Background

Over the years, [company X] has developed an extensive CRM system. Currently, a monthly export is made from this system to an outdated accounting package, resulting in financial data being updated only once a month. For a company the size of [company X], this situation is no longer tenable.

Goal

The CRM system of [company X] needs to be integrated with the new accounting package, Exact Online. All sales orders must be synchronized. Additionally, Exact Online should be used for inventory management.

Documentation

REST API Exact Online: Exact Online Developer Resources

Additional Information

Attached, you will find a description of the order process of [company X]. While not exhaustive, it provides a reasonable indication of the complexity of the integration, particularly because some exceptions in the order process may not be supported by Exact. Additionally, the attachment includes a preliminary definition of the data that should be either managed in the [company X] CRM system or lead in Exact Online.

Investigate/Research

General

- **Phasing**: Is it possible or desirable to implement in phases (e.g., first CRM + sales orders, later inventory, including all inventory-changing actions)?

  o Explanation: Smaller (sub-)projects are preferable to one large monolithic project of 4 months.
  o Likely no, as per J.e's input; as many administrative tasks as possible should be integrated into Exact.

- **Flowcharts**: Are the flowcharts created for the current situation or the desired situation?

  o These are proposed/input for discussion, not the current situation but a draft for a desired situation that is not fully complete.

- **Personalization Data**: Do we want (or can we) include personalization data in Exact Online, so it serves as input for the work process, or should this information remain only in [company X]?

  o To be determined later.

- **Dependency on Exact Online**: How tightly should we integrate with Exact Online? Do we want to maintain the flexibility to switch to another provider (e.g., Twinfield) in the future?

  o Assess the need/necessity for an additional layer/adapter.

- **Thoughts on Switching to Magento/CARTWise/etc.**: What are the rough thoughts on switching to existing e-commerce packages with existing Exact Online integration?

  o It seems like a lot of work to migrate everything to Magento (e.g., personalization), and there is a lack of experience within IT with another package.
  o Consult N./Do..
  o General consensus: no.

- **Test Account in Exact Online**: Is it possible to create a test account/bookkeeping in Exact Online Handel?

  o Yes, through a test account.

- **Separation of Test vs. Production Servers in Exact**:

  o   Yes, through a test account.

- **Purchasing Existing Code**: For example, buying a Magento Exact connector (better well stolen than poorly made)?

  o   Probably not very useful; the work and difficulty lie mainly in mapping [company X] methods/entities to Exact.

Exact

- **Article Variants**: How does Exact handle an article variant with a different price?

- **Product Name**: What exactly is the name of the product we will be using from Exact?

  o   Exact Online Handel or Exact Online Handel Geavanceerd?
  o   Not Geavanceerd (maybe later).

- **International Functionality**: How does multi-language/international functionality work within Exact?

  o   Separate sales orders/invoices per country?

- **Delivery Method**: How does "delivery method" work in Exact (also related to process 7 "Item out of stock returns to stock")?

- **Existing Relationships @ Exact**: What can we expect from them?

  o   Hiring knowledge for setting up the administration, is this necessary?
  ▪   To be determined by J./E.
  o   Similarly, for knowledge about setting up a connector?
  ▪   Training/webinar/video/live? What is available and what does it cost?

General

- **Adding/Editing an Article**: How is an article added or edited?

- **Current Inventory Management**: How does inventory management work now? What is currently leading?

- **Article Entry**: How are articles entered?

  - Who does it?
  - Initial inventory entry?
  - Who does the purchasing and on what basis?
  - Who handles it?
  - Updating inventory during the production process (i.e., deducting inventory after production/shipping), how does that work?
  - Is delivery also based on invoices? (see "order paid" flow)

- **PWC Scenario (External Website/Web POS)**:

  - This will happen more often in the future, possibly advocating for a move to a true service architecture where 'sites' (e.g., the own website, similar sites/subsites from external parties, white-label) communicate with backend services.

- **Composite Articles**: Some articles consist of article items, how does this work, how are they linked?

  - Practical examples?

- **Backoffice/Website Test Environment Access**: Is there a login for me in the backoffice/website test environment (that is more or less the same as the production environment)? Or can I do this on my local VM?

- **Order Completion Process**: Once an order is fully produced, approved, and ready for shipping, what happens in the system (order status change)?

  - This is when, if it is an unpaid delivery, an invoice should be sent from EO.
    - -> Signal to EO to create an invoice.

Meta

- **Handling EO Downtime**:
  - o   Example: Down/slow on July 15th, afternoon.
  - o   Ensure online sales (web POS) continue (retrieve article information from cache, queue/retry orders to EO).

