1x INTERNET

Leveraging the Drupal Core Entity API for your custom Entity Types

July 2023

Hristo Chonov @ 1xINTERNET GmbH

https://1xinter.net/Zxv

Hristo Chonov

Studied Computer Science at TU Darmstadt, Germany

Co-Maintainer for Drupal 8/9/10 Core Entity API

Author / maintainer of multiple contrib extensions for Drupal
- Autosave
- Conflict 2.x
- Prefetch Cache

Lead Software Engineer at 1xINTERNET GmbH

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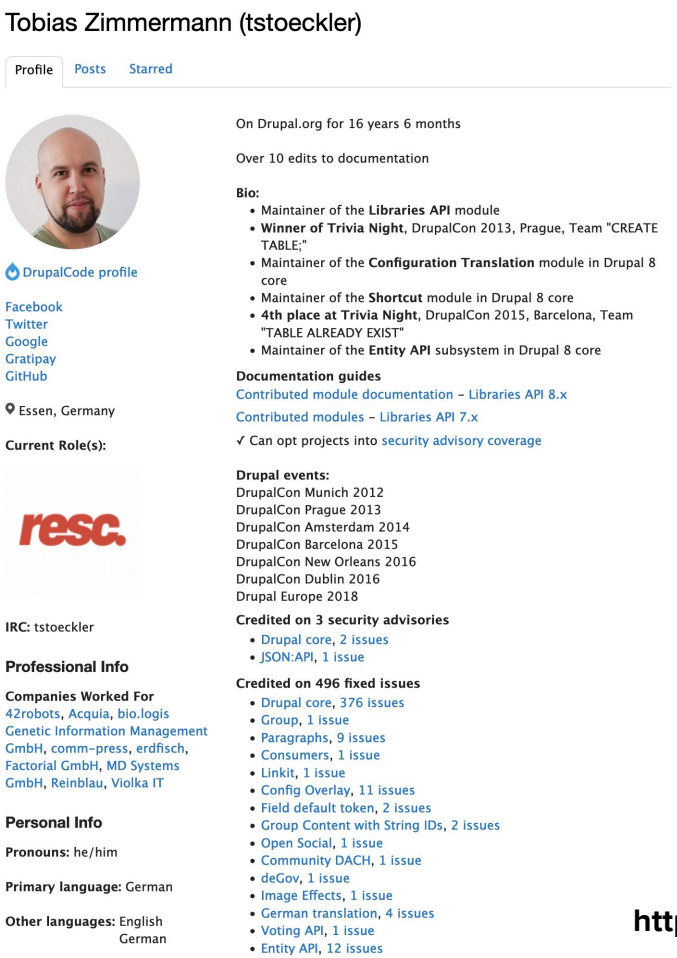
Credits

Entity Type Walkthrough

https://git.io/d8entity



Tobias Zimmermann (tstoeckler)

Profile | Posts | Starred

On Drupal.org for 16 years 6 months

Over 10 edits to documentation

Bio:

- Maintainer of the **Libraries API** module
- **Winner of Trivia Night**, DrupalCon 2013, Prague, Team "CREATE TABLE;"
- Maintainer of the **Configuration Translation** module in Drupal 8 core
- Maintainer of the **Shortcut** module in Drupal 8 core
- **4th place at Trivia Night**, DrupalCon 2015, Barcelona, Team "TABLE ALREADY EXIST"
- Maintainer of the **Entity API** subsystem in Drupal 8 core

Documentation guides

Contributed module documentation – Libraries API 8.x

Contributed modules – Libraries API 7.x

✓ Can opt projects into security advisory coverage

Drupal events:
DrupalCon Munich 2012
DrupalCon Prague 2013
DrupalCon Amsterdam 2014
DrupalCon Barcelona 2015
DrupalCon New Orleans 2016
DrupalCon Dublin 2016
Drupal Europe 2018

Credited on 3 security advisories

- Drupal core, 2 issues
- JSON:API, 1 issue

Credited on 496 fixed issues

- Drupal core, 376 issues
- Group, 1 issue
- Paragraphs, 9 issues
- Consumers, 1 issue
- Linkit, 1 issue
- Config Overlay, 11 issues
- Field default token, 2 issues
- Group Content with String IDs, 2 issues
- Open Social, 1 issue
- Community DACH, 1 issue
- deGov, 1 issue
- Image Effects, 1 issue
- German translation, 4 issues
- Voting API, 1 issue
- Entity API, 12 issues

DrupalCode profile

Facebook
Twitter
Google
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GitHub

Essen, Germany

Current Role(s):

resc.

IRC: tstoeckler

Professional Info

Companies Worked For
42robots, Acquia, bio.logis Genetic Information Management GmbH, comm-press, erdfisch, Factorial GmbH, MD Systems GmbH, Reinblau, Violka IT

Personal Info

Pronouns: he/him

Primary language: German

Other languages: English
German

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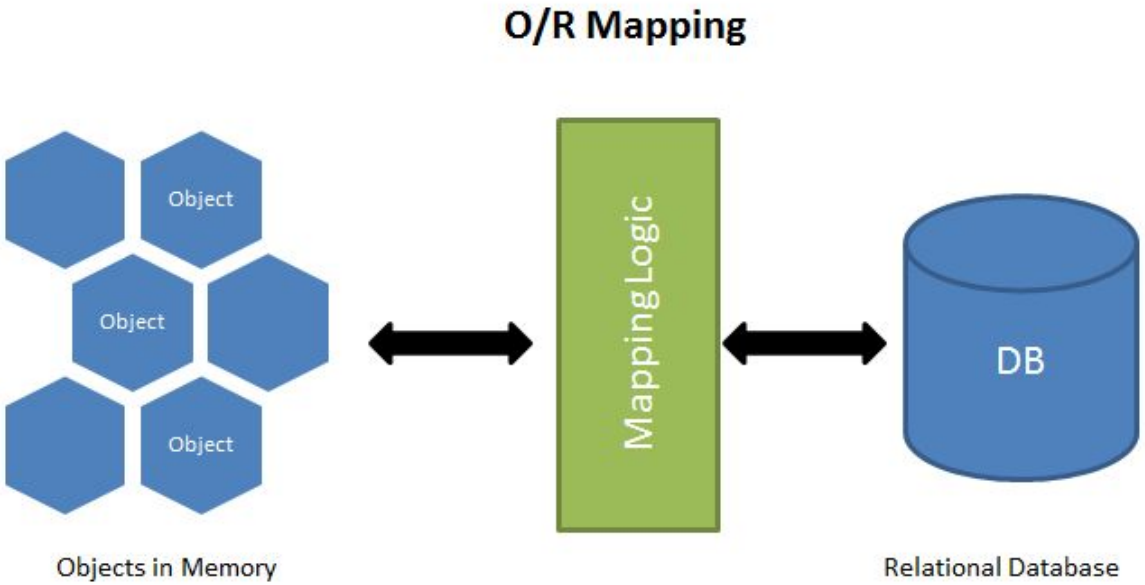
What is ORM?



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Drupal - Entity API

- ORM implementation

- supporting different variants of the same entity type

- supporting fields/properties defined in code

- supporting custom defined fields through configuration

- supporting translatability for each field

- supporting versions / revisions

Basics

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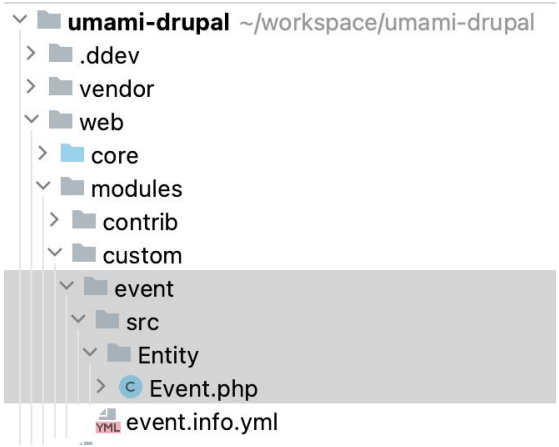

Event.php

```php
<?php

namespace Drupal\event\Entity;

use Drupal\Core\Entity\ContentEntityBase;

/**
 * @ContentEntityType(
 *   id = "event",
 *   label = @Translation("Event"),
 *   base_table = "event",
 *   entity_keys = {
 *     "id" = "id",
 *     "uuid" = "uuid",
 *   },
 * )
 */
class Event extends ContentEntityBase { }
```

event	/* The base table for event entities. */
uuid	varchar(128)
id	int(10) unsigned

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Basics...

1x

```php
<?php

use Drupal\event\Entity\Event;

$event = Event::create();
$event->save();
```

event

1 row | Tx: Auto | DDL

WHERE

	id	uuid
1	1	6fd5e14f-6ba8-464c-b10a-1274c8557958

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Entity Keys

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```php
<?php

namespace Drupal\event\Entity;

use Drupal\Core\Entity\ContentEntityBase;

/**
 * @ContentEntityType(
 *   id = "event",
 *   label = @Translation("Event"),
 *   base_table = "event",
 *   entity_keys = {
 *     "id" = "id",
 *     "uuid" = "uuid",
 *     "owner" = "author",
 *     "published" = "published",
 *   },
 * )
 */
```

event /* The base table for event entities. */	
uuid	varchar(128)
author /* The ID of the target entity. */	int(10) unsigned
published	tinyint(4)
id	int(10) unsigned

```php
25  class Event extends ContentEntityBase implements EntityOwnerInterface, EntityPublishedInterface {
26
27    use EntityOwnerTrait, EntityPublishedTrait;
28
29    /**
30     * {@inheritdoc}
31     */
32    public static function baseFieldDefinitions(EntityTypeInterface $entity_type) {
33      // Get the field definitions for 'id' and 'uuid' from the parent.
34      $fields = parent::baseFieldDefinitions($entity_type);
35
36      // Get the field definitions for 'author' and 'published' from the traits.
37      $fields += static::ownerBaseFieldDefinitions($entity_type);
38      $fields += static::publishedBaseFieldDefinitions($entity_type);
39
40      return $fields;
41    }
42
43  }
```

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Base fields

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```
/**
 * @ContentEntityType(
 *   id = "event",
 *   label = @Translation("Event"),
 *   base_table = "event",
 *   entity_keys = {
 *     "id" = "id",
 *     "uuid" = "uuid",
 *     "owner" = "author",
 *     "published" = "published",
 *     "label" => "title",
 *   },
 * )
 */
```

```
public static function baseFieldDefinitions(EntityTyp
  // Get the field definitions for 'id' and 'uuid' fr
  $fields = parent::baseFieldDefinitions($entity_type

  // Get the field definitions for 'author' and 'publ
  $fields += static::ownerBaseFieldDefinitions($entity_type);
  $fields += static::publishedBaseFieldDefinitions($entity_type);

  $fields['title'] = BaseFieldDefinition::create( type: 'string')
    ->setLabel(t( string: 'Title'))
    ->setRequired( required: TRUE);

  $fields['date'] = BaseFieldDefinition::create( type: 'datetime')
    ->setLabel(t( string: 'Date'))
    ->setRequired( required: TRUE);

  $fields['description'] = BaseFieldDefinition::create( type: 'text_long')
    ->setLabel(t( string: 'Description'));

  return $fields;
}
```

event /* The base table for event entities. */

uuid	varchar(128)
author /* The ID of the target entity. */	int(10) unsigned
published	tinyint(4)
title	varchar(255)
date /* The date value. */	varchar(20)
description__value	longtext
description__format	varchar(255)
id	int(10) unsigned

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Creating and saving an Entity

```php
$event = Event::create([
  'title' => 'Leveraging the Drupal Core Entity API for your custom entity types',
  'date' => '2023-07-21T10:45:00',
  'description' => [
    'value' => '<p>This session is a walk-through defining a custom entity type. Some of the major topics will be about:</p>
                <p>
                  <ul>
                    <li>Bundles</li>
                    <li>Revision and translation support</li>
                    <li>Configuring the form display of the entity type</li>
                    <li>Configuring the view display of</li>
                    <li>Constraints and validation</li>
                    <li>Access control</li>
                    <li>Entity queries</li>
                    <li>Configuration vs content entity</li>
                  </ul>
                </p>',
    'format' => 'restricted_html',
  ],
]);
$event->save();
```

event

1 row | Tx: Auto | DDL

WHERE | ORDER BY

	1
id	1
uuid	b61526f7-54f0-4ece-bb0b-8d6e5f04a7a7
author	0
published	1
title	Leveraging the Drupal Core Entity API for your c…
date	2023-07-21T10:45:00
description__value	<p>This session is a walk-through defining a cus…
description__format	restricted_html

Base fields - Getters and Setters

```php
/**
 * Returns the title of the event.
 *
 * @return string
 *   The event title.
 */
public function getTitle() {
  return $this->get('title')->value;
}
```

```php
/**
 * Sets the title of the event.
 *
 * @param string $title
 *   The title.
 *
 * @return $this
 */
public function setTitle($title) {
  return $this->set( name: 'title', $title);
}
```

```
> $event->get('title');
= Drupal\Core\Field\FieldItemList {#7951
    0: Drupal\Core\Field\Plugin\Field\FieldType\StringItem {#7955},
  }

> $event->get('title')->value;
= "Leveraging the Drupal Core Entity API for your custom entity types"
```

