunchOut.
- **No manual data input** – Connected catalogues contain all required information.
- **No additional hardware** for data transfers.
- **Leverage existing workflows** to authorise and complete orders.
- **Granular control** of who can buy what with user-level permissions.
- **Minimal risk of human error** thanks to fully automated data exchange.

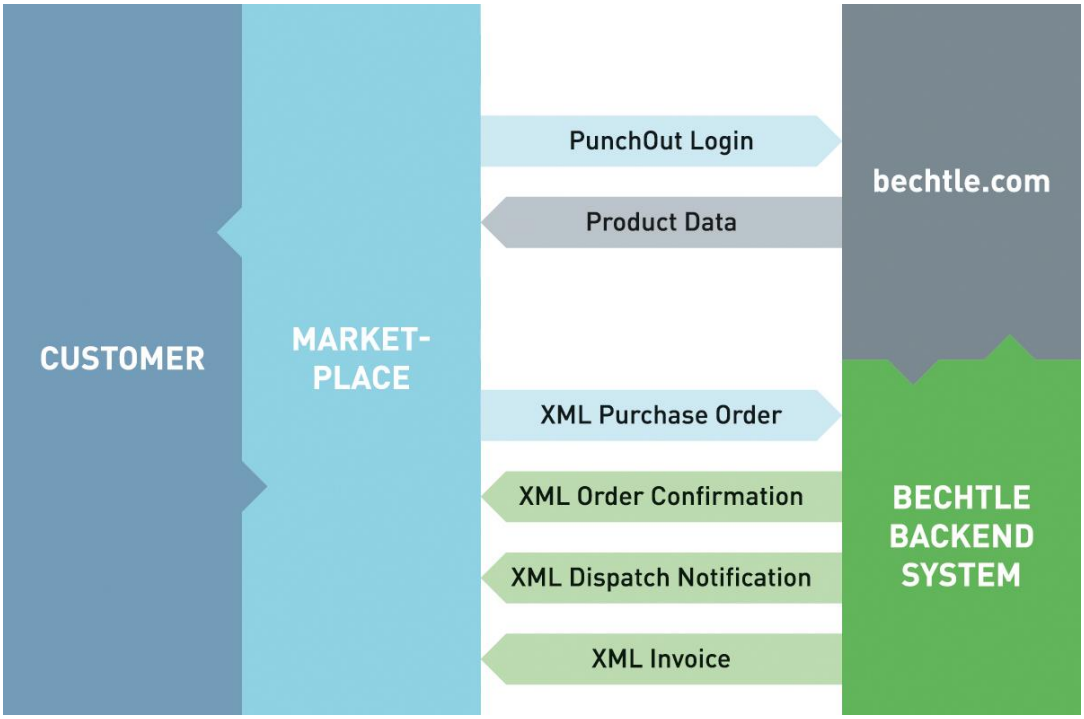
2 Example scenarios

Before implementing a PunchOut solution, we determine how the customer will access product data, define the XML format and interfaces for purchase orders and other data, and, if required, specify the parameters of electronic invoices.

