

NEW APIs IN TYPO3 v12

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AGENDA

- Who's this?
- What's an API?
- What's new?
- What's next?

OLIVER BARTSCH

- Working @ b13
- Core development & customer work
- Part of the Core Dev Team since 2021
- TYPO3 Ecosystem
(e.g. TER REST API / Tailor)

 @oli

 @_obartsch



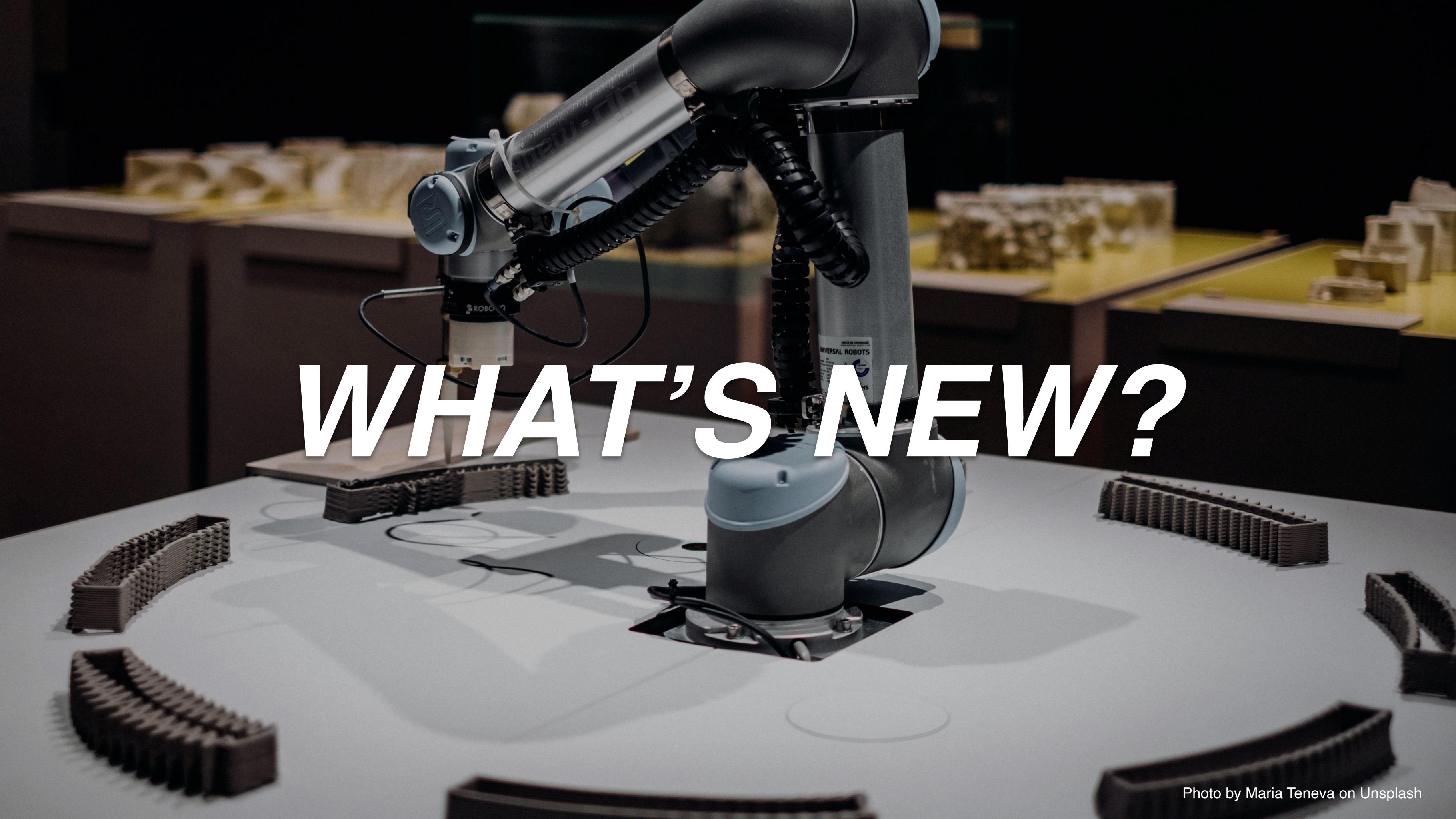
APIS

WHAT IS AN API?