Entity view

- requires a route on which the entity's field values are output on a given path

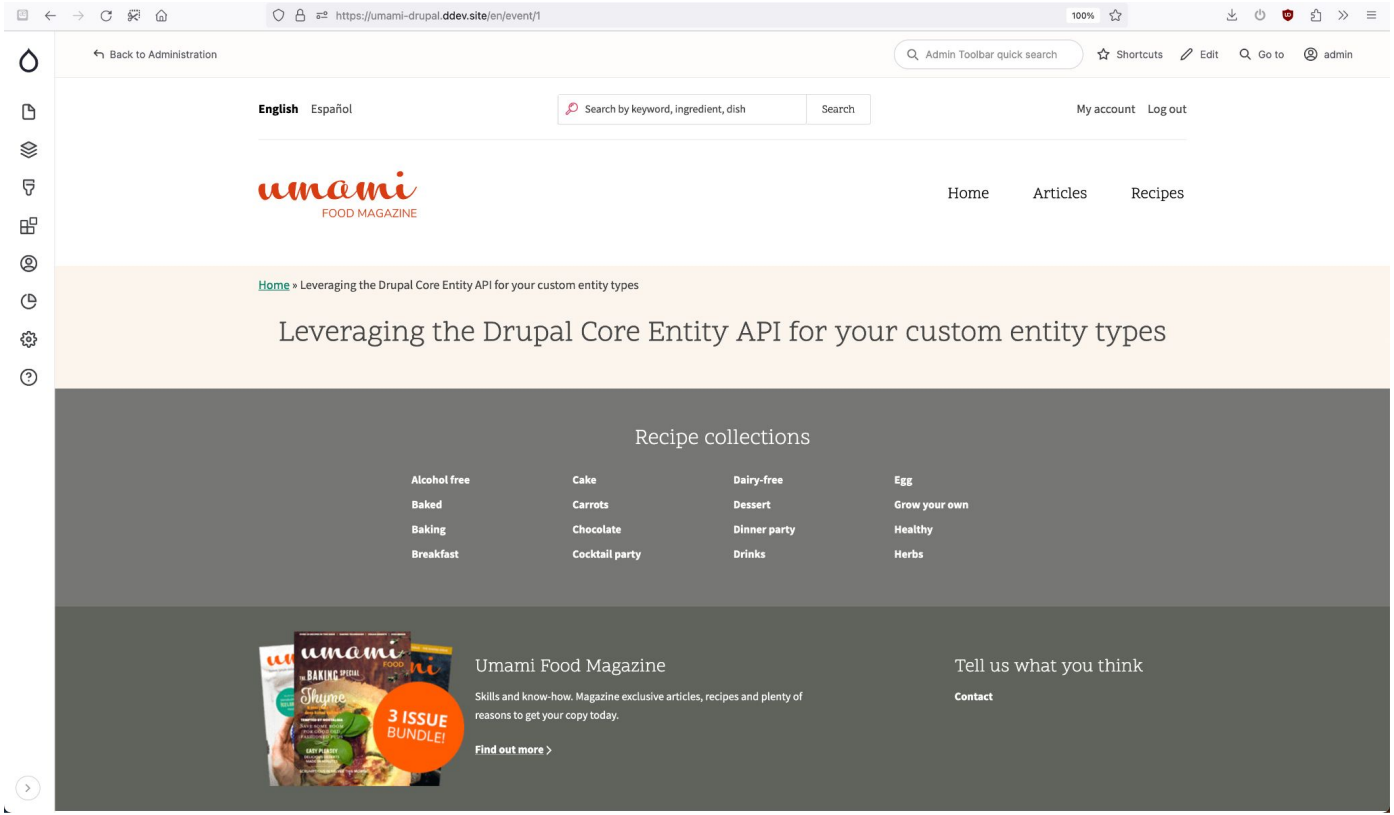
- can be automated by amending the entity annotation

- contributed Entity API provides various enhancements to the core Entity API. One such enhancement is the ability to more easily provide permissions for entity types.

https://www.drupal.org/project/entity

```
* @ContentEntityType(
*   id = "event",
*   label = @Translation("Event"),
*   base_table = "event",
*   entity_keys = {
*     "id" = "id",
*     "uuid" = "uuid",
*     "owner" = "author",
*     "published" = "published",
*     "label" = "title",
*   },
*   handlers = {
*     "access" = "Drupal\entity\EntityAccessControlHandler",
*     "permission_provider" = "Drupal\entity\EntityPermissionProvider",
*     "route_provider" = {
*       "default" = "Drupal\entity\Routing\DefaultHtmlRouteProvider",
*     },
*   },
*   links = {
*     "canonical" = "/event/{event}",
*   },
*   admin_permission = "administer event",
* )
*/
```

Entity view...


https://umami-drupal.ddev.site/en/event/1
100%
Back to Administration
Admin Toolbar quick search
Shortcuts
Edit
Go to
admin
English Español
Search by keyword, ingredient, dish
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Entity view...

```php
$fields['date'] = BaseFieldDefinition::create( type: 'datetime')
  ->setLabel(t( string: 'Date'))
  ->setRequired( required: TRUE)
  ->setDisplayOptions( display_context: 'view', [
    'label' => 'inline',
    'settings' => [
      'format_type' => 'short',
    ],
    'weight' => 0,
  ]);
```

```php
$fields['description'] = BaseFieldDefinition
  ->setLabel(t( string: 'Description'))
  ->setDisplayOptions( display_context: 'view',
    'label' => 'hidden',
    'weight' => 10,
  ]);
```

umami
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Home » Leveraging the Drupal Core Entity API for your custom entity types

Leveraging the Drupal Core Entity API for your custom entity types

Date: 07/21/2023 - 13:45

This session is a walk-through defining a custom entity type. Some of the major topics will be about:

- Bundles
- Revision and translation support
- Configuring the form display of the entity type
- Configuring the view display of the entity type
- Constraints and validation
- Access control
- Entity queries
- Configuration vs content entity types

Entity form

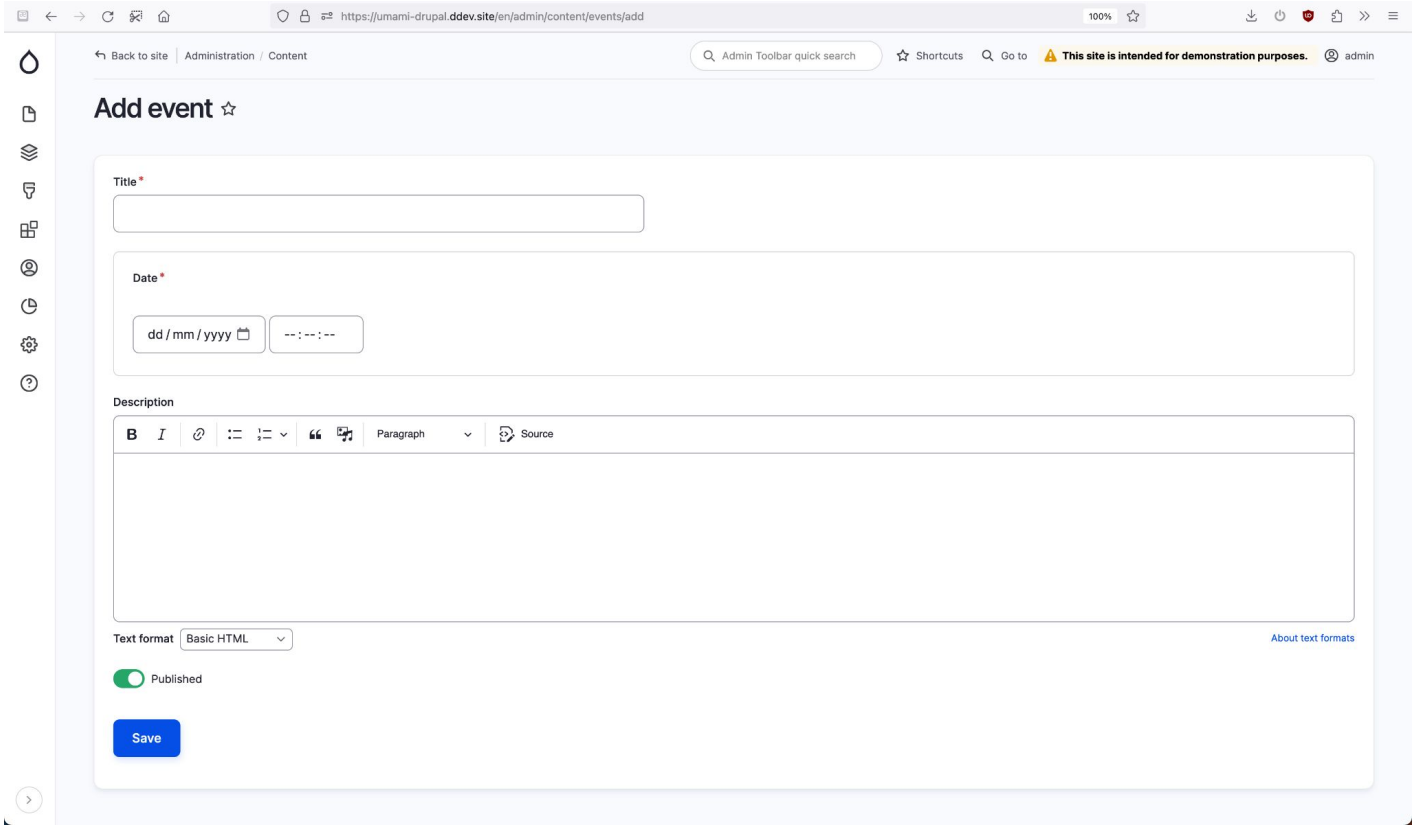
```
*   handlers = {
*     "access" = "Drupal\entity\EntityAccessControlHandler",
*     "permission_provider" = "Drupal\entity\EntityPermissionProvider",
*     "route_provider" = {
*       "default" = "Drupal\entity\Routing\DefaultHtmlRouteProvider",
*     },
*     "form" = {
*       "add" = "Drupal\Core\Entity\ContentEntityForm",
*       "edit" = "Drupal\Core\Entity\ContentEntityForm",
*       "delete" = "Drupal\Core\Entity\ContentEntityDeleteForm",
*     },
```

```
*   links = {
*     "canonical" = "/event/{event}",
*     "add-form" = "/admin/content/events/add",
*     "edit-form" = "/admin/content/events/manage/{event}",
*     "delete-form" = "/admin/content/events/manage/{event}/delete",
*   },
```

```
$fields['title'] = BaseFieldDefinition::create( type: 'string')
  ->setLabel(t( string: 'Title'))
  ->setRequired( required: TRUE)
  ->setDisplayOptions( display_context: 'form', ['weight' => 0]);

$fields['date'] = BaseFieldDefinition::create( type: 'datetime')
  ->setLabel(t( string: 'Date'))
  ->setRequired( required: TRUE)
  ->setDisplayOptions( display_context: 'view', [
    'label' => 'inline',
    'settings' => [
      'format_type' => 'short',
    ],
    'weight' => 0,
  ])
  ->setDisplayOptions( display_context: 'form', ['weight' => 10]);

$fields['description'] = BaseFieldDefinition::create( type: 'text_long')
  ->setLabel(t( string: 'Description'))
  ->setDisplayOptions( display_context: 'view', [
    'label' => 'hidden',
    'weight' => 10,
  ])
  ->setDisplayOptions( display_context: 'form', ['weight' => 20]);

$fields['published']->setDisplayOptions( display_context: 'form', [
  'settings' => [
    'display_label' => TRUE,
  ],
  'weight' => 30,
]);
```

1x

Entity form...


https://umami-drupal.ddev.site/en/admin/content/events/add
100%
Back to site
Administration
Content
Admin Toolbar quick search
Shortcuts
Go to
This site is intended for demonstration purposes.
admin
Add event
Title *
Date *
dd / mm / yyyy
--:--:--
Description
Paragraph
Source
Text format
Basic HTML
About text formats
Published
Save