Project

- **Project Setup**: How will we structure the project?
  - o   Who will be involved?
  - o   How does such a process work at [company X]?

Technical Implementation Questions

Exact

- **OAuth Access**: Where in the EOH online web app is the option to manage OAuth access ("browser", "phone" were options), not found?

- **HTTP Basic Auth Deprecation**: When will HTTP Basic Auth be deprecated?

  - o   Unknown, formally they say it is no longer supported.

- **"Sales Order" in API**: What is a "Sales Order" (as named in the EO web app) called in the API (English)?

  - o   It is called a Sales order but is not available in the REST API. It is available in the XML API.

- **Mapping Names**: Mapping of names as visible in the online app to the terms in the API?

  - o   Example: [Exact Online API Help](#)

- **Current Division in API**: Via ../api/v1/current/Me, 'currentDivision' is requested. Is this something that can change over time? When can this change?

- **"AccountItems" Entity**: What is the "AccountItems" entity? What is the difference from "Item"?

  - [Exact Online API Documentation](#)
- **API Endpoint Differences**: What is the difference between /api/v1/660525/logistics/Items and /api/v1/660525/read/logistics/Items? They do not have the same attributes. Which of these corresponds to "article" ([company X]_article)?

  - [Entity API](#)

  - [Read API](#)

- **Overall Entity Walkthrough in EOH**:

  - [Exact Online REST API Resources](#)

Selection Process: Exact Online Handel vs. Exact Online Handel Geavanceerd

- **Multiple Physical Warehouses**: Advanced supports more than one physical warehouse, including the ability to transfer inventory from one to another.e

Reference

- **Dealer4Dealer Magento Extension**: Only available as a contract/service, one-time costs 500 (Exact Online) and 800 (Exact Online Handel) + monthly costs (29 to 69 per month).

Exact Online Handel - Information

- OData Version 2.0 (July 2014)
- OAuth Version (2?)

Analysis - Processes

Note: According to existing flowcharts

New Order

1. **Order Adjustment - Partial Cancellation** (part of the order)
2. **Order Adjustment - Addition**
3. **Order Adjustment - ?**
4. **Order Adjustment - Full Cancellation**
5. **Order Adjustment - Order Paid**
6. **Order Adjustment - Change Customer**
7. **Inventory - …**

Mutations Examples:

- "Add a 6th clock to order 123."
- "I only want 4 instead" for order 321.

Analysis - Data/Entities

Entity: Customer (CRM)/Customer

- **Customer Data Storage**: Customer data is stored in the [company X] table `[company X]_klant`. This table is the leading source for CRM data. A customer is created on [company X]'s website, and at that moment, the customer is also created in EO.

  - Alternatively: Only provide customer information with the concrete order, regardless of whether it is a new customer or not.

- **Customer Type Attribute**: The attribute 'klanttype' can be 'individual' or 'business'.

  - ○ Is this attribute used to determine if a customer is B2C or B2B? Can this be established with this attribute

Entity: Article

- **[company X] Table Name**: `[company X]_artikel` (key: artikelcode)
- **EO Entity Name**: Item (URI /api/v1/$division/logistics/Items)

Alerts and Considerations:

- There is significant code duplication around `[company X]_artikel`.

- Are there related tables with additional information in [company X] that need to be included in EO?

  - ○ Example: `[company X]_artikel_data`, which has a one-to-one relationship with `[company X]_artikel`(foreign key artikelcode).

- **Variant Handling**: How do variants affect pricing, and how will this be managed in EO?

[company X] Table `[company X]_artikel`

- **Determine**:

  - ○ Attributes that are no longer in use.
  - ○ Attributes that are foreign keys to other entities/tables.

- **Article Groups**: How do article groups work?

- **Inventory Groups**: How do inventory groups work (this is managed somewhere in the back office)?

[detailed mapping tables omitted]

[detailed EO items omitted]

Analysis - Order

Pending Questions:

1. **Usage of `[company X]_orderregels`:**

   - What is `[company X]_orderregels` used for? How does it relate to `[company X]_order` (which seem to be order lines)?
   - Clarification: They are personalization parameters or something similar, referencing `[company X]_order` via orderid and sequence number.

2. **Table `[company X]_order_sku`:**

   - Contains no records?

3. **Table `[company X]_order_opmerking`:**

   - Similar to `[company X]_bestelling_userconfig`?
   - Similar to `[company X]_orderhistorie`?
   - Similar to `[company X]_orderhistorie_historie` (is empty)?
   - `[company X]_order_opnieuw`?