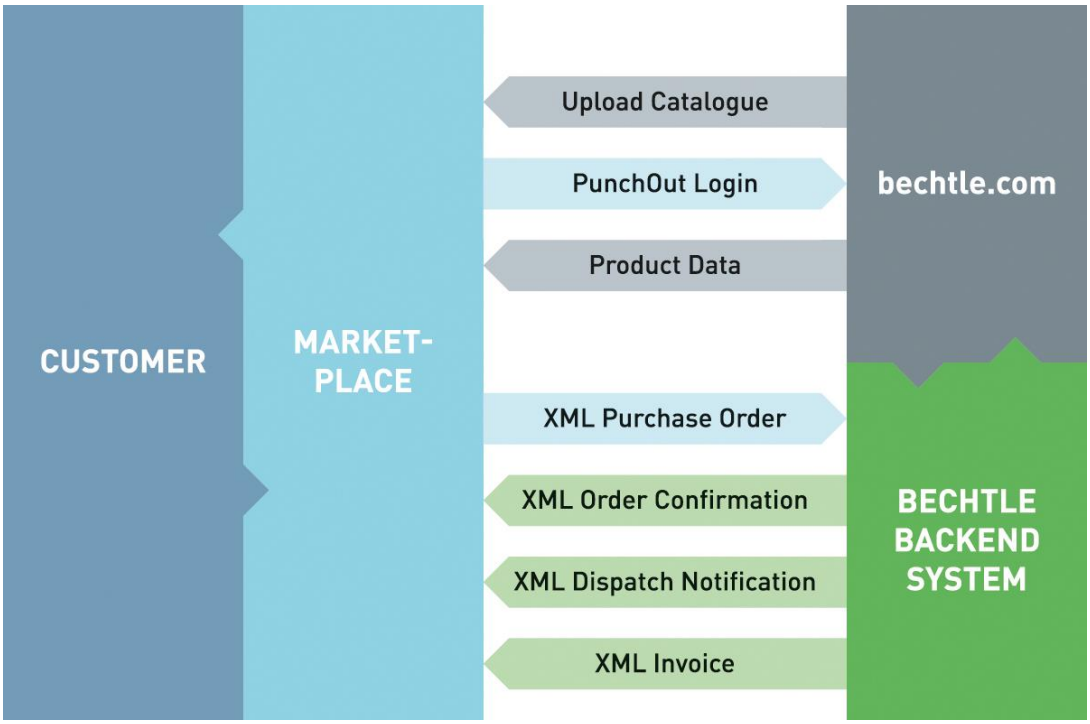
2.1 Connection to SAP via OCI



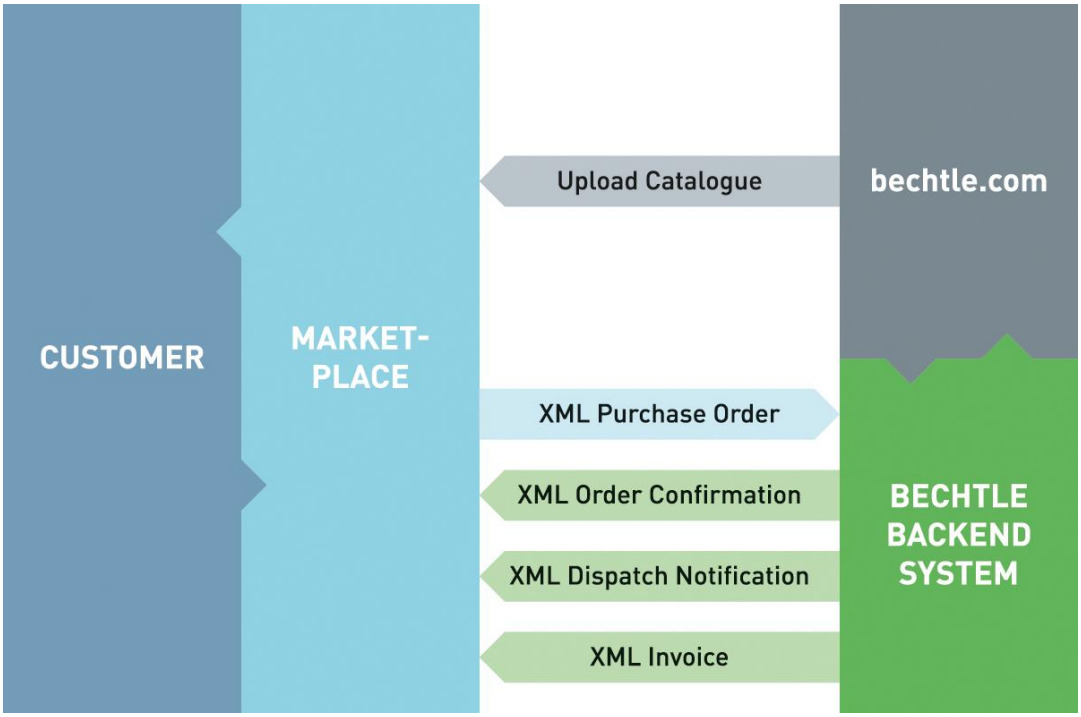
2.2 Connection to a market place – PunchOut level 1



2.3 Connection to a market place – PunchOut level 2



2.4 Connection to a market place – Hosted catalogue



3 Scenario: OCI configuration on SAP SRM Server

Most ERP systems support OCI. This scenario illustrates the ERP-side configuration of an OCI connection using the example of SAP SRM. However, connecting to an external catalogue is very similar in virtually all other ERP systems.