Entity listing

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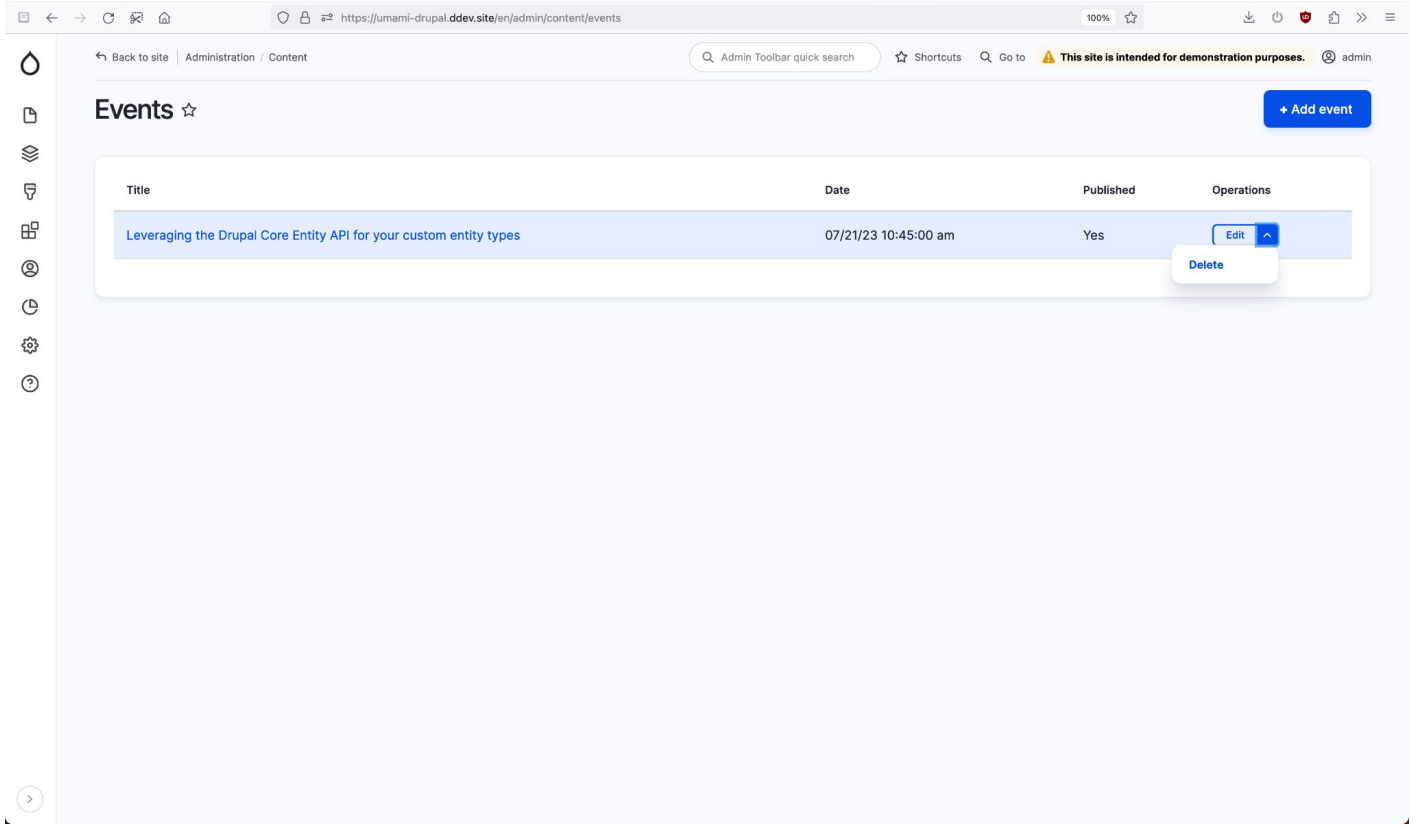
```php
<?php

namespace Drupal\event\Controller;

use Drupal\Core\Entity\EntityInterface;
use Drupal\Core\Entity\EntityListBuilder;

/**
 * Defines an implementation to build a listing of event entities.
 */
class EventListBuilder extends EntityListBuilder {

  /** {@inheritdoc} ...*/
  public function buildHeader() {
    $header = [];
    $header['title'] = $this->t( string: 'Title');
    $header['date'] = $this->t( string: 'Date');
    $header['published'] = $this->t( string: 'Published');
    return $header + parent::buildHeader();
  }

  /** {@inheritdoc} ...*/
  public function buildRow(EntityInterface $event) {
    /** @var \Drupal\event\Entity\Event $event */
    $row = [];
    $row['title'] = $event->toLink();
    $row['date'] = $event->date->date->format('m/d/y h:i:s a');
    $row['published'] = $event->isPublished() ? $this->t( string: 'Yes') : $this->t( string: 'No');
    return $row + parent::buildRow($event);
  }

}
```

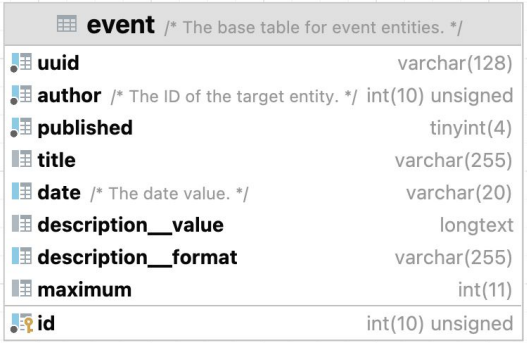
```php
/**
 * @ContentEntityType(
 *   id = "event",
 *   label = @Translation("Event"),
 *   label_collection = @Translation("Events"),
 *   label_singular = @Translation("event"),
 *   label_plural = @Translation("events"),
 *   base_table = "event",
 *   links = {
 *     "canonical" = "/event/{event}",
 *     "add-form" = "/admin/content/events/add",
 *     "edit-form" = "/admin/content/events/manage
 *     "delete-form" = "/admin/content/events/mana
 *     "collection" = "/admin/content/events",
 *   },
 *   handlers = {
 *     "access" = "Drupal\entity\EntityAccessControlHandler",
 *     "permission_provider" = "Drupal\entity\EntityPermissionProvider",
 *     "route_provider" = {
 *       "default" = "Drupal\entity\Routing\DefaultHtmlRouteProvider",
 *     },
 *     "form" = {
 *       "add" = "Drupal\Core\Entity\ContentEntityForm",
 *       "edit" = "Drupal\Core\Entity\ContentEntityForm",
 *       "delete" = "Drupal\Core\Entity\ContentEntityDeleteForm",
 *     },
 *     "list_builder" = "Drupal\event\Controller\EventListBuilder",
 *     "local_action_provider" = {
 *       "collection" = "Drupal\entity\Menu\EntityCollectionLocalActionProvider",
 *     },
 *   },
```

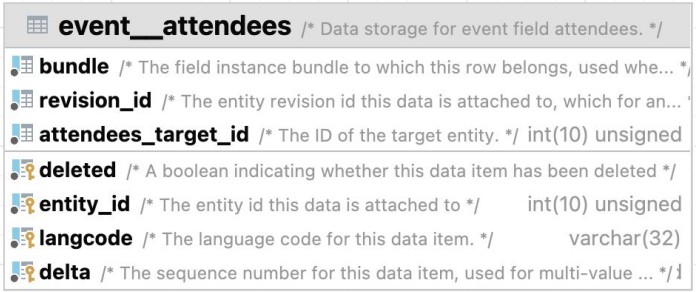
Entity listing



Entity constraints and validation

```php
$fields['maximum'] = BaseFieldDefinition::create( type: 'integer')
  ->setLabel(t( string: 'Maximum number of attendees'))
  ->setSetting( setting_name: 'min',  value: 1)
  ->setDisplayOptions( display_context: 'form', ['weight' => 23]);

$fields['attendees'] = BaseFieldDefinition::create( type: 'entity_reference')
  ->setLabel(t( string: 'Attendees'))
  ->setSetting( setting_name: 'target_type',  value: 'user')
  ->setCardinality( cardinality: FieldStorageDefinitionInterface::CARDINALITY_UNLIMITED)
  ->setDisplayOptions( display_context: 'view', ['weight' => 20])
  ->setDisplayOptions( display_context: 'form', ['weight' => 27]);
```





Entity constraints and validation

AttendeeCountConstraint.php

```php
<?php

namespace Drupal\event\Plugin\Validation\Constraint;

use Symfony\Component\Validator\Constraint;

/**
 * @Constraint(
 *   id = "AttendeeCount",
 *   label = @Translation("Attendee count"),
 * )
 */
class AttendeeCountConstraint extends Constraint {

  /**
   * @var string
   */
  public $message = 'The event %title only allows %maximum attendees.';

}
```

```php
$fields['attendees'] = BaseFieldDefinition::create( type: 'entity_reference')
  ->setLabel(t( string: 'Attendees'))
  ->setSetting( setting_name: 'target_type', value: 'user')
  ->setCardinality( cardinality: FieldStorageDefinitionInterface::CARDINALITY_UNL
  ->addConstraint( constraint_name: 'AttendeeCount')
  ->setDisplayOptions( display_context: 'view', ['weight' => 20])
  ->setDisplayOptions( display_context: 'form', ['weight' => 27]);
```

AttendeeCountConstraintValidator.php

```php
<?php

namespace Drupal\event\Plugin\Validation\Constraint;

use Symfony\Component\Validator\Constraint;
use Symfony\Component\Validator\ConstraintValidator;

class AttendeeCountConstraintValidator extends ConstraintValidator {

  public function validate($value, Constraint $constraint) {
    /* @var \Drupal\Core\Field\FieldItemListInterface $value */
    /* @var \Drupal\event\Plugin\Validation\Constraint\AttendeeCountConstraint $constraint */
    /* @var \Drupal\Core\Entity\Plugin\DataType\EntityAdapter $adapter */
    $adapter = $value->getParent();
    /* @var \Drupal\event\Entity\Event $event */
    $event = $adapter->getEntity();
    $maximum = $event->maximum->value;
    if (count($value) > $maximum) {
      $this->context->buildViolation($constraint->message)
        ->setParameter('%title', $event->getTitle())
        ->setParameter('%maximum', $maximum)
        ->addViolation();
    }
  }

}
```