“Enables software to communicate with each other using a set of definitions and protocols.”

WHAT DOES API MEAN IN TYPO3?

“Enables developers to extend and customize the system to their custom(er) needs.”

A Universal Robots collaborative robot arm is shown working on a conveyor belt in a factory setting. The robot is grey and black, mounted on a grey base. It is positioned over a conveyor belt that has several small, brown, rectangular components on it. The background is dark, and there are more conveyor belts and components visible.

WHAT'S NEW?

5 AREAS

- PSR-14 Events
- TCA Types & Options
- Auto-configuration & Auto-registration
- Backend Modules
- Backend Templates



PSR-14 EVENTS

~30

*PSR-14 EVENTS
ADDED ALREADY*

- `ModifyPageLinkConfigurationEvent`
- `FilterMenuItemsEvent`
- `RecordAccessGrantedEvent`
- `ModifyInfoModuleContentEvent`
- `ModifyGenericBackendMessagesEvent`
- `SiteConfigurationBeforeWriteEvent`
- `SiteConfigurationLoadedEvent`
- `ModifyCacheLifetimeForPageEvent`
- `ModifyLinkExplanationEvent`
- `ModifyInlineElementEnabledControlsEvent`
- `ModifyInlineElementControlsEvent`
- `ModifyImageManipulationPreviewUrlEvent`
- `ModifyNewContentElementWizardItemsEvent`
- `ModifyVersionDifferencesEvent`
- `AfterCacheableContentIsGeneratedEvent`
- `AfterCachedPageIsPersistedEvent`
- `AfterPageTreeItemsPreparedEvent`
- `EvaluateModifierFunctionEvent`
- `ModifyQueryForLiveSearchEvent`
- `BeforeMailerSentMessageEvent`
- `AfterMailerSentMessageEvent`
- `RedirectWasHitEvent`
- `ModifyPageLayoutContentEvent`
- `AfterLinkIsGeneratedEvent`
- `ModifyButtonBarEvent`
- `ShouldUseCachedPageDataIfAvailableEvent`
- `AfterBackendPageRenderEvent`
- `ModifyLinkHandlersEvent`
- `BeforePagePreviewUriGeneratedEvent`
- `AfterPagePreviewUriGeneratedEvent`
- `BeforePageIsResolvedEvent`
- `AfterPageWithRootLineIsResolvedEvent`
- `AfterPageAndLanguageIsResolvedEvent`

- Replaced Hooks with **improved** PSR-14 Events
- Added PSR-14 Events to **more** places in Core
- **Simplified** usage / registration
- Unified **structure** of the events
- Provide **object-oriented** access

AfterPageTreeItemsPreparedEvent

- Provides the current PSR-7 Request
- Contains the whole page record

ModifyPageLinkConfigurationEvent

- Replaces *typolinkModifyParameterForPageLinks* hook
- Allows to fully replace the resolved page link
- Allows to manipulate the *typolink* configuration
- Allows to manipulate query parameters and fragments

ModifyNewContentElementWizardItemsEvent

- Replaces *wizardItemsHook* hook
- Define wizard item position
- Manipulate wizard item configuration
- Built-in convenience features

TCA TYPES & OPTIONS

~50%
LESS
CONFIGURATION

100 %
MORE CLARITY

TCA TYPES

PASSWORD

Replaces eval=password and eval=saltedPassword of type=input

```
● ○ ●
'password_field' => [
    'label' => 'Password',
    'config' => [
        'type' => 'input',
        'eval' => 'trim,password,saltedPassword',
    ],
],
```



```
● ○ ●
'password_field' => [
    'label' => 'Password',
    'config' => [
        'type' => 'password',
    ],
],
```



```
'password_field' => [
    'label' => 'Password',
    'config' => [
        'type' => 'input',
        'eval' => 'trim,password',
    ],
],
```



```
'password_field' => [
    'label' => 'Password',
    'config' => [
        'type' => 'password',
        'hashed' => false,
    ],
]
```

DATETIME

Replaces renderType=inputDateTime of type=input



```
'datetime_field' => [
    'label' => 'Datetime field',
    'config' => [
        'type' => 'input',
        'renderType' => 'inputDateTime',
        'eval' => 'date,int',
        'default' => 0,
    ],
],
```



```
'datetime_field' => [
    'label' => 'Datetime field',
    'config' => [
        'type' => 'datetime',
        'format' => 'date',
        'default' => 0,
    ],
],
```