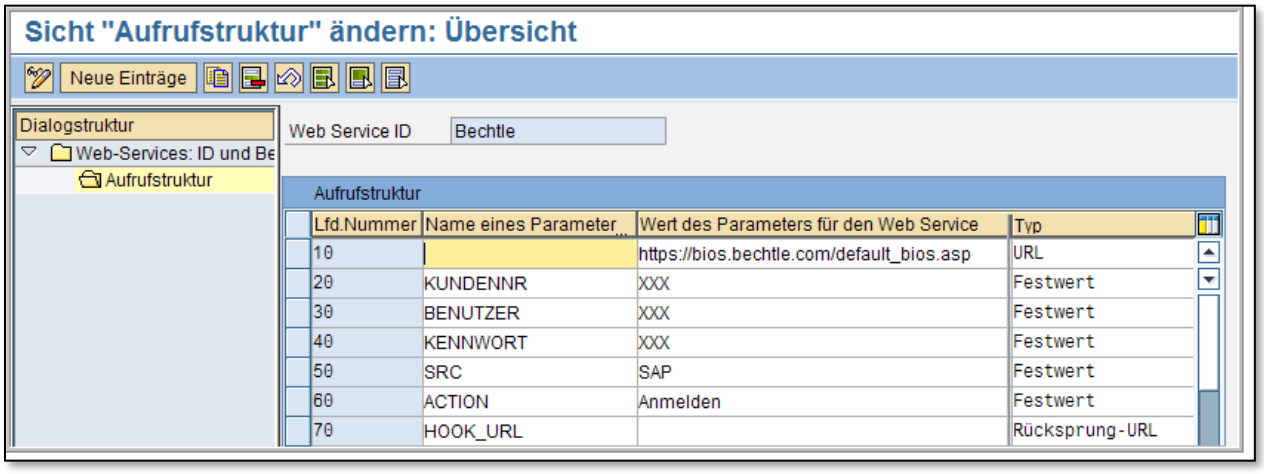
3.1 Connecting bios®

The first step is to tell the ERP system how to connect to bios® by configuring the following details:

- The product catalogue URL
- Additional parameters incl.
- User name
- Password
- Language
- Encoding
- Return URL (HOOK_URL)

Access parameters are customisable and often include information on how to populate available OCI fields. They may contain static values or SAP system variables. By default, OCI supports the following parameters:

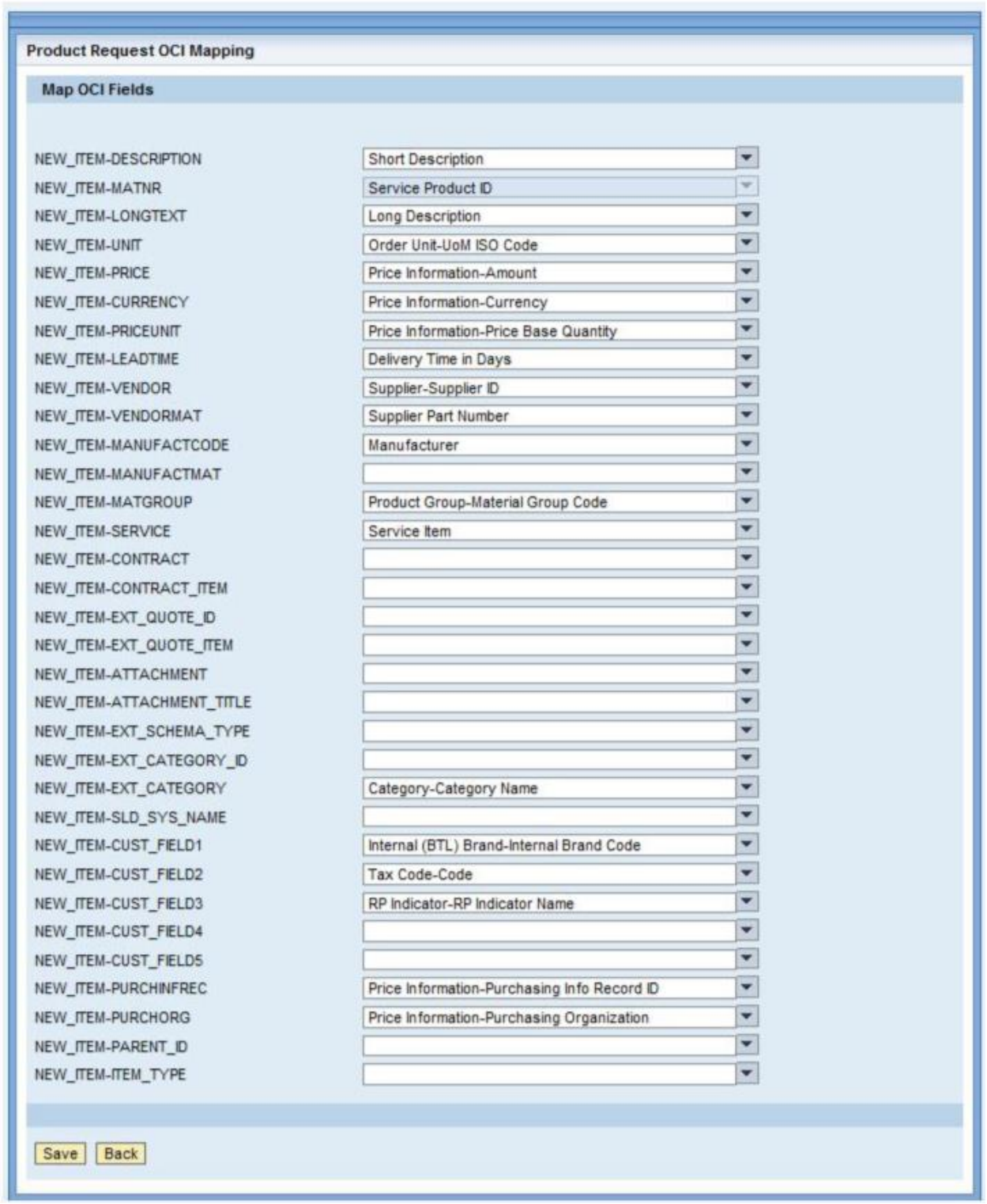
- OCI_VERSION – The expected OCI version, e.g. 4.0.
- secureMode (true/false) – Determines whether data are transferred via https.
- BYPASS_OUTB_HANDLER – This parameter requires SRM Server v7 or later and controls the use of an outbound handler service. The outbound hander places the product catalogue inside an iframe on a page, which may e.g. call back to SRM.
- BYPASS_INB_HANDLER – Similar to the outbound handler, the inbound handler ensures e.g. that return values from the external catalogue are properly encoded.