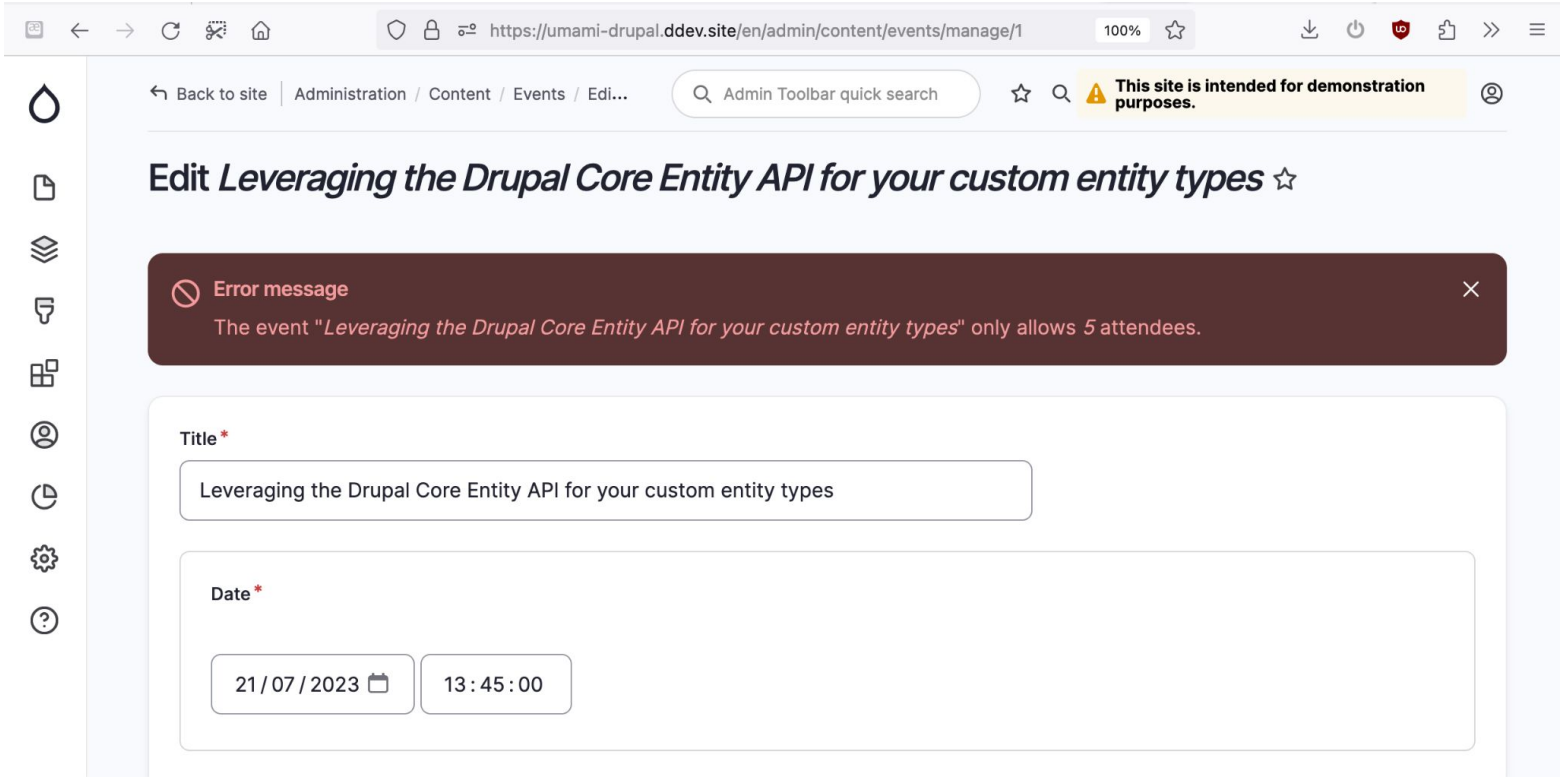
Entity constraints and validation

1x

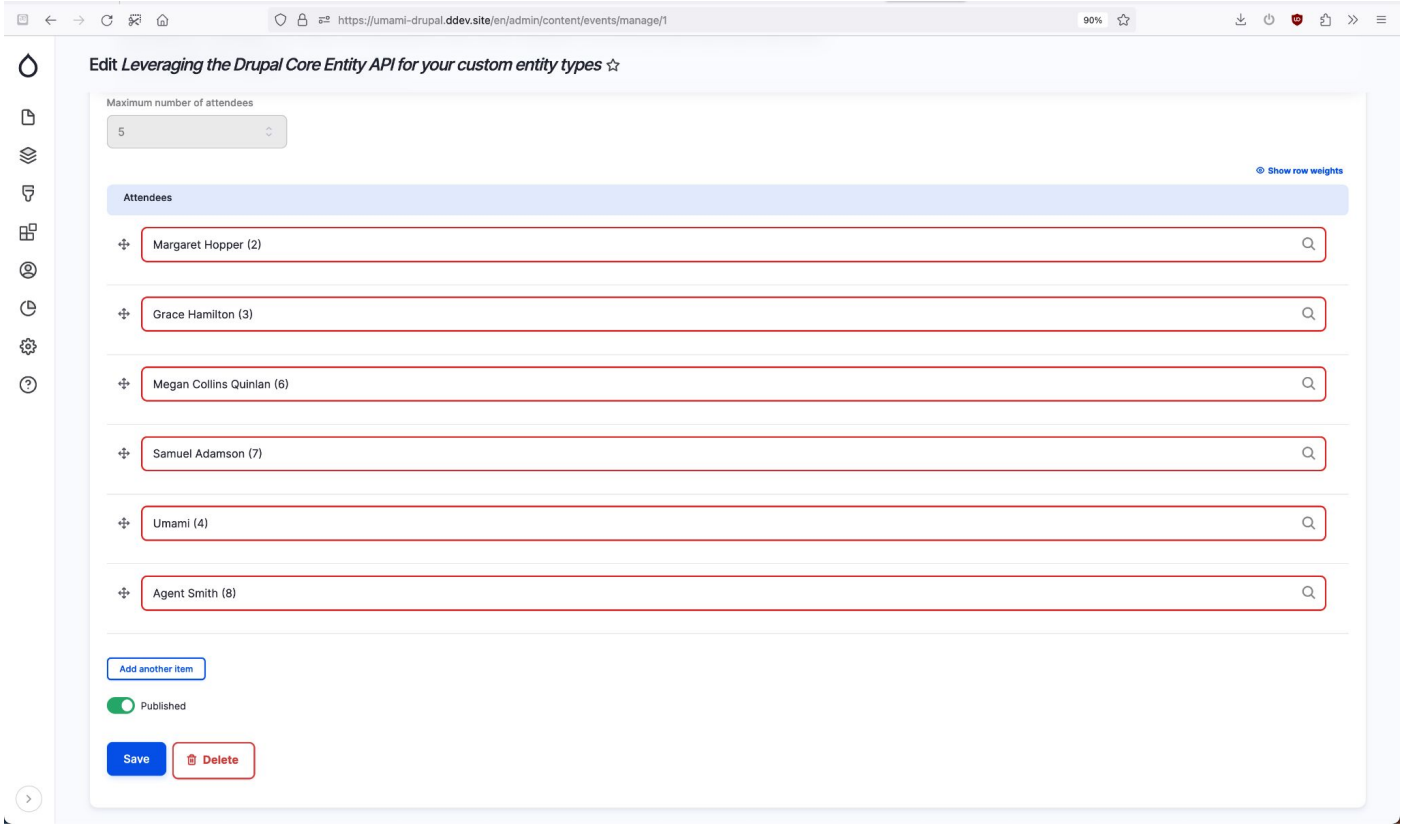
event.module

```php
<?php

use Drupal\Core\Form\FormStateInterface;

/**
 * Implements hook_form_BASE_FORM_ID_alter() event entity forms.
 */
function event_form_event_edit_form_alter(&$form, FormStateInterface $form_state, $form_id) {
  /** @var \Drupal\event\Entity\Event $entity */
  $entity = $form_state->getFormObject()
    ->getEntity();
  if (\Drupal::currentUser()->id() != $entity->getOwnerId()) {
    $form['maximum']['#disabled'] = TRUE;
  }
}
```

Entity constraints and validation



Entity constraints and validation



Tracking changes to entities

1x

```php
class Event extends ContentEntityBase implements EntityOwnerInterface, EntityPublishedInterface, RevisionLogInterface {

  use EntityOwnerTrait, EntityPublishedTrait, RevisionLogEntityTrait;

  /**
   * {@inheritdoc}
   */
  public static function baseFieldDefinitions(EntityTypeInterface $entity_type) {
    // Get the field definitions for 'id' and 'uuid' from the parent.
    $fields = parent::baseFieldDefinitions($entity_type);
    $fields += static::revisionLogBaseFieldDefinitions($entity_type);
```

OR

```php
class Event extends RevisionableContentEntityBase implements EntityOwnerInterface, EntityPublishedInterface {

  use EntityOwnerTrait, EntityPublishedTrait;
```

Tracking changes to entities

1x

```
*   entity_keys = {
*     "id" = "id",
*     "revision" = "vid",
*     "uuid" = "uuid",
*     "owner" = "author",
*     "published" = "published",
*     "label" = "title",
*   },
*   entity_keys = {
*     "id" = "id",
*     "revision" = "vid",
*     "uuid" = "uuid",
*     "owner" = "author",
*     "published" = "published",
*     "label" = "title",
*   },
*   revision_table = "event_revision",
*   revision_metadata_keys = {
*     "revision_user" = "revision_author",
*     "revision_created" = "revision_created",
*     "revision_log_message" = "revision_log_message",
*   },
*   show_revision_ui = true,
```

```
*   handlers = {
*     "access" = "Drupal\entity\EntityAccessControlHandler",
*     "permission_provider" = "Drupal\entity\EntityPermissionProvider",
*     "route_provider" = {
*       "default" = "Drupal\entity\Routing\DefaultHtmlRouteProvider",
*       "revision" = \Drupal\Core\Entity\Routing\RevisionHtmlRouteProvider::class,
*     },
```

```
*   links = {
*     "canonical" = "/event/{event}",
*     "add-form" = "/admin/content/events/add",
*     "edit-form" = "/admin/content/events/manage/{event}",
*     "delete-form" = "/admin/content/events/manage/{event}/delete",
*     "collection" = "/admin/content/events",
*     "version-history" = "/event/{event}/revisions",
*     "revision" = "/event/{event}/revisions/{event_revision}",
*     "revision-revert-form" = "/event/{event}/revisions/{event_revision}/revert",
*   },
```

Tracking changes to entities

1x

event /* The base table for event entities. */

vid	int(10) unsigned
uuid	varchar(128)
author /* The ID of the target entity. */	int(10) unsigned
published	tinyint(4)
title	varchar(255)
date /* The date value. */	varchar(20)
description__value	longtext
description__format	varchar(255)
maximum	int(11)
id	int(10) unsigned

event__attendees /* Data storage for event field attendees. */

bundle /* The field instance bundle to which this row belongs, used whe... */	
revision_id /* The entity revision id this data is attached to */	)) unsigned
attendees_target_id /* The ID of the target entity. */	int(10) unsigned
deleted /* A boolean indicating whether this data item has been deleted */	
entity_id /* The entity id this data is attached to */	int(10) unsigned
langcode /* The language code for this data item. */	varchar(32)
delta /* The sequence number for this data item, used for multi-value ... */	1

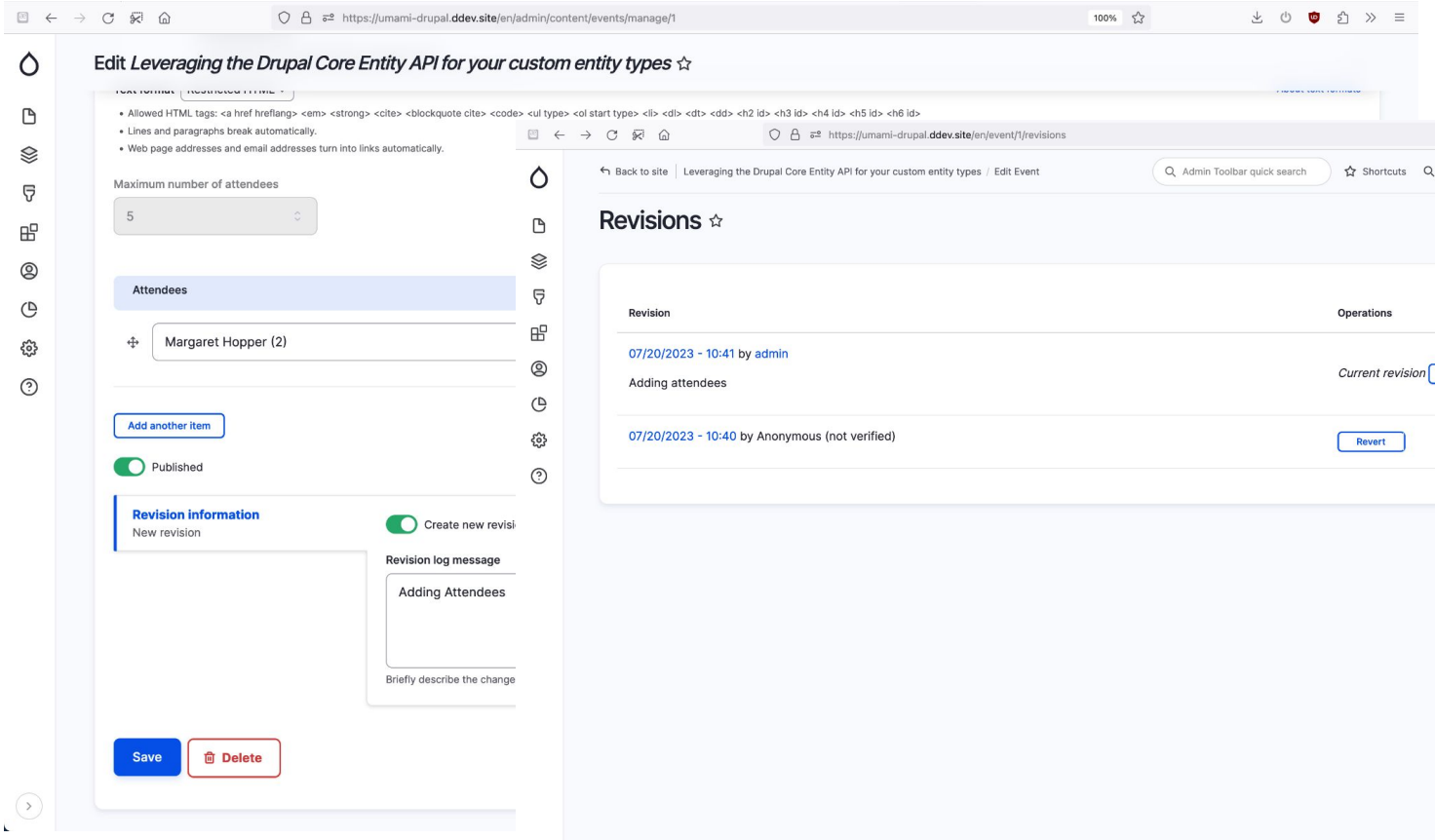
event_revision /* The revision table for event entities. */

id	int(10) unsigned
revision_created	int(11)
revision_author /* The ID of the target entity. */	int(10) unsigned
revision_log_message	longtext
published	tinyint(4)
revision_default	tinyint(4)
vid	int(10) unsigned

event_revision__attendees /* Revision archive storage for event field attendees. */

bundle /* The field instance bundle to which this row belongs, used whe... */	varchar(128)
attendees_target_id /* The ID of the target entity. */	int(10) unsigned
deleted /* A boolean indicating whether this data item has been deleted */	tinyint(4)
entity_id /* The entity id this data is attached to */	int(10) unsigned
revision_id /* The entity revision id this data is attached to */	int(10) unsigned
langcode /* The language code for this data item. */	varchar(32)
delta /* The sequence number for this data item, used for multi-value ... */	int(10) unsigned

Tracking changes to entities



Config entity - Event Type

EventType.php

```php
<?php

namespace Drupal\event\Entity;

use Drupal\Core\Config\Entity\ConfigEntityBase;

/**
 * @ConfigEntityType(
 *   id = "event_type",
 *   label = @Translation("Event type"),
 *   label_collection = @Translation("Event types"),
 *   label_singular = @Translation("event type"),
 *   label_plural = @Translation("event types"),
 *   config_prefix = "type",
 *   config_export = {
 *     "id",
 *     "label",
 *   },
 *   entity_keys = {
 *     "id" = "id",
 *     "label" = "label",
 *   },
 * )
 */
class EventType extends ConfigEntityBase {

  /** The machine name of this event type. ...*/
  protected $id;

  /** The human-readable name of the node type. ...*/
  protected $label;

}
```

umami-drupal 〉 web 〉 modules 〉 custom 〉 event 〉 config 〉 schema 〉 event.schema.yml

Project

event.schema.yml

```yaml
event.type.*:
  type: config_object
  mapping:
    id:
      type: string
      label: 'ID'
    label:
      type: label
      label: 'Label'
```

Config entity - Event Type

```
*   handlers = {
*     "access" = "Drupal\entity\EntityAccessControlHandler",
*     "list_builder" = "Drupal\event\Controller\EventTypeListBuilder",
*     "local_action_provider" = {
*       "collection" = "Drupal\entity\Menu\EntityCollectionLocalActionProvider",
*     },
*     "permission_provider" = "Drupal\entity\EntityPermissionProvider",
*     "route_provider" = {
*       "default" = "Drupal\entity\Routing\DefaultHtmlRouteProvider",
*     },
*   },
*   links = {
*     "collection" = "/admin/structure/event-types",
*   },
*   admin_permission = "administer event_type",
```

EventTypeListBuilder.php

```php
<?php

namespace Drupal\event\Controller;

use Drupal\Core\Entity\EntityInterface;
use Drupal\Core\Entity\EntityListBuilder;

/**
 * Defines an implementation to build a listing of event type entities.
 */
class EventTypeListBuilder extends EntityListBuilder {

  /** {@inheritdoc} ...*/
  public function buildHeader() {
    $header = [];
    $header['label'] = $this->t( string: 'Label');
    return $header + parent::buildHeader();
  }

  /** {@inheritdoc} ...*/
  public function buildRow(EntityInterface $event) {
    $row = [];
    $row['label'] = $event->label();
    return $row + parent::buildRow($event);
  }

}
```

Config entity - Event Type

```
*   handlers = {
*     "access" = "Drupal\entity\EntityAccessControlHandler",
*     "list_builder" = "Drupal\event\Controller\EventTypeListBuilder",
*     "local_action_provider" = {
*       "collection" = "Drupal\entity\Menu\EntityCollectionLocalActionProvider",
*     },
*     "permission_provider" = "Drupal\entity\EntityPermissionProvider",
*     "route_provider" = {
*       "default" = "Drupal\entity\Routing\DefaultHtmlRouteProvider",
*     },
*     "form" = {
*       "add" = "Drupal\event\Form\EventTypeForm",
*       "edit" = "Drupal\event\Form\EventTypeForm",
*       "delete" = "Drupal\Core\Entity\EntityDeleteForm",
*     },
*   },
*   links = {
*     "collection" = "/admin/structure/event-types",
*     "add-form" = "/admin/structure/event-types/add",
*     "edit-form" = "/admin/structure/event-types/manage/{event_type}",
*     "delete-form" = "/admin/structure/event-types/manage/{event_type}/delete",
*   },
```