4. **PWC Customer Orders:**

   - How does an order from a PWC customer look on backend.[company X].net (find an example)?

Explanation:

- **Order Tables:**
  - `[company X]_bestelling` is essentially the order table.
  - `[company X]_order` is essentially the order lines table.
  - `[company X]_orderregels` are not order lines but name/value pairs linked to an order line via order id and sequence number.

Alerts:

- There is significant code duplication around `[company X]_bestelling` and `[company X]_order` within various components.

Relationships:

- **Relationship Between `[company X]_bestelling` and `[company X]_order`:**
  - Is it a one-to-one relationship? It seems so; key is orderid?
  - Or is `[company X]_order` actually `[company X]_order_line` (order line)?

```
mysql> desc [company X]_bestelling;
+-----------------+-----------------------+------+-----+------------+----------------+
| Field           | Type                  | Null | Key | Default    | Extra          |
+-----------------+-----------------------+------+-----+------------+----------------+
| orderid         | int(11) unsigned      | NO   | PRI | NULL       | auto_increment |
| resellerorderid | varchar(40)           | YES  | MUL | NULL       |                |
| klantid         | int(11) unsigned      | YES  | MUL | 0          |                |
| websiteid       | mediumint(8) unsigned | NO   | MUL | 0          |                |
| language_id     | smallint(5) unsigned  | NO   |     | NULL       |                |
| variant_id      | mediumint(8) unsigned | NO   |     | NULL       |                |
| besteltype      | varchar(15)           | NO   |     | particulier|                |
| ordertime       | date                  | YES  | MUL | NULL       |                |
| besteltijd      | varchar(10)           | NO   |     | 00:00      |                |
| ordertimestamp  | int(10) unsigned      | YES  |     | NULL       |                |
| referer         | varchar(255)          | YES  | MUL | NULL       |                |
| ip              | varchar(30)           | YES  |     | NULL       |                |
| muntsoort       | varchar(3)            | YES  |     | EUR        |                |
| paymethod       | varchar(20)           | YES  | MUL | NULL       |                |
| website         | varchar(3)            | NO   |     | [company X]|                |  |
| taal            | varchar(3)            | NO   |     | NL         |                |
| spreektaal      | varchar(3)            | NO   |     | NL         |                |
| totalcheck      | varchar(50)           | NO   |     | NULL       |                |
| paymentid       | varchar(15)           | YES  |     | NULL       |                |
| status          | smallint(1)           | NO   | MUL | 0          |                |
| bevestigingsmail| tinyint(1)            | NO   | MUL | 0          |                |
| factuur         | tinyint(1)            | NO   | MUL | 0          |                |
| kostenplaats    | varchar(100)          | YES  |     | NULL       |                |
| kredietwaardig  | mediumint(8) unsigned | NO   |     | 2          |                |
| sender_fullname | varchar(255)          | NO   |     | NULL       |                |
+-----------------+-----------------------+------+-----+------------+----------------+

mysql> desc [company X]_order;
+---------------------------+----------------------+------+-----+---------------+-------+
| Field                     | Type                 | Null | Key | Default       | Extra |
+---------------------------+----------------------+------+-----+---------------+-------+
| orderid                   | int(11) unsigned     | NO   | PRI | NULL          |       |
| volgnr                    | mediumint(5) unsigned| NO   | PRI | 0             |       |
| artikelcode               | int(10) unsigned     | NO   | MUL | 0             |       |
| editor_id                 | smallint(5) unsigned | NO   | MUL | 0             |       |
```

```
| file_extension            | enum('jpg','pdf','png') | NO  |     | NULL            |   |
| confirmed                 | tinyint(1) unsigned     | NO  | MUL | 1               |   |
| artikelprijs              | decimal(9,3)            | YES |     | NULL            |   |
| korting                   | decimal(8,3)            | YES |     | 0.000           |   |
| verzendkosten             | decimal(8,3)            | YES |     | 0.000           |   |
| btwpercentage             | decimal(3,1) unsigned   | NO  |     | 0.0             |   |
| aantal                    | mediumint(5)            | NO  |     | 1               |   |
| afleverdatum              | varchar(12)             | YES |     | snel            |   |
| afleveradres              | varchar(15)             | NO  |     | eigen adres     |   |
| afleverid                 | mediumint(5)            | YES |     | 1               |   |
| verzendwijze_id           | int(10) unsigned        | NO  | MUL | 0               |   |
| verzendingsoort           | varchar(30)             | YES |     | brievenbuspost  |   |
| verzenddatum              | date                    | NO  |     | NULL            |   |
| bedrijfsnaam              | varchar(150)            | YES |     | NULL            |   |
| ont_voornaam              | varchar(50)             | YES |     | NULL            |   |
| ont_achternaam            | varchar(100)            | YES |     | NULL            |   |
| ont_email                 | varchar(255)            | NO  |     | NULL            |   |
| ont_telefoonnr            | varchar(50)             | YES |     | NULL            |   |
| ont_adres                 | varchar(100)            | YES |     | NULL            |   |
| ont_adres_toevoeging      | varchar(100)            | YES |     | NULL            |   |
| ont_tav                   | varchar(100)            | YES |     | NULL            |   |
| ont_huisnummer            | varchar(20)             | YES |     | NULL            |   |
| ont_huisnummer_toevoeging | varchar(50)             | YES |     | NULL            |   |
| ont_postcode              | varchar(20)             | YES |     | NULL            |   |
| ont_provincie             | varchar(50)             | YES |     | NULL            |   |
| ont_woonplaats            | varchar(100)            | YES |     | NULL            |   |
| ont_land                  | varchar(60)             | YES | MUL | Netherlands     |   |
| ont_landcode              | varchar(2)              | YES |     | NL              |   |
| ont_additional_information| varchar(100)            | YES |     | NULL            |   |
| ont_post_town             | varchar(100)            | YES |     | NULL            |   |
| ont_wilreactie            | tinyint(1)              | NO  |     | 0               |   |
| ont_reactienaam           | varchar(255)            | NO  |     | NULL            |   |
| ont_reactiemail           | varchar(255)            | NO  |     | NULL            |   |
| ont_reactiebericht        | text                    | NO  |     | NULL            |   |
| xml_file                  | text                    | YES |     | NULL            |   |
| gemaakt                   | tinyint(1)              | NO  | MUL | 1               |   |
| parcelware                | varchar(255)            | YES |     | NULL            |   |
| productiestatus           | varchar(20)             | NO  | MUL | ONVERWERKT      |   |
| betalingsstatus           | varchar(50)             | NO  | MUL | NIET BETAALD    |   |
| productietaal             | varchar(3)              | NO  |     | NL              |   |
```

```
| gefactureerd              | tinyint(1)          | NO  |     | 0     |       |       |
| factuurnummer             | varchar(20)         | YES |     | NULL  |       |       |
| tekstopnieuw              | varchar(255)        | YES |     | NULL  |       |       |
| spoed                     | tinyint(1)          | NO  |     | 0     |       |       |
| vooropvolgen              | tinyint(1) unsigned | NO  | MUL | 0     |       |       |
| reden_id                  | tinyint(2)          | YES |     | NULL  |       |       |
| bevestigingsmail          | tinyint(1)          | NO  | MUL | 1     |       |       |
| locatiecode               | varchar(30)         | NO  |     | NULL  |       |       |
| shopid                    | int(11)             | NO  |     | 0     |       |       |
| markup                    | decimal(8,3)        | NO  |     | 0.000 |       |       |
| same_day_delivery         | tinyint(3) unsigned | NO  |     | 0     |       |       |
+---------------+------------------------+------+-----+---------------+-------+
```