In addition, authorised users can also access bios® as a stand-alone web application independent of the ERP system, e.g. to research products or pull statistics.
Granular user rights mean you can even allow specific users to place orders on the bios® website and trigger the built-in authorisation workflow as required.

3.2 Mapping OCI fields

Once the ERP system is able to call bios®, you need to map the catalogue values it returns via OCI.



3.3 Additional OCI functions

3.3.1 Detailed product information

The function call parameter DETAIL combined with PRODUCTID can collect detailed product specifications from bios®. bios® returns the data using the OCI format. This means users can view much more information in SRM that may not defined in the OCI standard.

3.3.2 Advanced OCI functions

In addition to transferring portfolios, OCI 5.0 and later also support product searches and the synchronisation of master data. In these cases, bios® returns data using the JSON format. Advanced functions supported by the OCI standard include:

- VALIDATE – Used to refresh product information, e.g. the price
- SOURCING – Enables term-based product searches
- BACKGROUND_SEARCH – Enables term-based product searches across all OCI catalogues available in the SRM portal
- DOWNLOADJSON – Returns a defined, paged subset of product data in JSON format.

This means that OCI allows customers to do away with the PunchOut process and instead use the external catalogue as a mere data source. However, this is rare in real-life customer scenarios.

3.4 Collecting the shopping basket

When a user has added all required products to the shopping basket, they simply have to click a button to send the relevant data to SAP SRM (the button label is customisable; by default, it is “Transfer Data”). As soon as all data have been successfully transferred, SAP SRM logs out of bios® and the data is available for processing in the customer system. This means that any existing procurement processes such as order approval remain intact at the customer and are not disrupted through OCI-enhanced sourcing.

3.5 OCI return data (outbound)

By default, the following fields are transferred via OCI using an HTML form. These can be adapted to customer needs. For instance, it is possible to populate the field NEW_ITEM-CUST_FIELD1 with a third-party product classification such as eCl@ass or UNSPSC.

3.5.1 Standard fields

NEW_ITEM-DESCRIPTION	Product name
NEW_ITEM-QUANTITY	Quantity
NEW_ITEM-UNIT	Unit – Bechtle only supports the unit PCE (pieces)
NEW_ITEM-PRICE	Unit price excluding VAT
NEW_ITEM-CURRENCY	Currency (EUR, etc.)
NEW_ITEM-LEADTIME	Lead time
NEW_ITEM-VENDORMAT	Bechtle no.
NEW_ITEM-MANUFACTMAT	Manufacturer ref. no.
NEW_ITEM-LONGTEXT	Product description

3.5.2 Optional fields

NEW_ITEM-VENDOR	Bechtle supplier no.
NEW_ITEM-MATGROUP	eCl@ss or UNSPSC product classification no.