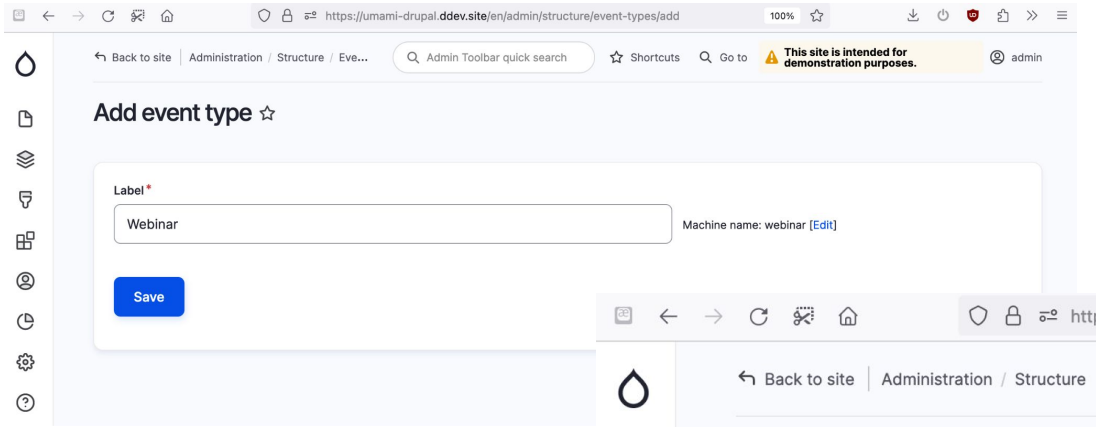
EventTypeForm.php

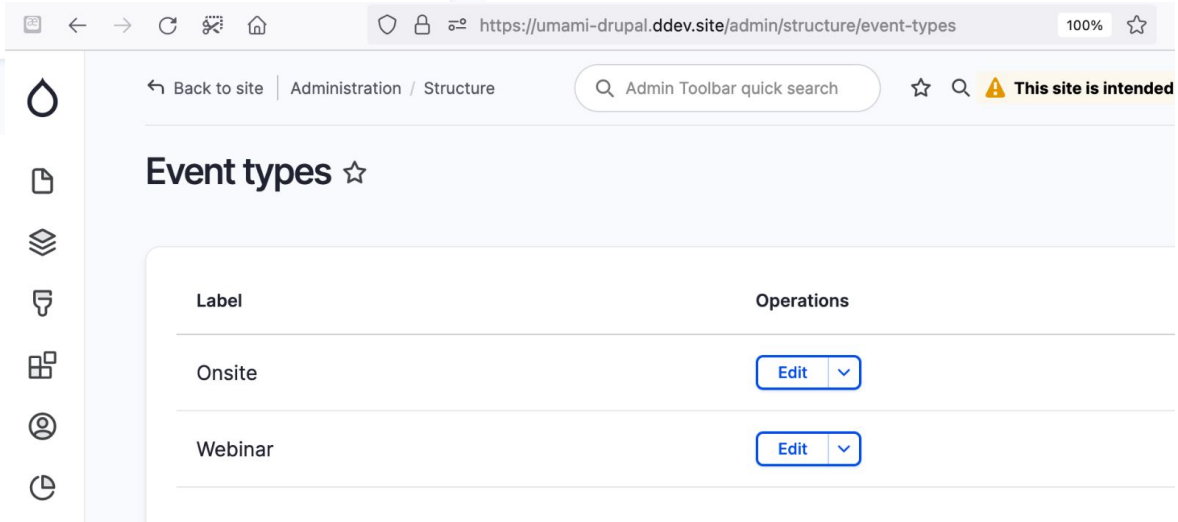
```php
<?php

namespace Drupal\event\Form;

use Drupal\Core\Entity\BundleEntityFormBase;
use Drupal\Core\Entity\EntityTypeInterface;
use Drupal\Core\Form\FormStateInterface;

/**
 * Form handler for event type forms.
 */
class EventTypeForm extends BundleEntityFormBase {

  /** {@inheritdoc} ...*/
  public function form(array $form, FormStateInterface $form_state) {
    $form = parent::form($form, $form_state);

    $event_type = $this->getEntity();

    $form['label'] = [
      '#type' => 'textfield',
      '#title' => $this->t( string: 'Label'),
      '#default_value' => $event_type->label(),
      '#required' => TRUE,
    ];

    $form['id'] = [
      '#type' => 'machine_name',
      '#title' => $this->t( string: 'ID'),
      '#maxlength' => EntityTypeInterface::BUNDLE_MAX_LENGTH,
      '#default_value' => $event_type->id(),
      '#machine_name' => [
        'exists' => [$event_type->getEntityType()->getClass(), 'load'],
      ],
      '#disabled' => !$event_type->isNew(),
    ];

    return $form;
  }
```

Config entity - Event Type

```php
/**
 * {@inheritdoc}
 */
public function save(array $form, FormStateInterface $form_state) {
  parent::save($form, $form_state);

  $entity = $this->getEntity();
  $entity_type = $entity->getEntityType();

  $arguments = [
    '@entity_type' => $entity_type->getSingularLabel(),
    '%entity' => $entity->label(),
    'link' => $entity->toLink($this->t( string: 'Edit'),  rel: 'edit-form')->toString(),
  ];

  $this->logger($entity->getEntityTypeId())->notice( message: 'The @entity_type %entity has been saved.', $arguments);
  $this->messenger()->addMessage($this->t( string: 'The @entity_type %entity has been saved.', $arguments));

  $form_state->setRedirectUrl($entity->toUrl( rel: 'collection'));
}
```

Config entity - Event Type





Configuring bundles in the user interface

1x

Event.php

\Drupal\event\Entity

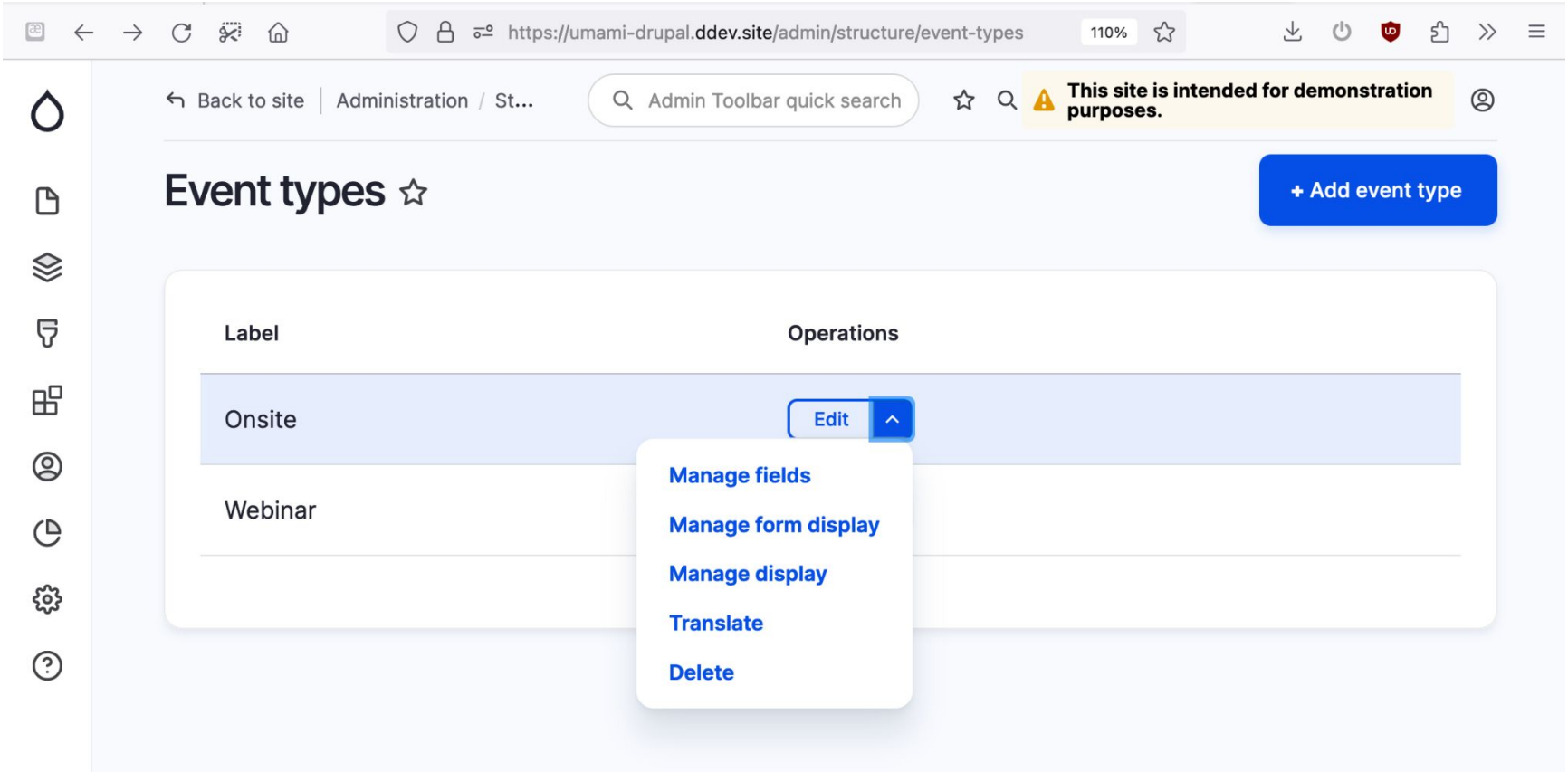
```
59   *   links = {
60   *     "canonical" = "/event/{event}",
61   *     "add-form" = "/admin/content/events/add/{event_type}",
62   *     "edit-form" = "/admin/content/events/manage/{event}",
63   *     "delete-form" = "/admin/content/events/manage/{event}/delete",
64   *     "collection" = "/admin/content/events",
65   *     "version-history" = "/event/{event}/revisions",
66   *     "revision" = "/event/{event}/revisions/{event_revision}",
67   *     "revision-revert-form" = "/event/{event}/revisions/{event_revision}/revert",
68   *   },
69   *   bundle_entity_type = "event_type",
70   *   field_ui_base_route = "entity.event_type.edit_form",
```

EventType.php

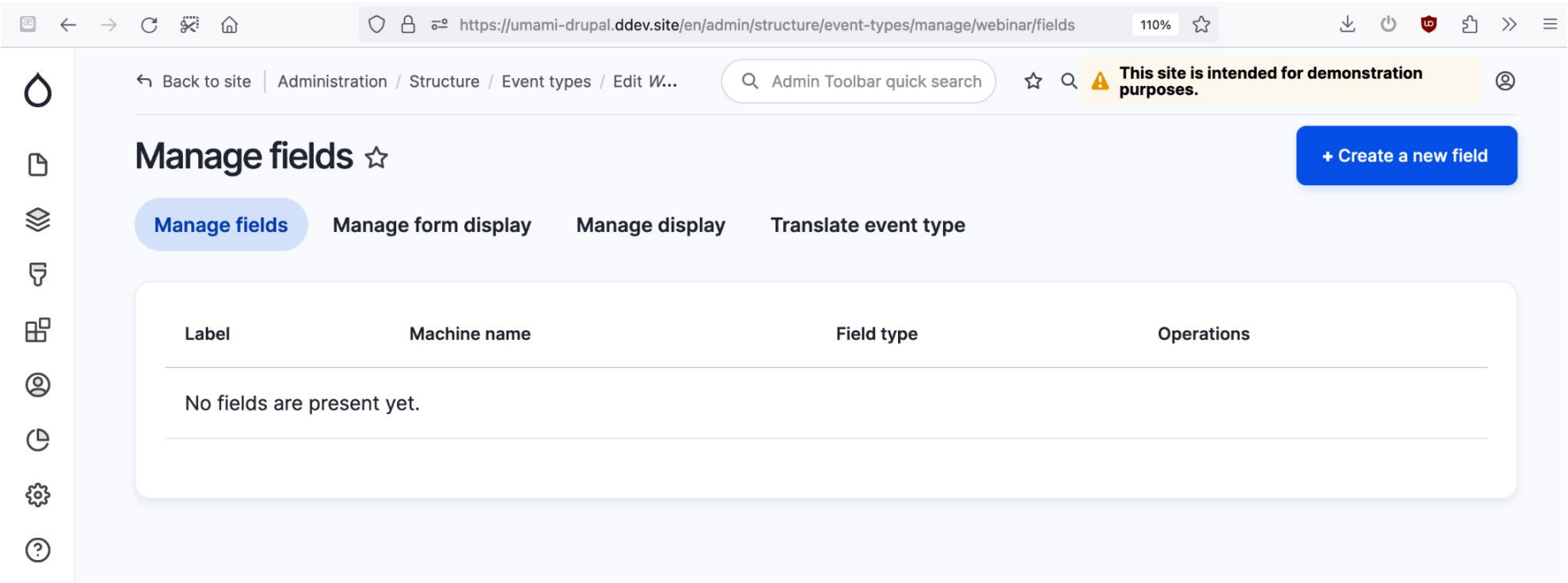
\Drupal\event\Entity

```
38   *   },
39   *   links = {
40   *     "collection" = "/admin/structure/event-types",
41   *     "add-form" = "/admin/structure/event-types/add",
42   *     "edit-form" = "/admin/structure/event-types/manage/{event_type}",
43   *     "delete-form" = "/admin/structure/event-types/manage/{event_type}/delete",
44   *   },
45   *   bundle_of = "event",
```