Analysis - Create/Modify Order ([`company X]_bestelling`)

Code References

- **backoffice/classes/class.bestelling.php**:

- ```
  $query = "INSERT INTO [company X]_bestelling(orderid, paymethod, klantid, ordertime,
  ordertimestamp, besteltijd, muntsoort, website, taal, websiteid, status,
  bevestigingsmail)";
  ```

- **backoffice/common/[company X]data/classes/crm/[company X]Bestelling.php**:

  ```
  return Sql::insert($data, '[company X]_bestelling');
  ```

- **backoffice/common/[company X]data/classes/whitelabel/giftservice/GsCartFunctions.php**:

  ```
  Sql::insert($insert, '[company X]_bestelling_userconfig', true);
  ```

- **backoffice/crm/kopieer_order.php**:

  ```
  $query = "INSERT INTO [company X]_bestelling(orderid, klantid, ordertime, besteltijd,
  ip, muntsoort, paymethod, website, taal, bevestigingsmail, factuur)";
  ```

- **backoffice/evolution/whitelabel/prerun.coupon_user.php**:

```
$orderid = Sql::insert($bestelling, '[company X]_bestelling');
```

- **giftservice/common/[company X]data/classes/crm/[company X]Bestelling.php**:

```
return Sql::insert($data, '[company X]_bestelling');
```