NUMBER

Replaces eval=int and eval=double2 of type=input



```
'int_field' => [
    'label' => 'Int field',
    'config' => [
        'type' => 'input',
        'eval' => 'int',
    ],
]
```



```
'int_field' => [
    'label' => 'Int field',
    'config' => [
        'type' => 'number',
    ],
]
```



```
'double2_field' => [
    'label' => 'double2 field',
    'config' => [
        'type' => 'input',
        'eval' => 'double2',
    ],
],
```



```
'double2_field' => [
    'label' => 'double2 field',
    'config' => [
        'type' => 'number',
        'format' => 'decimal',
    ],
],
```

LINK

Replaces renderType=inputLink of type=input



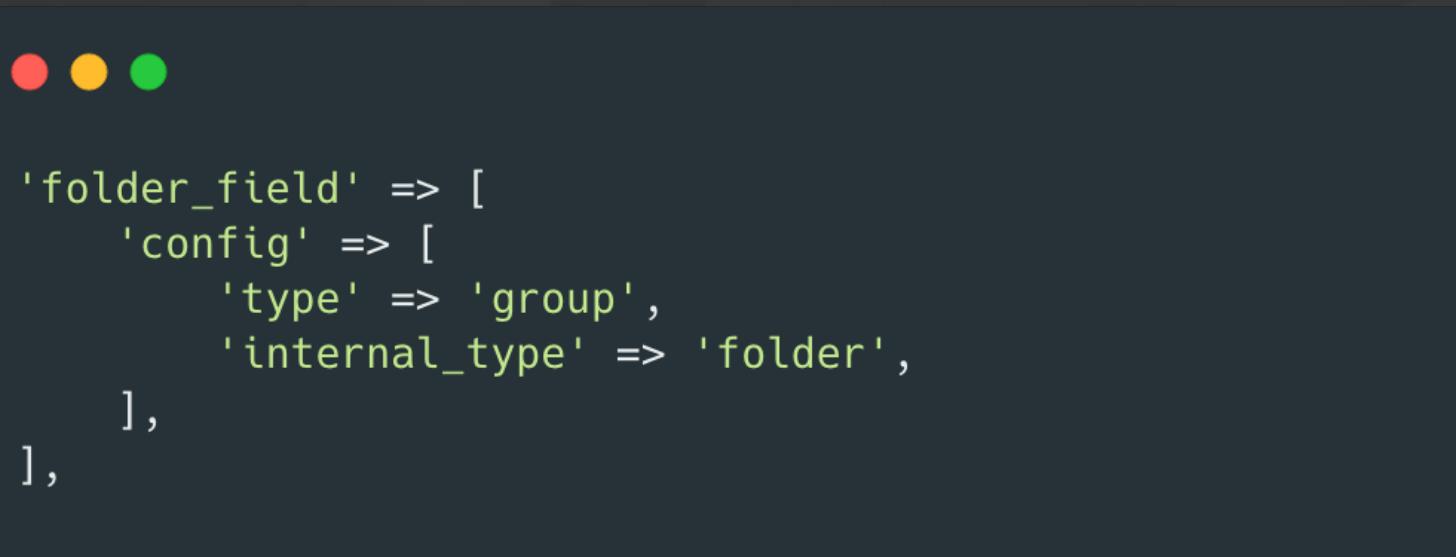
```
'config' => [
    'type' => 'input',
    'renderType' => 'inputLink',
    'eval' => 'trim',
    'fieldControl' => [
        'linkPopup' => [
            'disabled' => true,
            'options' => [
                'title' => 'Link popup',
                'allowedExtensions' => 'jpg,png',
                'blindLinkFields' => 'class,target,title',
                'blindLinkOptions' => 'mail, folder, file',
            ],
        ],
    ],
    'softref' => 'typolink',
],
```



```
'config' => [
    'type' => 'link',
    'allowedTypes' => ['page', 'url', 'record'],
    'appearance' => [
        'enableBrowser' => false,
        'browserTitle' => 'Link popup',
        'allowedFileExtensions' => ['jpg', 'png'],
        'allowedOptions' => ['params', 'rel'],
    ],
],
```