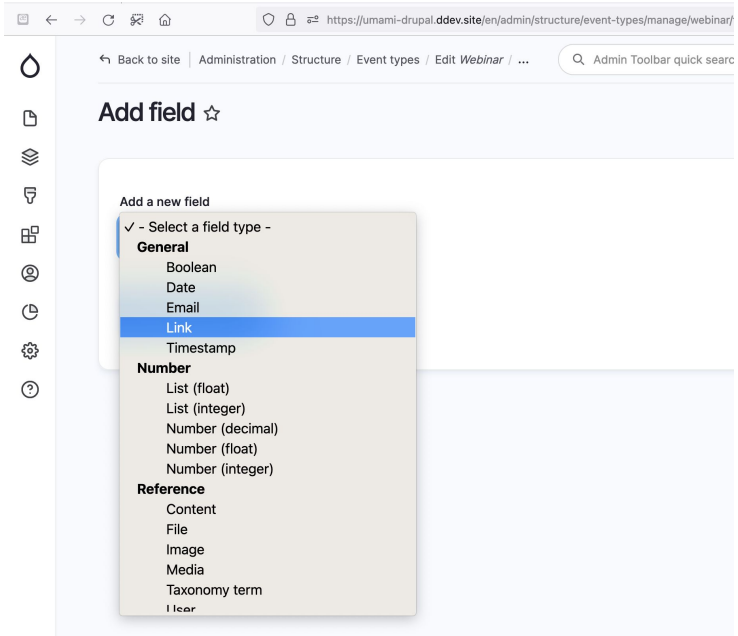
Configuring bundles in the user interface

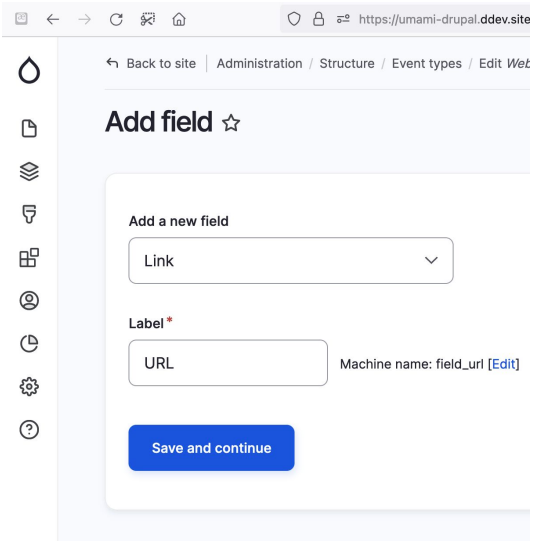


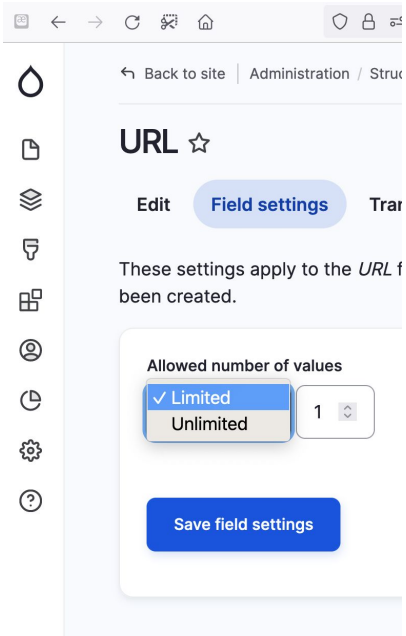
Configuring bundles in the user interface



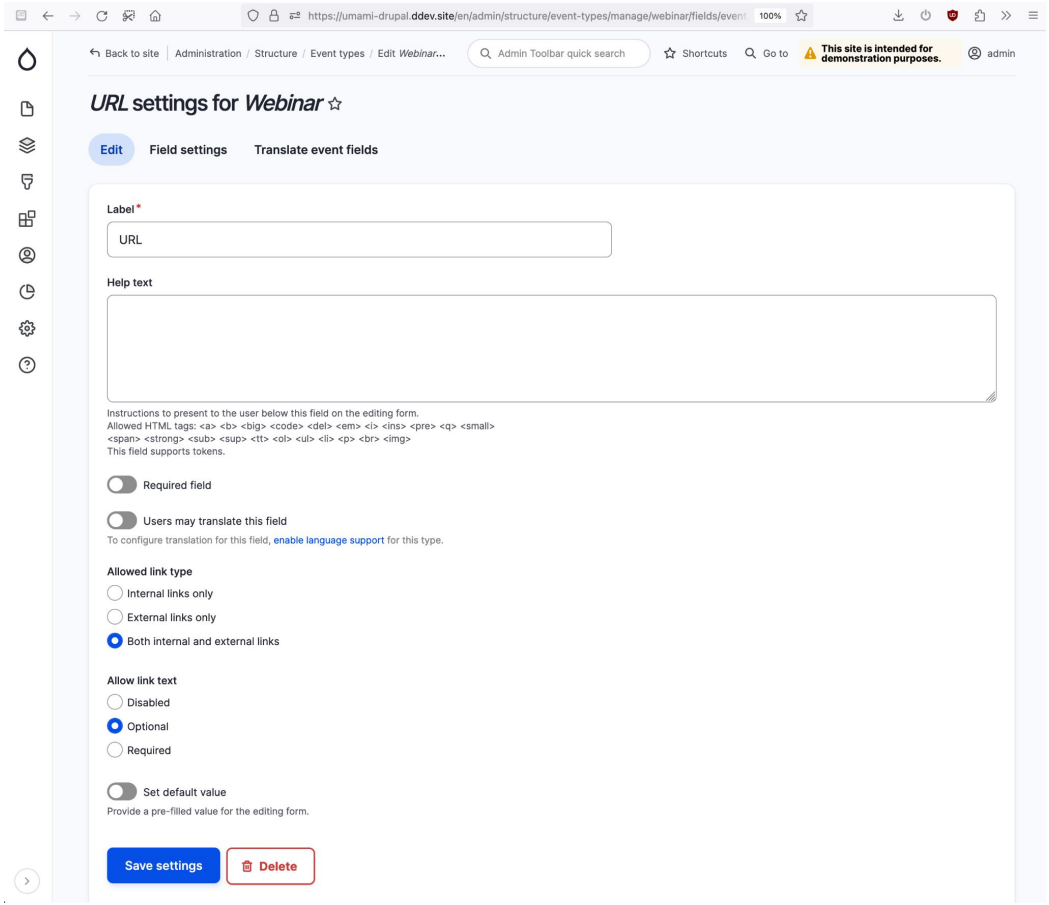
Configuring bundles in the user interface





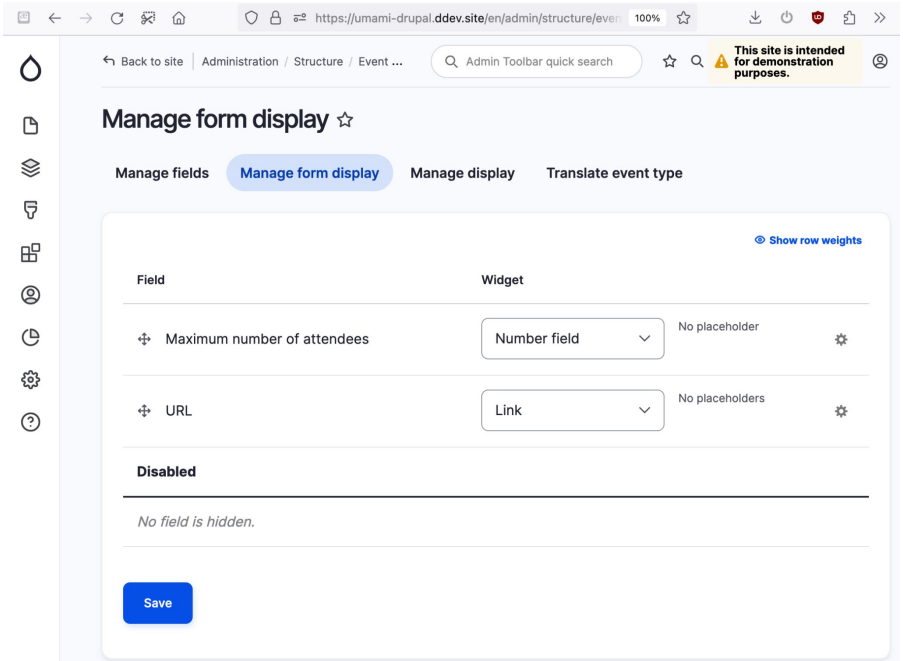


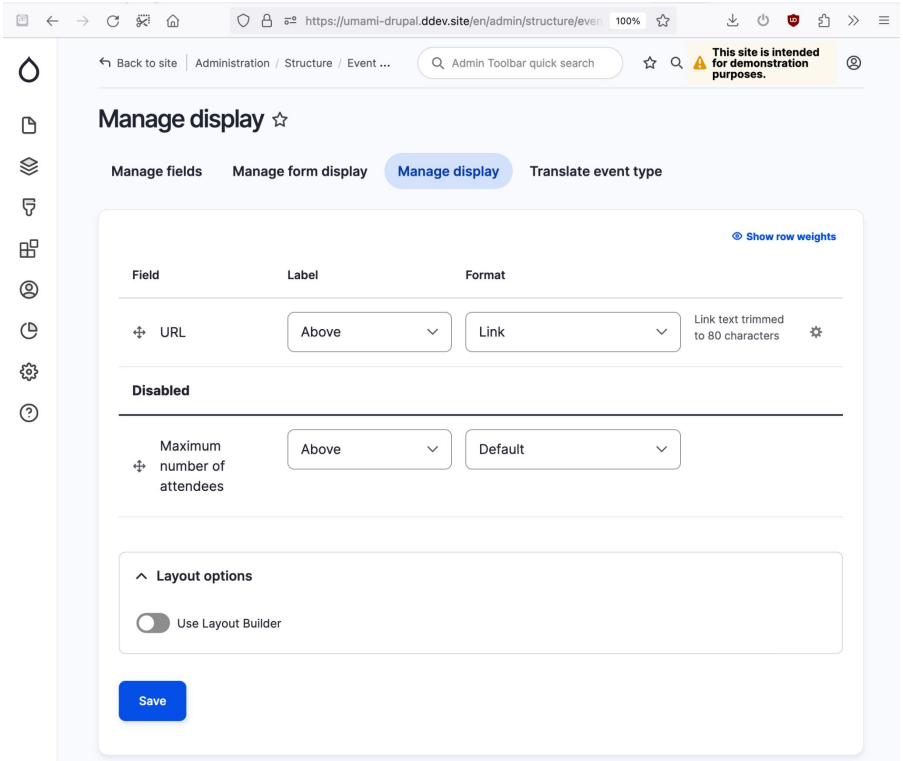
Configuring bundles in the user interface



Configuring bundles in the user interface

```
$fields['maximum'] = BaseFieldDefinition::create( type: 'integer')
  ->setLabel(t( string: 'Maximum number of attendees'))
  ->setSetting( setting_name: 'min',  value: 1)
  ->setDisplayOptions( display_context: 'form', ['weight' => 23])
  ->setDisplayConfigurable( display_context: 'form',  configurable: TRUE)
  ->setDisplayConfigurable( display_context: 'view',  configurable: TRUE);
```





Translatable entities

```
*   entity_keys = {
*     "id" = "id",
*     "revision" = "vid",
*     "bundle" = "type",
*     "langcode" = "langcode",
*     "uuid" = "uuid",
*     "owner" = "author",
*     "published" = "published",
*     "label" = "title",
*   },

*   translatable = TRUE,
*   data_table = "event_field_data",
*   revision_data_table = "event_revision_field_data",
```

event_field_data /* The data table for event entities. */

vid	int(10) unsigned
type /* The ID of the target entity. */	varchar(32)
author /* The ID of the target entity. */	int(10) unsigned
published	tinyint(4)
title	varchar(255)
date /* The date value. */	varchar(20)
description__value	longtext
description__format	varchar(255)
maximum	int(11)
default_langcode	tinyint(4)
revision_translation_affected	tinyint(4)
id	int(10) unsigned
langcode	varchar(12)

event_revision_field_data /* The revision data table for event entities. */

id	int(10) unsigned
published	tinyint(4)
default_langcode	tinyint(4)
revision_translation_affected	tinyint(4)
vid	int(10) unsigned
langcode	varchar(12)

