Write a datatype

The PHP side of a custom datatype - the eZDataType methods grouped by when the kernel calls them, registration with eZDataType::register(), storage in data_text, data_int and data_float or a table of your own, string...

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This page is for PHP developers who write a new field type for content classes. A datatype is a class extending `eZDataType` (`kernel/classes/ezdatatype.php`) plus edit and view templates. The complete working example, with its templates and registration, is on Writing a custom datatype; this page maps the PHP methods to the moments the kernel calls them, so you know which to override.

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Registration

PHP

```php
class acmeColorType extends eZDataType
{
    const DATA_TYPE_STRING = 'acmecolor';

    public function __construct()
    {
        parent::__construct( self::DATA_TYPE_STRING, ezpI18n::tr( 'extension/acmereport', 'Color'
 ),
                             array( 'serialize_supported' => true ) );
    }
    // ... the methods below
}

eZDataType::register( acmeColorType::DATA_TYPE_STRING, 'acmeColorType' );
```

The file is `extension/acmereport/datatypes/acmecolor/acmecolortype.php`, found through `content.ini`:

INI

```
<?php /* #?ini charset="utf-8"?
[DataTypeSettings]
ExtensionDirectories[]=acmereport
AvailableDataTypes[]=acmecolor
*/ ?>
```

The type string is stored in every attribute of this type, forever: choose it once, prefixed, lower case.

The methods by moment

Moment	Methods
an editor submits the edit form	`validateObjectAttributeHTTPInput()`, then `fetchObjectAttributeHTTPInput()`; `customObjectAttributeHTTPAction()` for extra buttons
the attribute is stored	`storeObjectAttribute()`
a new version or translation is created	`initializeObjectAttribute()`, `postInitializeObjectAttribute()`
the object is published	`onPublish()`
templates read the value	`objectAttributeContent()` (`$attribute.content`), `hasObjectAttributeContent()` (`$attribute.has_content`), `title()`
the search index is built	`isIndexable()`, `metaData()`
lists are sorted by the attribute	`sortKey()`, `sortKeyType()` (`'string'` or `'int'`)
a version is removed, or the object goes to the trash	`deleteStoredObjectAttribute()`, `trashStoredObjectAttribute()`, `restoreTrashedObjectAttribute()`
export and import	`toString()`, `fromString()`, `serializeContentObjectAttribute()`, `unserializeContentObjectAttribute()`
the class is edited	`validateClassAttributeHTTPInput()`, `fetchClassAttributeHTTPInput()`, `initializeClassAttribute()`, `storeClassAttribute()`

`validate...` returns `eZInputValidator::STATE_ACCEPTED`, `STATE_INVALID` (after `setValidationError()`) or `STATE_INTERMEDIATE`. `fetch...` returns `true` when it stored a value. The life cycle in detail: The datatype life cycle.

Storage

Where	For
`data_text`, `data_int`, `data_float` of `ezcontentobject_attribute`	simple values, one per attribute version and language
`data_text1` ... `data_int1` ... of `ezcontentclass_attribute`	settings of the class attribute
a table of your own, keyed by attribute id and version	structured values; remove rows in `deleteStoredObjectAttribute()`

Every version and translation has its own attribute row, so a value stored elsewhere must be

keyed by attribute id **and** version, and copied in `initializeObjectAttribute()` when a new version starts from an old one.

String, package and search forms

- `toString()` and `fromString()` are the plain text form used by imports, the REST API and scripts; make them round trip: `fromString( toString( x ) )` gives `x`.
- `serializeContentObjectAttribute()` and `unserializeContentObjectAttribute()` write and read the value in content packages; set `'serialize_supported' => true` in the constructor when you implement them.
- `metaData()` is the text the search engine indexes; return the words a visitor would search for.

Class attribute settings

A datatype with options per class attribute (a default color, a list of allowed values) reads them from the class edit form in `fetchClassAttributeHTTPInput()`, stores them in `data_text1` and friends, and shows them in its class templates `class/datatype/edit/<type>.tpl` and `class/datatype/view/<type>.tpl`.

PHP points to watch

- **Match the parent's signatures exactly.** A parameter less, or a by-reference marker that the parent does not have, is a fatal error when the class loads, and every page that touches content breaks (PHP 8 migration notes for your code).
- **Declare properties** your subclass uses; PHP 8.2 deprecates dynamic properties.
- `null` **from the database.** `data_text` can be `null`; cast before string functions (`(string)`).
- **Escape in templates**, not in `objectAttributeContent()`: the content is data, `|wash` makes it safe in HTML.

Testing a datatype

1. DB-less: `toString()`/`fromString()` round trips and the validation rules in a separate validator class (PHPUnit without a database).
2. On an installation: add an attribute to a test class; create, edit, translate, copy, move to the trash, restore and remove objects; export and import a package.
3. Check the search index and sorting if you implemented them.

Related pages

- Datatypes (extension developers)
- eZDataType API
- Datatype pattern
- Free documentation: this page is free to copy, translate and improve under the GNU FDL 1.3.

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