

Workshop: I'm a developer where do I start?

Presentation at the official Contao Conference 2012

Bad Soden, Germany

Hi there!

- I'm Yanick aka Toflar
- I'm a 23-year-old web developer
- I'm working at my own company „certo web & design GmbH“
- I'm interested in
 - the web, Contao, php, API's, Symfony2 and other cutting-edge innovations
 - system architecture, conception, UML
 - project management and communication
 - sports
 - music
 - cooking
 - people
 - life



Contao
OFFICIAL PARTNER



Yanick Witschi

 @toflar

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Goals

What you will know after this workshop

- Get to know the structure of Contao 2.11
- How to read the source and help yourself
- The structure of a custom module
- Hooks and callbacks

What you will **not** know after this workshop

- PHP
- Object Oriented Programming (OOP)
- How to use Contao
- Every single line of Code of Contao

Expectations



Tell me. Maybe I'll help.

The structure of Contao 2.11

- **contao**
- **plugins**
- **system**
- **templates**
- **tl_files**
- **typolight**
- .gitignore
- .htaccess.default
- CHANGELOG.md
- GPL.txt
- LGPL.txt
- README.md
- cron.php
- index.php
- robots.txt
- share.php

Contao 2.11 - plugins

- **contao**
- **plugins**
- **system**
- **templates**
- **tl_files**
- **typolight**
- .gitignore
- .htaccess.default
- CHANGELOG.md
- GPL.txt
- LGPL.txt
- README.md
- cron.php
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- share.php

Contao 2.11 - system

- ...
- **system**
 - **config**
 - **drivers**
 - **html**
 - **libraries**
 - **logs**
 - **modules**
 - **scripts**
 - **themes**
 - **tmp**
 - constants.php
 - contao.css
 - functions.php
 - initialize.php
 - interface.php
 - mbstring.php
 - utf8_lookup.php

Contao 2.11 – system – config

- ...
- **system**
 - **config**
 - **drivers**
 - **html**
 - **libraries**
 - **logs**
 - **modules**
 - **scripts**
 - **themes**
 - **tmp**
 - constants.php
 - contao.css
 - functions.php
 - initialize.php
 - interface.php
 - mbstring.php
 - utf8_lookup.php

Contao 2.11 – system – drivers

- ...
- **system**
 - **config**
 - **drivers**
 - **html**
 - **libraries**
 - **logs**
 - **modules**
 - **scripts**
 - **themes**
 - **tmp**
 - constants.php
 - contao.css
 - functions.php
 - initialize.php
 - interface.php
 - mbstring.php
 - utf8_lookup.php

Contao 2.11 – system – libraries

- ...
 - **system**
 - **config**
 - **drivers**
 - **html**
 - **libraries**
 - **logs**
 - **modules**
 - **scripts**
 - **themes**
 - **tmp**
 - constants.php
 - contao.css
 - functions.php
 - initialize.php
 - interface.php
 - mbstring.php
 - utf8_lookup.php
- Cache.php
 - Combiner.php
 - Config.php
 - Controller.php
 - Database.php
 - Date.php
 - Email.php
 - Encryption.php
 - Environment.php
 - FTP.php
 - Feed.php
 - File.php
 - FileCache.php
 - Files.php
 - Folder.php
 - Input.php
 - Model.php
 - Request.php
 - RequestToken.php
 - Search.php
 - Session.php
 - String.php
 - System.php
 - Template.php
 - User.php
 - Widget.php
 - ZipReader.php
 - ZipWriter.php

Contao 2.11 – system – modules

- ...
- **system**
 - **config**
 - **drivers**
 - **html**
 - **libraries**
 - **logs**
 - **modules**
 - **scripts**
 - **themes**
 - **tmp**
 - constants.php
 - contao.css
 - functions.php
 - initialize.php
 - interface.php
 - mbstring.php
 - utf8_lookup.php

Contao 2.11 – system – functions.php

- ...
- **system**
 - **config**
 - **drivers**
 - **html**
 - **libraries**
 - **logs**
 - **modules**
 - **scripts**
 - **themes**
 - **tmp**
 - constants.php
 - contao.css
 - **functions.php**
 - initialize.php
 - interface.php
 - mbstring.php
 - utf8_lookup.php

Contao 2.11 – system – initialize.php

- ...
- **system**
 - **config**
 - **drivers**
 - **html**
 - **libraries**
 - **logs**
 - **modules**
 - **scripts**
 - **themes**
 - **tmp**
 - constants.php
 - contao.css
 - functions.php
 - **initialize.php**
 - interface.php
 - mbstring.php
 - utf8_lookup.php

- **contao**
- **plugins**
- **system**
- **templates**
- **tl_files**
- **typolight**
- .gitignore
- .htaccess.default
- CHANGELOG.md
- GPL.txt
- LGPL.txt
- README.md
- cron.php
- **index.php**
- robots.txt
- share.php

Drivers & The DataContainer

- The drivers that begin with „DB_“ represent a very simple database abstraction layer
 - Mssql
 - Mysql
 - Mysqli
 - Oracle
 - Postgresql
 - Sybase
- The drivers that begin with „DC_“ represent a Contao specific „DataContainer“
 - File
 - Folder
 - Table

What is a DataContainer?