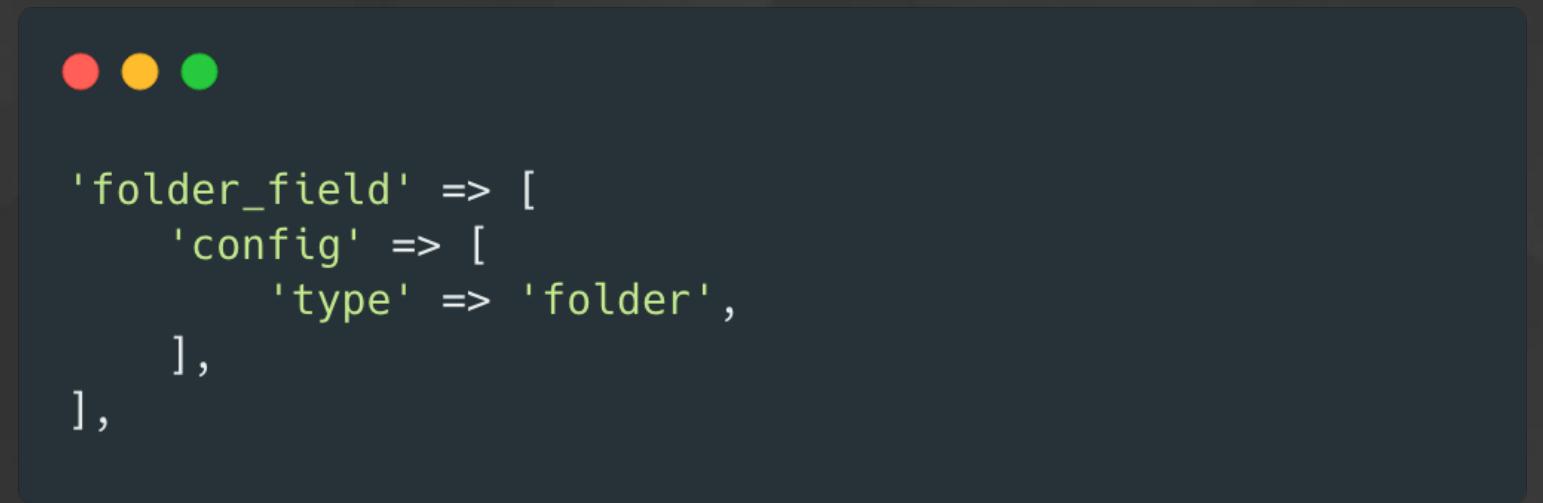
FOLDER

Replaces type=group with internal_type=folder



A screenshot of the TYPO3 Backend configuration interface. It shows a list of fields under a section. The first field is highlighted with a red dot above it. An orange arrow points from the right side of this field to the corresponding field in the next screenshot.

```
'folder_field' => [
    'config' => [
        'type' => 'group',
        'internal_type' => 'folder',
    ],
],
```



A screenshot of the TYPO3 Backend configuration interface, showing the same list of fields. The first field has been modified. The 'internal_type' key has been removed, and the 'type' key has been changed to 'folder'. An orange arrow points from the right side of this field to the corresponding field in the previous screenshot.

```
'folder_field' => [
    'config' => [
        'type' => 'folder',
    ],
],
```

EMAIL

Replaces eval=email of type=input



```
'email_field' => [
    'label' => 'Email',
    'config' => [
        'type' => 'input',
        'eval' => 'trim,email',
        'softref' => 'email[subst]',
    ],
],
```



```
'email_field' => [
    'label' => 'Email',
    'config' => [
        'type' => 'email',
    ],
],
```

COLOR

Replaces renderType=colorpicker of type=input



```
'color_field' => [
    'label' => 'Color field',
    'config' => [
        'type' => 'input',
        'renderType' => 'colorpicker',
        'valuePicker' => [
            'items' => [
                ['typo3 orange', '#FF8700'],
            ],
        ],
    ],
],
```



```
'color_field' => [
    'label' => 'Color field',
    'config' => [
        'type' => 'color',
        'valuePicker' => [
            'items' => [
                ['typo3 orange', '#FF8700'],
            ],
        ],
    ],
],
```

TCA OPTIONS

NULLABLE



```
'nullable_column' => [
    'title' => 'A nullable field',
    'config' => [
        'type' => 'input',
        'nullable' => true,
    ],
],
```

REQUIRED



```
'required_column' => [
    'title' => 'A required field',
    'config' => [
        'type' => 'input',
        'required' => true,
    ],
],
```