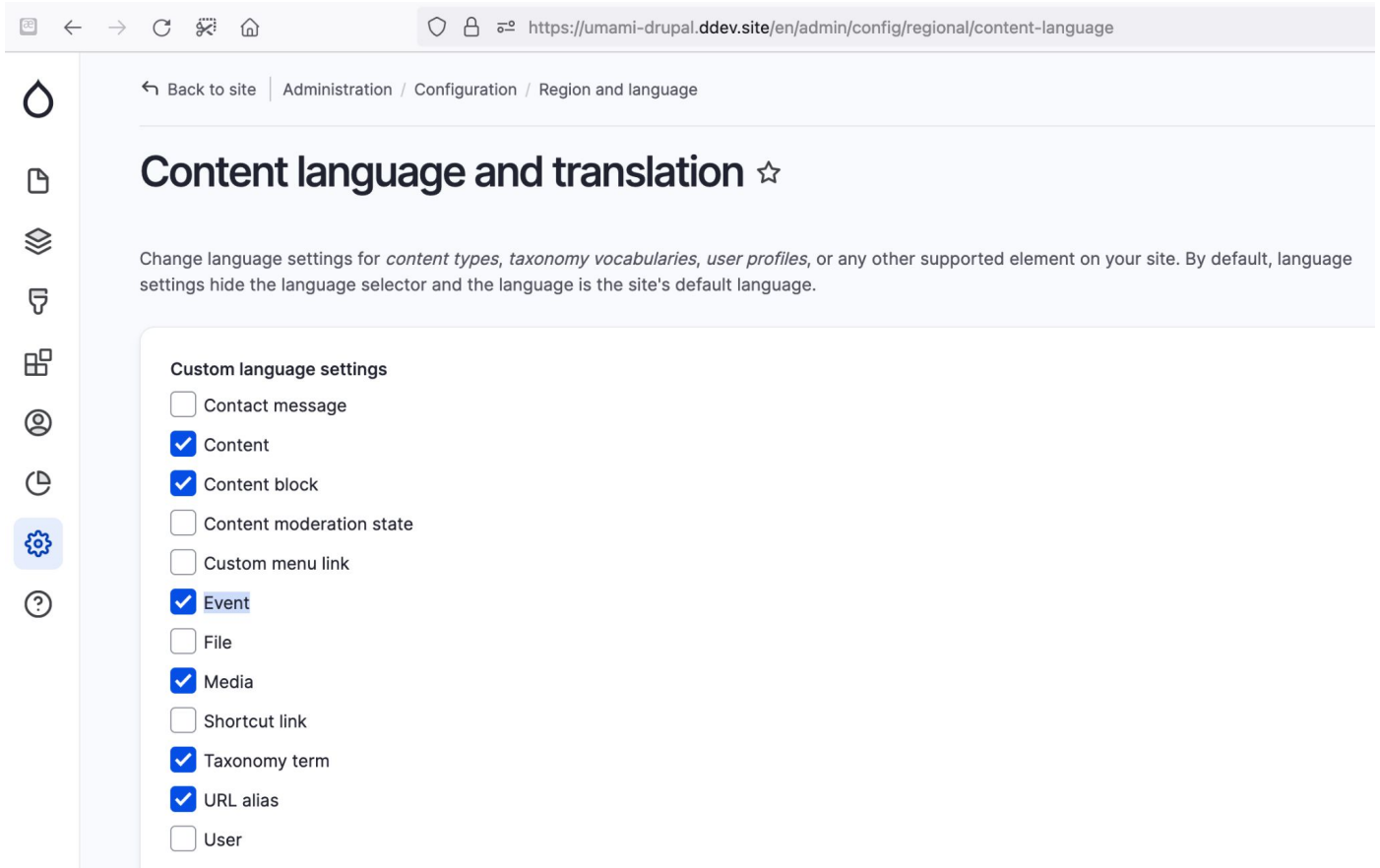
Translatable and revisionable fields

```
$fields['title'] = BaseFieldDefinition::create( type: 'string')
  ->setLabel(t( string: 'Title'))
  ->setRequired( required: TRUE)
  ->setTranslatable( translatable: TRUE)
  ->setRevisionable( revisionable: TRUE)
  ->setDisplayOptions( display_context: 'form', ['weight' => 0]);
```

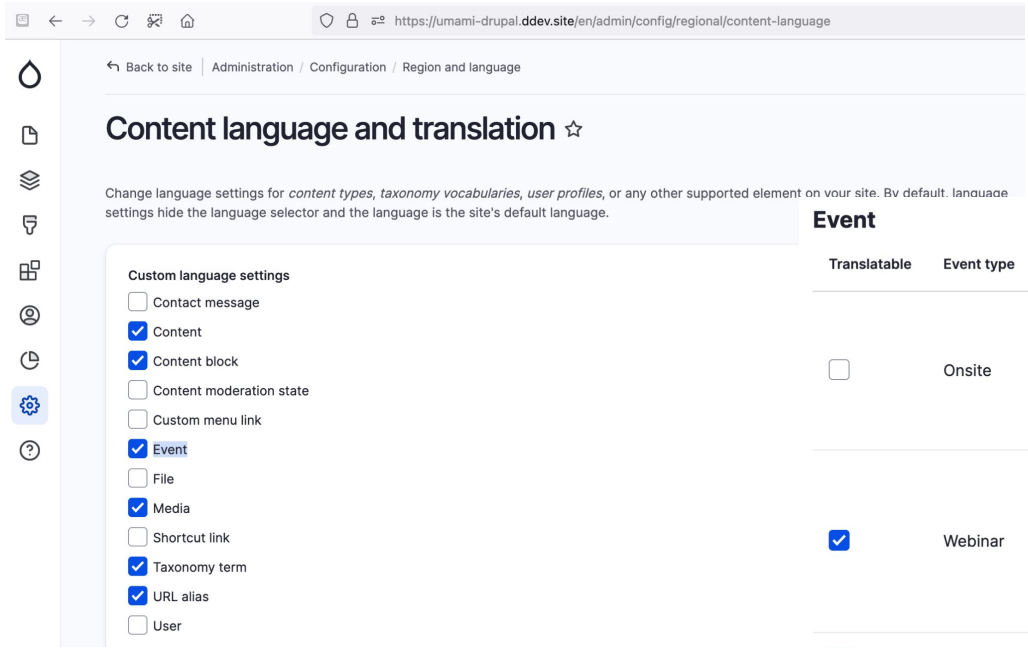
event_revision_field_data /* The revision data table for event entities. */	
id	int(10) unsigned
published	tinyint(4)
default_langcode	tinyint(4)
revision_translation_affected	tinyint(4)
vid	int(10) unsigned
langcode	varchar(12)

event_revision_field_data /* The revision data table for event entities. */	
id	int(10) unsigned
published	tinyint(4)
title	varchar(255)
default_langcode	tinyint(4)
revision_translation_affected	tinyint(4)
vid	int(10) unsigned
langcode	varchar(12)

Configuring translations per bundle



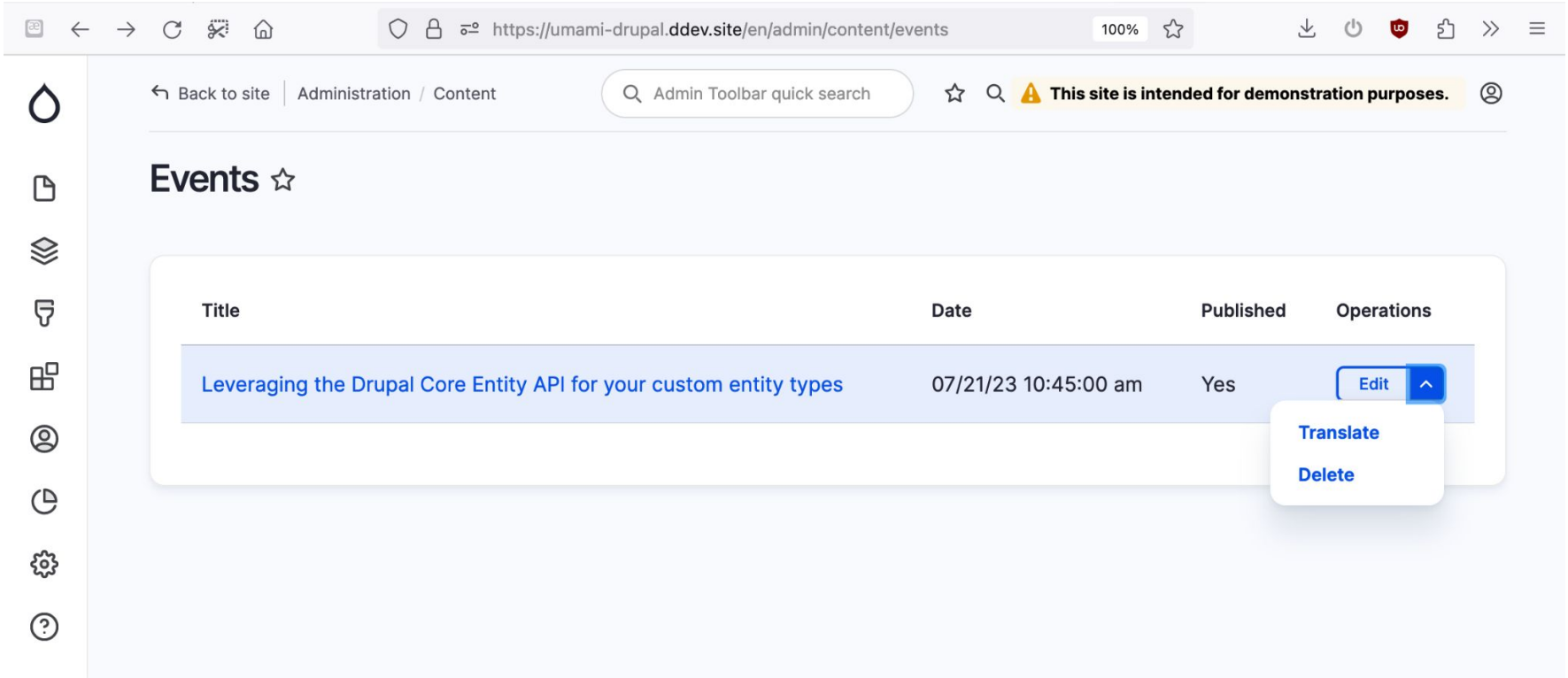
Configuring translations per bundle



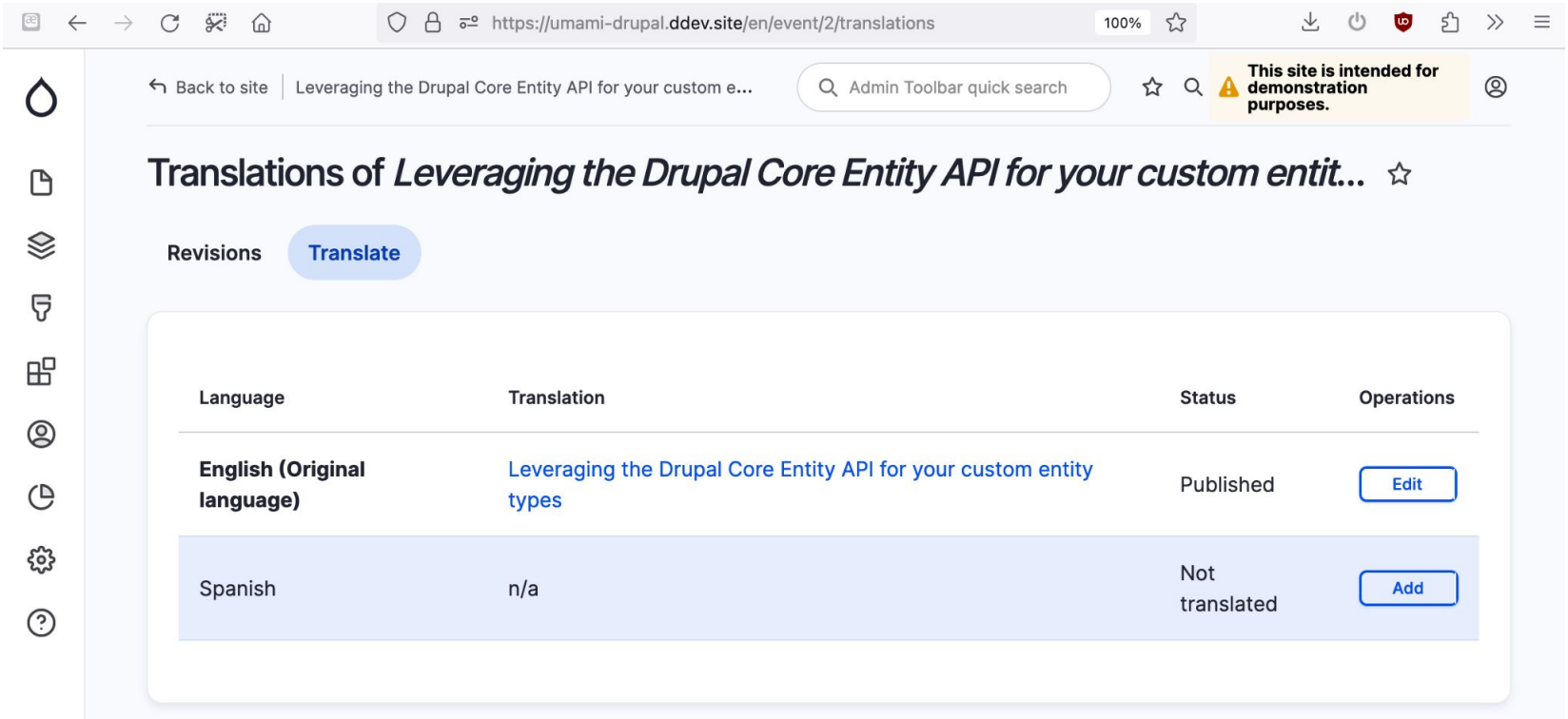
Event

Translatable	Event type	Configuration
☐	Onsite	Default language: Site's default language (English). Explanation of the language options is found on the languages list page. ○ Show language selector on create and edit pages
☑	Webinar	Default language: Site's default language (English). Explanation of the language options is found on the languages list page. ● Show language selector on create and edit pages ○ Hide non translatable fields on translation forms
☑	User ID	
☑	Published	
☑	Title	
☑	Description	
☐	URL	