- A DataContainer is something Contao specific
- It's a mix of Model, View and Controller which makes it very easy to use for common patterns but very hard if you want to do something that's not planned
- It provides different ways to render a DataContainer Array (DCA) and list database records or files
- It's configuration is done via a DataContainer Array (DCA)

What is a DataContainer Array?

- Used to define the meta data of how the DataContainer displays the data of a database table
- Defines relations to other tables and their fields (database columns)
- Grown in the past and thus very powerful but also very complex and unfortunately not very well documented
- Consists of
 - Table configuration
 - Listing configuration
 - Global operations
 - Operations
 - Palettes and subpalettes
 - Fields
 - Evaluation

How a DCA is being loaded and extended

```

protected function loadDataContainer($strName, $bInNoCache=false)
{
    // Return if the data has been loaded already
    if (!$bInNoCache && isset($GLOBALS['loadDataContainer'][$strName]))
    {
        return;
    }

    // Use a global cache variable to support nested calls
    $GLOBALS['loadDataContainer'][$strName] = true;

    // Parse all module folders
    foreach ($this->Config->getActiveModules() as $strModule)
    {
        $strFile = sprintf('%s/system/modules/%s/dca/%s.php', TL_ROOT, $strModule, $strName);

        if (file_exists($strFile))
        {
            include($strFile);
        }
    }

    // HOOK: allow to load custom settings
    if (isset($GLOBALS['TL_HOOKS']['loadDataContainer']) && is_array($GLOBALS['TL_HOOKS']['loadDataContainer']))
    {
        foreach ($GLOBALS['TL_HOOKS']['loadDataContainer'] as $callback)
        {
            $this->import($callback[0]);
            $this->$callback[0]->$callback[1]($strName);
        }
    }

    // Local configuration file
    if (file_exists(TL_ROOT . '/system/config/dcaconfig.php'))
    {
        include(TL_ROOT . '/system/config/dcaconfig.php');
    }
}

```

Example for a DCA based on the table „tl_news“ – table configuration

```
/**
 * Table tl_news
 */
$GLOBALS['TL_DCA']['tl_news'] = array
(
    // Config
    'config' => array
    (
        'dataContainer'           => 'Table',
        'pTable'                  => 'tl_news_archive',
        'enableVersioning'       => true,
        'onload_callback' => array
        (
            array('tl_news', 'checkPermission'),
            array('tl_news', 'generateFeed')
        ),
        'oncut_callback' => array
        (
            array('tl_news', 'scheduleUpdate')
        ),
        'ondelete_callback' => array
        (
            array('tl_news', 'scheduleUpdate')
        ),
        'onsubmit_callback' => array
        (
            array('tl_news', 'adjustTime'),
            array('tl_news', 'scheduleUpdate')
        )
    ),
),
```

Example for a DCA based on the table „tl_news“ – listing configuration

```
// List
'list' => array
(
    'sorting' => array
    (
        'mode' => 4,
        'fields' => array('date DESC'),
        'headerFields' => array('title', 'jumpTo', 'tstamp', 'protected', 'allowComments', 'makeFeed'),
        'panelLayout' => 'filter;sort,search,limit',
        'child_record_callback' => array('tl_news', 'listNewsArticles')
    ),
    'global_operations' => array
    (
        'all' => array
        (
            'label' => &GLOBALS['TL_LANG']['MSC']['all'],
            'href' => 'act=select',
            'class' => 'header_edit_all',
            'attributes' => 'onclick="Backend.getScrollOffset()" accesskey="e"'
        )
    ),
    'operations' => array
    (
        'edit' => array
        (
            'label' => &GLOBALS['TL_LANG']['tl_news']['edit'],
            'href' => 'act=edit',
            'icon' => 'edit.gif'
        )
    )
)
```

Example for a DCA based on the table „tl_news“ – palettes and subpalettes

```
// Palettes
'palettes' => array
(
    '__selector__'           => array('addImage', 'addEnclosure', 'source'),
    'default'                 => '{title_legend},headline,alias,author;{date_legend},date,time;{teaser_legend:hide},sub
),

// Subpalettes
'subpalettes' => array
(
    'addImage'               => 'singleSRC,alt,size,imagemargin,imageUrl,fullsize,caption,floating',
    'addEnclosure'          => 'enclosure',
    'source_internal'       => 'jumpTo',
    'source_article'        => 'articleId',
    'source_external'       => 'url,target'
),
```


Example for a DCA based on the table „tl_news“ – fields and evaluation

```
// Fields
'fields' => array
(
    'headline' => array
    (
        'label'           => &${GLOBALS['TL_LANG']}['tl_news']['headline'],
        'exclude'         => true,
        'search'          => true,
        'sorting'         => true,
        'flag'            => 1,
        'inputType'       => 'text',
        'eval'            => array('mandatory'=>true, 'maxlength'=>255)
    ),