Classes

- **Class: `[company X]Bestelling`**:
  - This class is identically defined in:
    - **giftservice**: `giftservice/common/[company X]data/classes/crm/[company X]Bestelling.php`
    - **jouwcadeau**: `jouwcadeau/common/[company X]data/classes/crm/[company X]Bestelling.php`
    - **backoffice**: `backoffice/common/[company X]data/classes/crm/[company X]Bestelling.php`

Example Order #1

- **Order Details**:

  - `[company X]_bestelling.orderid = 1359608`
  - `[company X]_bestelling.klantid = 823967`

- **Order URL**:

  - [Order Link](https://backoffice.[company X].net/crm/orders.php?orderid=1359608&volgnr=1)

Analysis - Production

Order Status Tracking

- **Top-Level Order Status**:

    - Stored in `[company X]_bestelling.status`.
    - Possible values:
        - 0
        - 1
        - 9

- **Order Line Status**:

    - Stored in `[company X]_order.productiestatus`.
    - Possible values:
        - BEVESTIGD
        - DUBBEL_BETAALD
        - GEANNULEERD KLANT
        - GEANNULEERD [company X]
        - GEPRODUCEERD
        - IN PRODUCTIE
        - KOSTEN
        - ON HOLD
        - ON HOLD BETALING
        - ON HOLD KWALITEIT
        - ON HOLD ZAKELIJK
        - ONVERWERKT
        - PRINTING
        - PROMOTIE
        - REFUND

- TUSSENSTAP
- UIT VOORRAAD
- VERZONDEN
- VERZONDEN NAAR [company X]
- WACHT OP BEVESTIGING
- WACHT OP LABEL
- WACHT OP OPMAAK
- WACHT OP SPRAAK
- WACHT OP TRANSPORT

Analysis - System Components

Top-Level Repository Components

The following diagram provides a high-level overview of the various [company X] system components and a description of each component's access to the database, focusing on the relevant entities for the [company X] - Exact Online (EOH) integration.

Please refer to the schema for detailed insights into the system architecture, illustrating how each component interacts with the database and manages key entities crucial for the integration.

[detailed schema omitted]

Technical Implementation

Messaging Server

- **Introduction of Messaging Server**:
    - Introduce a messaging server within the system.
    - Benefits:
        - Asynchronous processing.
        - Potential for temporary manual control/editing.
        - Handling downtime of remote servers with retry capabilities.

    - Options:
        - Apache ActiveMQ
        - Apache Apollo
        - RabbitMQ

Service Layer Setup

- **Objective**:

    - Centralize operations from various system components (e.g., the website, PWC/KPN, whitelabel).
    - Ensure clients of this service layer no longer perform direct database operations on entities like "artikel," "bestelling," "order," and "klant."
    - Assess the workload required for this transition. The current state of inter-component communication is not well-documented.

- **Contraindications**:

    - Components like "JouwCadeau" have direct database connections in files like `connection.php`.
    - Similarly, "giftservice" directly interacts with the database.
    - `[company X]Article.php` retrieves articles directly from the database, appearing in various places with nearly identical code.

- **Workarounds**:

- Implement real-time or semi-real-time synchronization from EO to `[company X]` to ensure components still accessing the database directly have up-to-date information.

- Alternative: Use database triggers (not ideal, seen as a clunky solution).

- Gradual migration of components can be managed without a major system overhaul.

- **References**:

    - Martin Fowler's [Enterprise Architecture](#)

Example 1 - Creating an Article

- **Goal**:
    - EO should be the primary system for article storage, if feasible.
    - For any elements that don't fit into EO, maintain a 1-to-1 relationship between EO and the `[company X]` database, ensuring synchronization (preferably automatic). EO remains the master source.

Example 2 - System Design

- **Reference**:
    - Stack Overflow discussions on immutable order systems and database design for e-commerce:
        - [E-commerce Order System - Immutable Orders](#)
        - [Product Table Design in E-commerce](#)
        - [E-commerce Database Design](#)

Technical Details

- **HTTP Client Options**:
    - [Guzzle](#)
    - [PHP HTTP Client](#)
    - Low-level cURL

Migration

- **Historical Data**:
  - o Decide whether to include historical data in EO or start populating EO from the moment of migration.
  - o Possible to use existing scripts that are used at the end of the month to populate YOB.

Implementation

- **Shadow Running**:
  - o Enable shadow running for testing, control, and verification.
  - o Avoid a direct cutover ("with a bang"); if necessary, establish a rollback strategy.

[GPT-4o limit reached]