MIN (LENGTH)

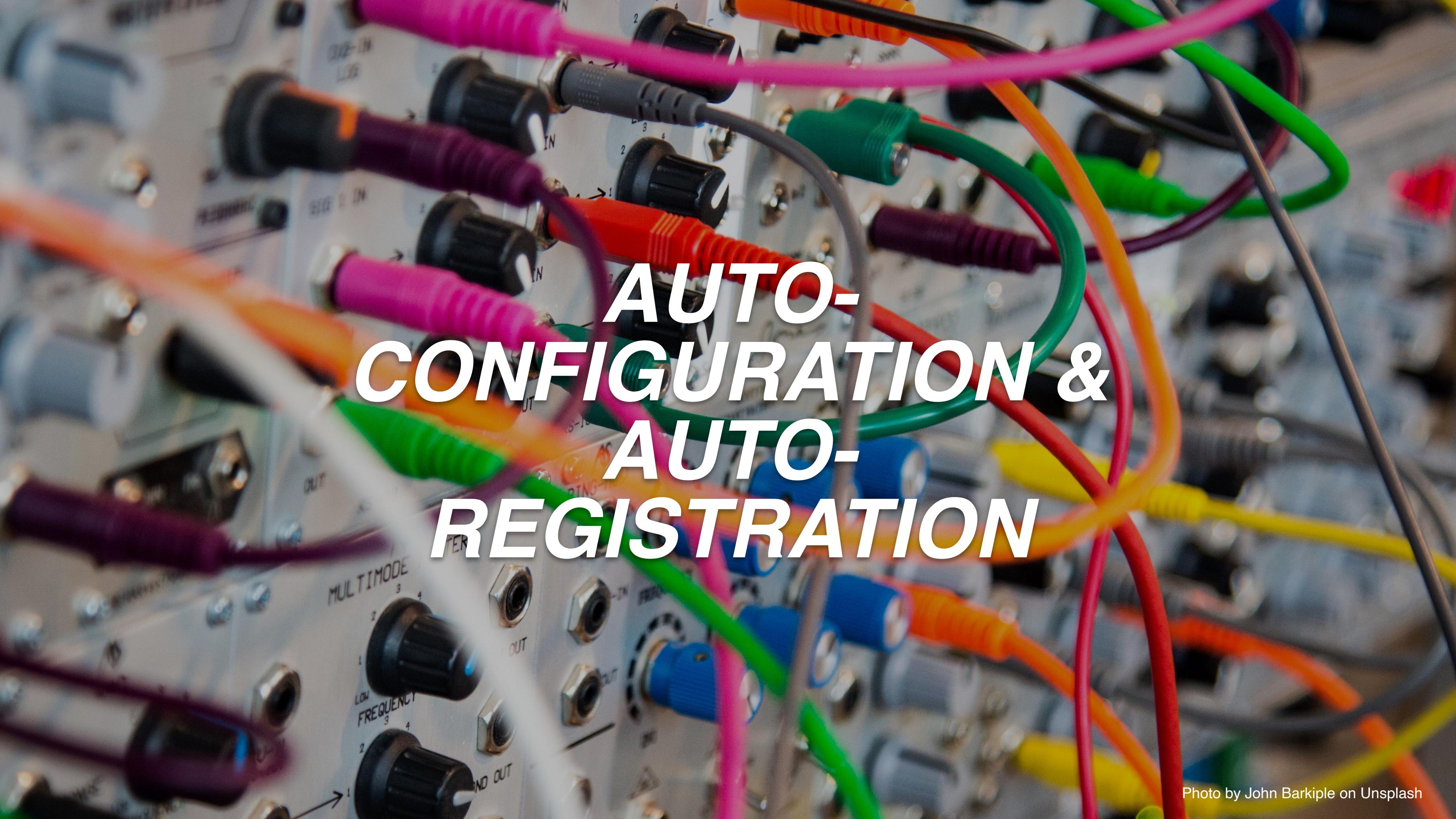


```
'min_column' => [
    'title' => 'A min length field',
    'config' => [
        'type' => 'input',
        'min' => 5,
    ],
],
```

ELEMENT BROWSER ENTRY POINTS



```
'latest_news' => [
    'label' => 'Latest News',
    'config' => [
        'type' => 'group',
        'allowed' => 'tx_news_domain_model_news',
        'elementBrowserEntryPoints' => [
            'tx_news_domain_model_news' => 123,
        ],
    ],
],
```