```

```
--
-- Table `tl_news`
--
CREATE TABLE `tl_news` (
  `id` int(10) unsigned NOT NULL auto_increment,
  `pid` int(10) unsigned NOT NULL default '0',
  `tstamp` int(10) unsigned NOT NULL default '0',
  `headline` varchar(255) NOT NULL default '',
  `alias` varbinary(128) NOT NULL default ''
)
```

The structure of a custom module

Our example module "input_output"

- **system**
 - **modules**
 - **input_output**
 - **config**
 - **dca**
 - **html**
 - **languages**
 - **templates**
 - ContentInputOutput.php
 - InputOutput.php
 - ModuleInputOutputList.php

Our example module "input output" - config

- **config**
 - .htaccess
 - config.php
 - database.sql
 - runonce.php
- ...

Our example module "input output" - dca

- **dca**
 - .htaccess
 - tl_content.php
 - tl_input_output.php
 - tl_module.php
- ...

Our example module "input output" - html

- **html**
 - style.css
- ...

Our example module "input output" - languages

- **languages**

- **de**

- default.php
 - modules.php
 - tl_content.php
 - tl_input_output.php
 - tl_module.php

- **en**

- default.php
 - modules.php
 - tl_content.php
 - tl_input_output.php
 - tl_module.php

- ...

Our example module "input_output" - templates

- **templates**
 - ce_input_output.html5
 - ce_input_output.xhtml
 - mod_input_output_list.html5
 - mod_input_output_list.xhtml

Hooks & Callbacks

Hooks & Callbacks

- Somehow similar to an event (event dispatcher pattern)
- Provide ways to extend Contao core functionality at certain points in the code
- Callbacks are used in the DCA
- Hooks are used all over the core

Callbacks - Overview

- child_record_callback
- group_callback
- header_callback
- label_callback
- load_callback
- oncopy_callback
- oncreate_callback
- oncut_callback
- ondelete_callback
- onload_callback
- onrestore_callback
- onsubmit_callback
- onversion_callback
- options_callback
- paste_button_callback
- save_callback

system/modules/news/dca/tl_news.php

```

$GLOBALS['TL_DCA']['tl_news'] = array
(
    // Config
    'config' => array
    (
        'dataContainer'           => 'Table',
        'ptable'                 => 'tl_news_archive',
        'enableVersioning'       => true,
        'onload_callback' => array
        (
            array('tl_news', 'checkPermission'),
            array('tl_news', 'generateFeed')
        )
    )
)
    
```

Hooks - Overview

57 Hooks!

activateAccount activateRecipient addComment addCustomRegexp addLogEntry checkCredentials closeAccount compileDefinition createDefinition createNewUser executePostActions executePreActions generateBreadcrumb generateFrontendUrl generatePage	getAllEvents getArticle getCacheKey getCombinedFile getContentElement getCountries getForm getFrontendModule getImage getPageIdFromUrl getRootPageFromUrl getSearchablePages getSystemMessages getUserNavigation importUser	loadDataContainer loadFormField loadLanguageFile outputBackendTemplate outputFrontendTemplate parseArticles parseBackendTemplate parseFrontendTemplate parseTemplate postDownload postLogin postLogout postUpload printArticleAsPdf processFormData	removeOldFeeds removeRecipient replaceInsertTags reviseTable setCookie setNewPassword sqlCompileCommands sqlGetFromDB sqlGetFromFile storeFormData updatePersonalData validateFormField
--	---	---	--

system/modules/isotope/config/config.php

```

/**
 * Hooks
 */
GLOBALS['TL_HOOKS']['loadDataContainer'][] = array('Isotope', 'loadProductsDataContainer');
GLOBALS['TL_HOOKS']['addCustomRegexp'][] = array('Isotope', 'validateRegexp');
GLOBALS['TL_HOOKS']['getSearchablePages'][] = array('IsotopeFrontend', 'addProductsToSearchIndex');
GLOBALS['TL_HOOKS']['replaceInsertTags'][] = array('IsotopeFrontend', 'replaceIsotopeTags');
GLOBALS['TL_HOOKS']['generatePage'][] = array('IsotopeFrontend', 'injectMessages');
GLOBALS['TL_HOOKS']['executePreActions'][] = array('ProductTree', 'executePreActions');
GLOBALS['TL_HOOKS']['executePostActions'][] = array('ProductTree', 'executePostActions');
    
```

Workshop

- This slide was in German as the presentation and the workshop were held in German.
- This is the module I created to give you something you can start off with:
https://github.com/Toflar/iadwdis_input_output
- Leo Feyer's „Inside TYPOlight“ presentation from the user meeting back in 2009 in Frankfurt, Germany:
http://www.contao.org/tl_files/meetings/Inside-TYPOlight.pdf
→ A few things are not correct anymore (template loading order, referer check on forms etc.) but it might still be useful. (German only, unfortunately).

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