3.5.3 Custom extensions (requires additional coding)

NEW_ITEM-MATNR	Customer product no. – if available in the catalogue database
NEW_ITEM-CUST_FIELD1-5	Five custom fields, e.g. VAT rate

3.6 Typical OCI data stream

This is an exemplary data stream for Bechtle no. 990138 - HP 1TB SATA HDD.

```
<FORM name="SAP" action="https://HereComesThe_HOOK_URL_FromTheLogin" method="post"
target="_top">
        <input type="hidden" name="NEW_ITEM-DESCRIPTION[1]" value = "HP 1 TB SATA HDD">
        <input type="hidden" name="NEW_ITEM-MATNR[1]" value = "">
        <input type="hidden" name="NEW_ITEM-MATGROUP[1]" value = "24010801">
        <input type="hidden" name="NEW_ITEM-QUANTITY[1]" value = "1">
        <input type="hidden" name="NEW_ITEM-UNIT[1]" value = "PCE">
        <input type="hidden" name="NEW_ITEM-PRICE[1]" value = "145.60">
        <input type="hidden" name="NEW_ITEM-PRICEUNIT[1]" value = "1">
        <input type="hidden" name="NEW_ITEM-CURRENCY[1]" value = "EUR">
        <input type="hidden" name="NEW_ITEM-LEADTIME[1]" value = "1">
        <input type="hidden" name="NEW_ITEM-VENDOR[1]" value = "">
        <input type="hidden" name="NEW_ITEM-VENDORMAT[1]" value = "990138">
        <input type="hidden" name="NEW_ITEM-MANUFACTCODE[1]" value = "HP">
        <input type="hidden" name="NEW_ITEM-MANUFACTMAT[1]" value = " L3M56AA">
        <input type="hidden" name="NEW_ITEM-CONTRACT[1]" value = "">
        <input type="hidden" name="NEW_ITEM-CONTRACT_ITEM[1]" value = "">
        <input type="hidden" name="NEW_ITEM-SERVICE[1]" value = "">
        <input type="hidden" name="NEW_ITEM-EXT_QUOTE_ID[1]" value = "">
        <input type="hidden" name="NEW_ITEM-EXT_QUOTE_ITEM[1]" value = "">
        <input type="hidden" name="NEW_ITEM-EXT_PRODUCT_ID[1]" value = "990138">
        <input type="hidden" name="NEW_ITEM-LONGTEXT_1:132[]" value = "+++ HP 1 TB SATA HDD
        +++">
        <input type="hidden" name="NEW_ITEM-CUST_FIELD1[1]" value = "">
        <input type="hidden" name="NEW_ITEM-CUST_FIELD2[1]" value = "">
        <input type="hidden" name="NEW_ITEM-CUST_FIELD3[1]" value = "">
        <input type="hidden" name="NEW_ITEM-CUST_FIELD4[1]" value = "">
        <input type="hidden" name="NEW_ITEM-CUST_FIELD5[1]" value = "">
        <table border=0 cellpadding=2 cellspacing=2>
                <tr>
                        <td><input type="submit" value="Sync to SAP">
                        </td>
                </tr>
        </table>
</FORM>
```

3.7 Downstream customer processes

Once the Bechtle shopping basket has been synced to the customer ERP system, the data can be processed according to the customer's existing workflows, e.g. to approve the order, before it is eventually placed from the customer's back-end system. Bechtle does not have any influence on these external process steps.

4 Connecting bios® to a market place

Bechtle maintains long-standing partnerships with leading market places and business networks.

Depending on the technical standards supported by the respective platforms, we can provide catalogue data both in in the form of static snapshots as well as via PunchOut connections complete with 100% paperless document streams.

An extract of our existing partnerships:

5 Product and service classification systems

There are a number of classification systems that have been designed to catalogue products and services in ERP systems using a shared and unambiguous terminology across industries and organisations, covering over 50,000 product classes.

The most popular standards are:

- eCl@ss – Used primarily in Europe
- UNSPSC – Used primarily in the Americas

In addition to common sales, purchasing and accounting applications, these standards are particularly useful in cross-organisation process data management and engineering.