AUTO- CONFIGURATION & AUTO- REGISTRATION

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CONFIG-FILES

- Registration during build-time
- Dependency injection is enabled automatically
- Make services request aware
- Configuration module displays registered services

- Element browsers
 - Reports and Statuses
 - Backend toolbar items
 - Context menu item providers
 - Linkvalidator linktypes
-
- Extbase type converters
 - Content objects

Dashboard

Web

Page

View

List

Forms



BACKEND MODULES

Enter search term



TYPO3 v11 - Warp Speed

The Motion Picture

The Wrath of Khan

The Search for Spock

The Voyage Home

The Final Frontier

The Undiscovered Country

Simplified Module Registration API

- `$TBE_MODULES` and *ModuleLoader* removed
- Registration during **build-time** in *ModuleRegistry*
- Configuration in *Configuration/Backend/Modules.php*
- Access via *ModuleProvider API*
- Access to module information via *ModuleInterface*
- Module object (*ModuleInterface*) in PSR-7 Request
- *PSR-14 BeforeModuleCreationEvent*



```
ExtensionManagementUtility::addModule(  
    'web',  
    'module',  
    'top',  
    '',  
    [  
        'routeTarget' => MyModuleController::class . '::handleRequest',  
        'name' => 'web_module',  
        'access' => 'admin',  
        'workspaces' => 'online',  
        'iconIdentifier' => 'module-example',  
        'labels' => 'LLL:EXT:example/Resources/Private/Language/locallang_mod.xlf',  
        'navigationComponentId' => 'TYP03/CMS/Backend/PageTree/PageTreeElement',  
    ]  
);
```



```
return [
    'web_module' => [
        'parent' => 'web',
        'position' => ['before' => '*'],
        'access' => 'admin',
        'workspaces' => 'live',
        'path' => '/module/web/example',
        'iconIdentifier' => 'module-example',
        'navigationComponent' => 'TYPO3/CMS/Backend/PageTree/PageTreeElement',
        'labels' => 'LLL:EXT:example/Resources/Private/Language/locallang_mod.xlf',
        'routes' => [
            '_default' => [
                'target' => MyExampleModuleController::class . '::handleRequest',
            ],
        ],
    ],
];
```



```
'extensionName' => 'MyExtbaseExtension',
'controllerActions' => [
    MyExtbaseExtensionModuleController::class => [
        'index',
        'detail'
    ],
],
```

- standalone
- appearance
- component
- `inheritNavigationComponentFromMainModule`



```
final class AddDefaultModuleIcon
{
    public function __invoke(BeforeModuleCreationEvent $event)
    {
        if (!$event->hasConfigurationValue('controllerActions')
            || $event->getConfigurationValue('icon')
            || $event->getConfigurationValue('iconIdentifier'))
        ) {
            // Either no extbase module or icon / iconIdentifier is already set
            return;
        }

        $event->setConfigurationValue('icon', 'EXT:extbase/Resources/Public/Icons/Extension.svg');
    }
}
```

Aliases

- Change module identifier while providing compatibility
- Upgrade Wizard migrates user and group permissions
- Displayed in configuration module
- Available for **all** backend routes



```
return [
    'new_name' => [
        'parent' => 'web',
        ...
        'aliases' => [ 'web_module' ],
    ],
];
```

ModuleData API

- Stores user related module state
- Definition of allowed GET/POST parameters
- ModuleData object available in PSR-7 Request



```
return [
    'new_name' => [
        'parent' => 'web',
        ...
        'moduleData' => [
            'language' => 0,
            'showHiddenElements' => true,
        ],
    ],
];
```



```
$moduleData = $request->getAttribute('moduleData');

$allowedValues = ['foo', 'bar'];
$moduleData->clean('property', $allowedValues);
```

Module Functions / Third level Modules

- ***\$TBE_MODULES_EXT removed***
- Registration is the same as for “main” modules
- Same feature set / functionality as for “main” modules
- Definition of access permissions possible



```
ExtensionManagementUtility::insertModuleFunction(  
    'new_name',  
    MyThirdLevelController::class,  
    '',  
    'LLL:EXT:extkey/Resources/Private/Language/locallang.xlf:mod_title'  
);
```



```
'new_name_third' => [
    'parent' => 'new_name',
    'path' => '/module/new/name/thrid',
    'labels' => [
        'title' => 'LLL:EXT:extkey/Resources/Private/Language/locallang.xlf:mod_title',
    ],
    'routes' => [
        '_default' => [
            'target' => MyThirdLevelController::class . '::handleRequest',
        ],
    ],
    'moduleData' => [
        'someData' => 0,
    ],
],
```