6 Transferring e-orders

Ideally, an order that is generated in the customer system is sent to the Bechtle B2B gateway via an XML gateway such as SAP XI/PI/PO or another EDI platform. Alternatively, orders may be transferred as e-mail attachments. Incoming data are verified and preprocessed in accordance with customer-specific parameters as they pass through the Bechtle gateway before they enter Bechtle's ERP system.
They are then passed on to the Bechtle branch managing the account, which will, after a final automated due diligence check, process and fulfil the order.

6.1 Technical details

Bechtle can process e-orders submitted by customers with the following XML standard:

- SAP IDOCXML
- cXML
- open TRANS
- xCBL
- UBL 2.0
- DIN5XML

We are also able to accept EDIFACT D96A / D97A standard orders. However, this would significantly add to the project scale.

A custom XSLT is applied to incoming orders, converting the original XML into a Bechtle-specific target format. This means that we can accept a variety of data and readily adapt to changing customer needs. We recommend a secure transfer of order data to a web server via HTTPS POST, which supports HTTP Response Status 200 to confirm successful receipt of XML data, as well as HTTP Error Status notifications, e.g. in the case of invalid XML files or incorrect login credentials, to enable effective troubleshooting.

Bechtle also supports (S)FTP and AS2, as well as unencrypted transfers via HTTP and/or e-mail attachments. However, the latter are not encouraged and are exclusive to specific scenarios where unsecured transfers may be necessary.

7 E-invoicing

Customers may choose to receive electronic invoices e.g. in XML format, which can be automatically processed in customer systems.

7.1 ZUGFeRD invoices (www.ferd-net.de)

The ZUGFeRD 1.0 (06/2014) standard enables structured invoicing and credit data to be provided in and extracted from a modified PDF file. The format is a joint development of stakeholders in the automotive, banking and software industries, as well as the public sector to address the need for a standardisation of invoice transactions across national borders.

7.2 Unsigned XML invoices

Unsigned XML invoices are always accompanied by a hardcopy.

7.3 Signed XML invoices via a certified signature provider

For a completely paperless workflow, it is necessary to have XML invoices signed by a certified signature provider to guarantee compliance with legal provisions, and maintain an audit-proof long-term archive of all invoice data including any relevant certificates.

➔ It is generally advisable to postpone the integration of electronic invoices until all aspects of the underlying OCI/XML-based integration of purchase orders are confirmed to run smoothly in a live environment. We also advise that both parties must adhere to strict legal requirements governing electronic invoices.

8 Pre-integration questionnaire

8.1 Dynamic PunchOut integration

- What system do you use for PunchOut communication?
- What version of PunchOut do you use?
- Can you support secure communication via HTTP(S)
- Will you require the OCI functions DETAIL, SEARCH, and VALIDATE?

8.2 Static catalogue integration

- What system do you use to manage catalogues?
- What catalogue format do you require? (BMEcat, JSON, CIF)
- How often do you require updates? (every week, every month)
- How should data be transferred? (FTP upload / download)
- Do you use a classification system? (e.g. eCl@ss)

8.3 Order transfer

- What system do you use to transfer electronic orders?
- Which XML standard do you use to transfer orders?
- What method of transfer do you require? (e.g. HTTP(S) POST, e-mail attachment)
- Will you require multiple shipping addresses for the same order? (not supported by Bechtle)
- Do you request changes and cancellations electronically, or manually (by phone, e-mail)?
- If this is handled electronically, what is the process?
- Do you place free-text orders? (Bechtle cannot offer this option; a Bechtle No. is mandatory)
- Are there custom headers or product notes that need to be observed, or that are relevant to the order?
- Are partial deliveries authorised/unauthorised across the board? Or is this information given case by case in the XML order?
- Are delivery dates included in the order or should products be delivered ASAP?
- Will orders sometimes be submitted with attachments?
- Do you want to receive electronic order confirmations?
- If yes, in which XML format should it be and how should it be transferred?
- Do you want to receive electronic shipping notifications?
- If yes, in which XML format should it be and how should it be transferred?

8.4 Faktura

- Which type of invoice do you prefer?
- If you prefer electronic invoices: in which XML format and how should they be transferred?
- Will you require a digital signature?
- If yes, do you already use a digital signature service?

Conclusion

Bechtle is your expert for optimised e-procurement based on detailed process analyses and internal policies. A pioneer in e-commerce, we have been designing e-procurement platforms since 1994. putting priority on seamless workflows to relieve employees from tedious tasks and make our customers' lifes easier.