BACKEND TEMPLATES

Simplified ModuleTemplate API

- Rendering of backend module content frame
 - Retrieved by factory method
-
- Auto-discover of template paths
 - Auto-creation of the PSR-7 Response



```
$moduleTemplate = $this->moduleTemplateFactory->create($request);
$view = GeneralUtility::makeInstance(StandaloneView::class);
$view->setTemplateRootPaths(['EXT:my_ext/Resources/Private/Templates']);
$view->assign('content', 'My module content');
$moduleTemplate->setContent($view->render('MyModuleTemplate'));
return $this->responseFactory->createResponse()
    ->withHeader('Content-Type', 'text/html; charset=utf-8')
    ->withBody($this->streamFactory->createStream($moduleTemplate->renderContent()));
```



```
$moduleTemplate = $this->moduleTemplateFactory->create($request);
$moduleTemplate->assign( 'content', 'My module content');
$moduleTemplate->renderResponse( 'MyModuleTemplate');
```

Template Overrides

- Override fluid templates in the backend
- Configuration via TSconfig
- Based on composer (package) name
- Replaces overrides via TypoScript / Extbase
- Use with care



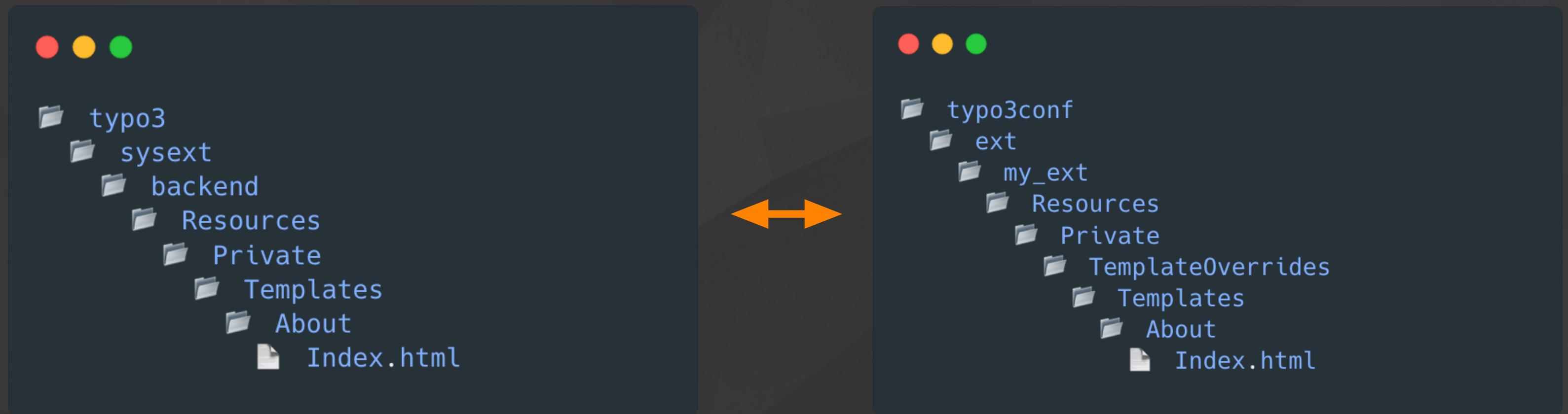
```
templates.<target-package-name>.<identifier> = <source-package-name>:<template-override-path>
```



```
templates.typo3/cms-backend.1659794217 = o-ba/my-ext:Resources/Private/TemplateOverrides
```



```
page.templates.typo3/cms-backend.1659794217 = o-ba/my-ext:Resources/Private/TemplateOverrides
```



- Works for Layouts and Partials as well
- Replaces the whole file - no merging
- Definition with highest numerical identifier is used
- Based on the low level *BackendViewFactory*
- Package name available as route option

**WHAT'S
NEXT?**



TCA TYPE “FILES”

ANYTHING *MISSING?*

- #typo3-cms-coredev
- forge.typo3.org

THANK YOU!

QUESTIONS?