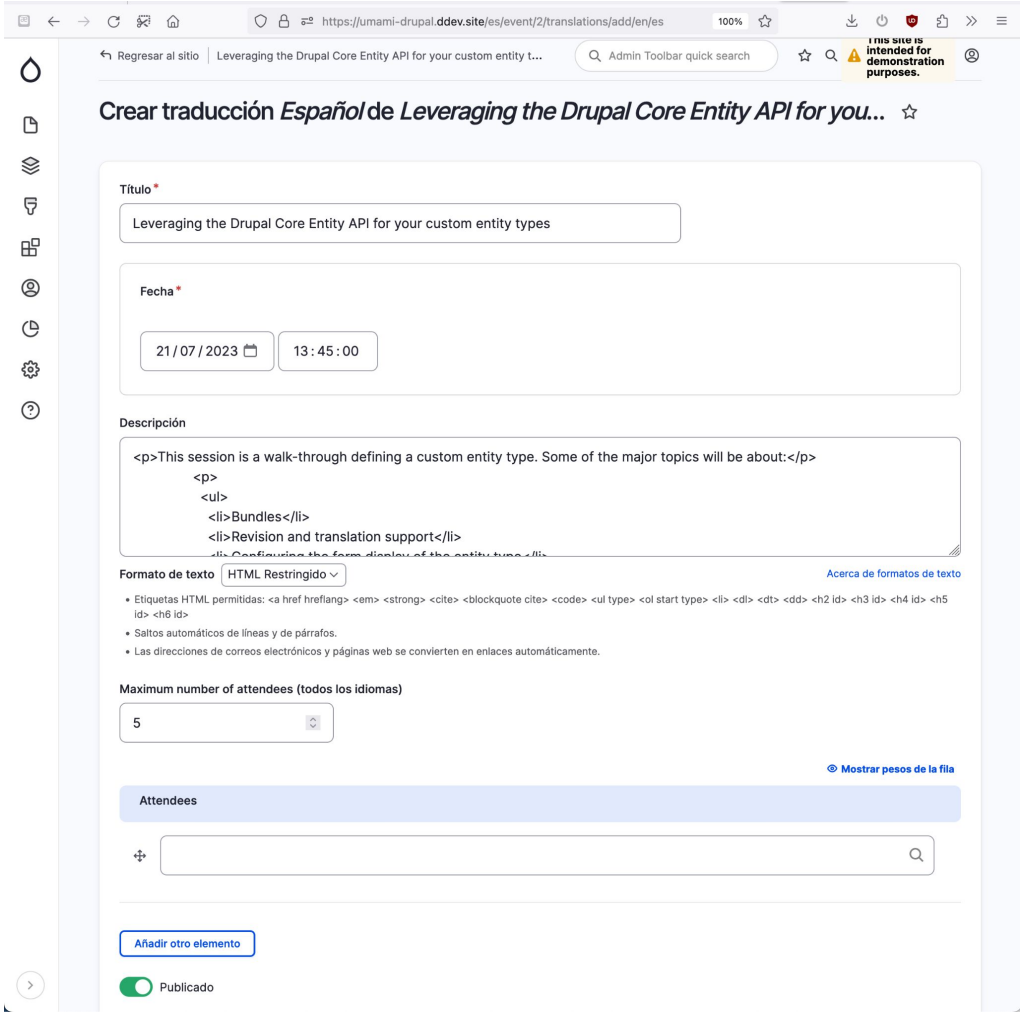
Translating entities



Translating entities

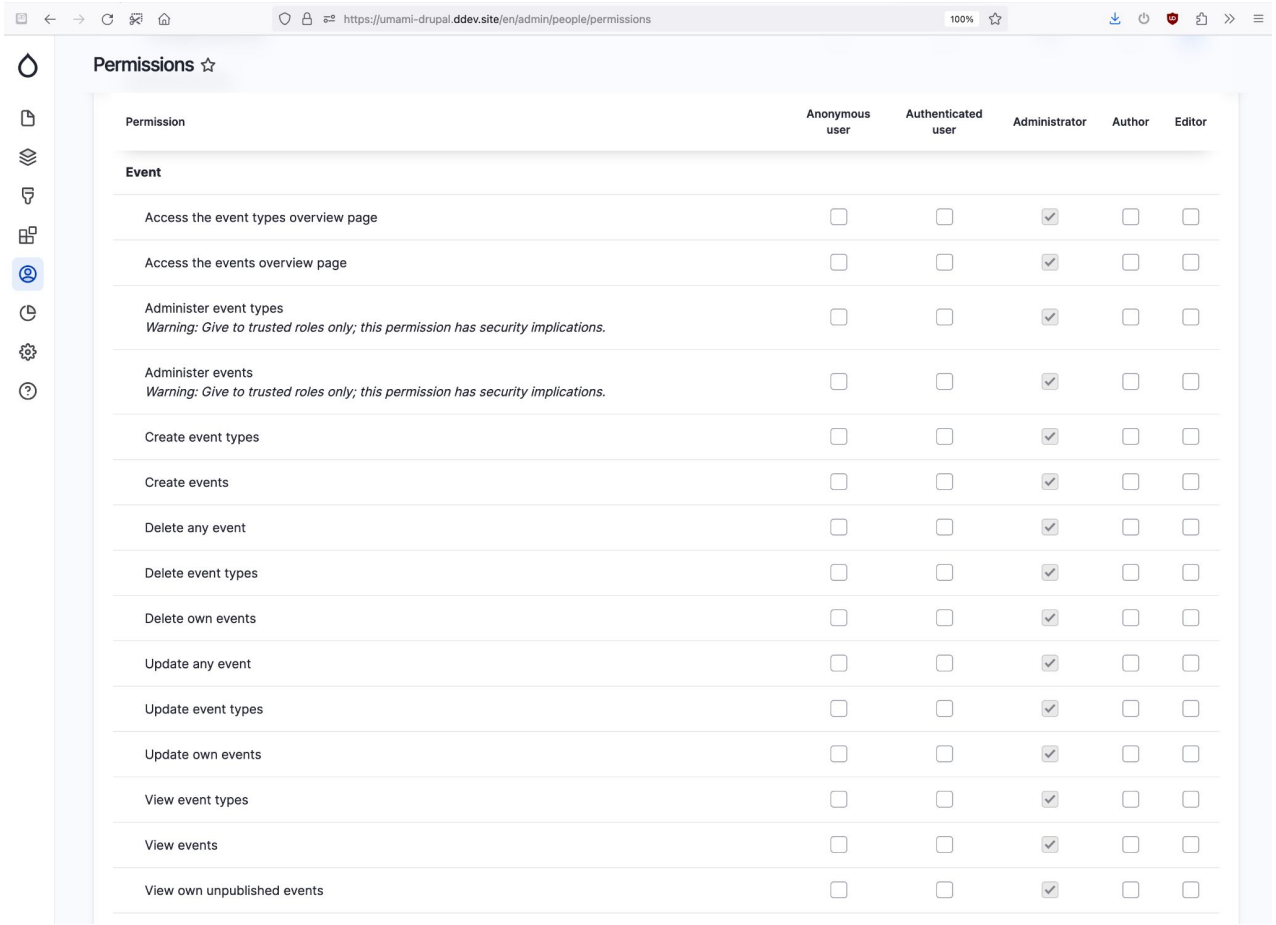


Translating entities



Access control and permissions

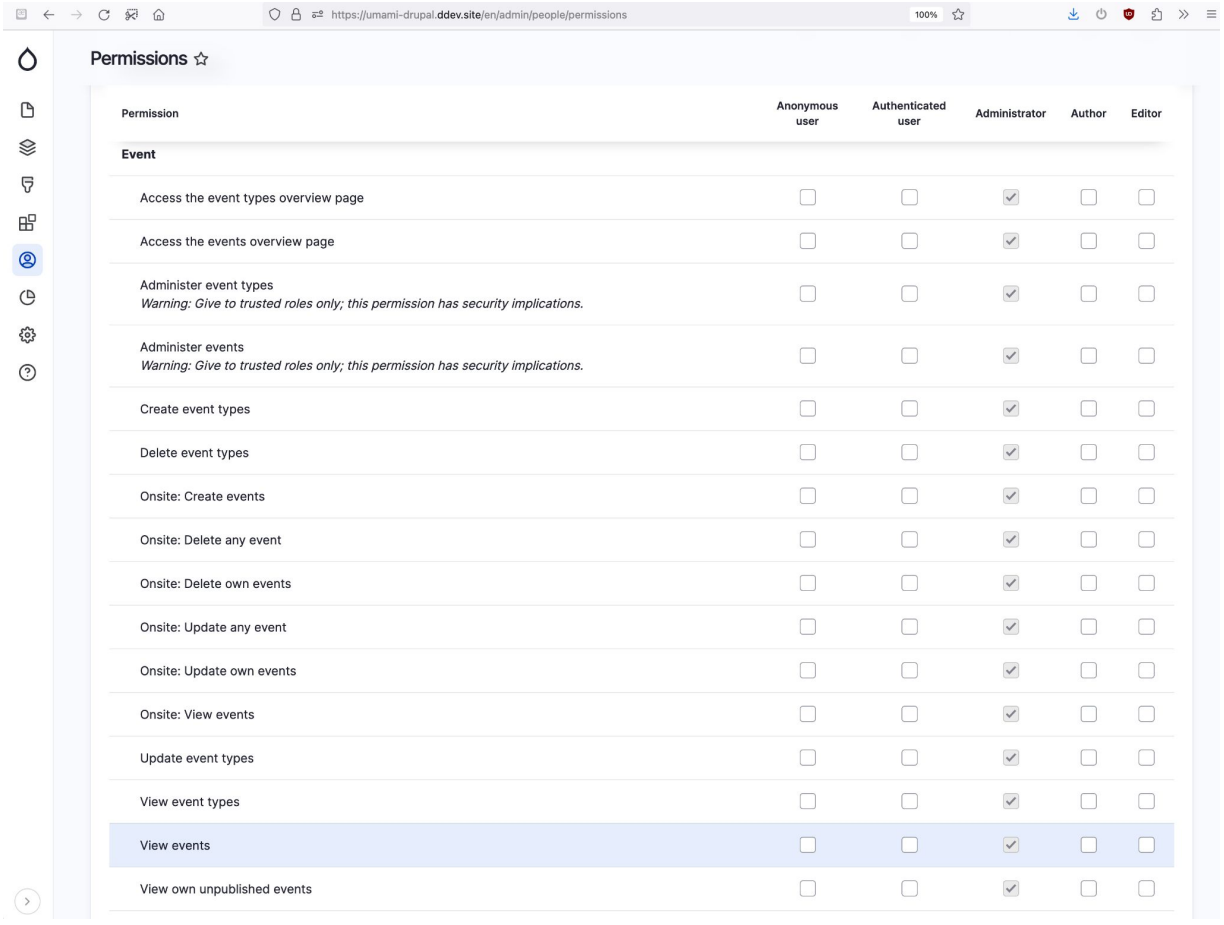
permission_granularity = “entity_type”



Permission	Anonymous user	Authenticated user	Administrator	Author	Editor
Event					
Access the event types overview page	☐	☐	☑	☐	☐
Access the events overview page	☐	☐	☑	☐	☐
Administer event types *Warning: Give to trusted roles only; this permission has security implications.*	☐	☐	☑	☐	☐
Administer events *Warning: Give to trusted roles only; this permission has security implications.*	☐	☐	☑	☐	☐
Create event types	☐	☐	☑	☐	☐
Create events	☐	☐	☑	☐	☐
Delete any event	☐	☐	☑	☐	☐
Delete event types	☐	☐	☑	☐	☐
Delete own events	☐	☐	☑	☐	☐
Update any event	☐	☐	☑	☐	☐
Update event types	☐	☐	☑	☐	☐
Update own events	☐	☐	☑	☐	☐
View event types	☐	☐	☑	☐	☐
View events	☐	☐	☑	☐	☐
View own unpublished events	☐	☐	☑	☐	☐

Access control and permissions

permission_granularity = “bundle”



Entity queries

```
\Drupal::entityTypeManager()
  ->getStorage( entity_type_id: 'event')
  ->getQuery()
  ->accessCheck( access_check: FALSE)
  ->condition( field: 'type',  value: 'webinar')
  ->condition( field: 'date',  value: '2023-07-21%',  operator: 'LIKE',  langcode: 'es')
  ->execute();
// Returns [2 => "2"]
```

```
\Drupal::entityTypeManager()
  ->getStorage( entity_type_id: 'event')
  ->loadMultiple($entity_ids);
```

Entity type annotation

```
/**
 * @ContentEntityType(
 *   id = "event",
 *   label = @Translation("Event"),
 *   label_collection = @Translation("Events"),
 *   label_singular = @Translation("event"),
 *   label_plural = @Translation("events"),
 *   base_table = "event",
 *   entity_keys = {
 *     "id" = "id",
 *     "revision" = "vid",
 *     "bundle" = "type",
 *     "langcode" = "langcode",
 *     "uuid" = "uuid",
 *     "owner" = "author",
 *     "published" = "published",
 *     "label" = "title",
 *   },
 *   revision_table = "event_revision",
 *   revision_metadata_keys = {
 *     "revision_user" = "revision_author",
 *     "revision_created" = "revision_created",
 *     "revision_log_message" = "revision_log_message",
 *   },
 *   show_revision_ui = true,
 *   translatable = TRUE,
 *   data_table = "event_field_data",
 *   revision_data_table = "event_revision_field_data",
 *   handlers = {
 *     "access" = "Drupal\entity\EntityAccessControlHandler",
 *     "permission_provider" = "Drupal\entity\EntityPermissionProvider",
 *     "route_provider" = {
 *       "default" = "Drupal\entity\Routing\DefaultHtmlRouteProvider",
 *       "revision" = \Drupal\Core\Entity\Routing\RevisionHtmlRouteProvider::class,
 *     },
 *     "form" = {
 *       "add" = "Drupal\Core\Entity\ContentEntityForm",
 *       "edit" = "Drupal\Core\Entity\ContentEntityForm",
 *       "delete" = "Drupal\Core\Entity\ContentEntityDeleteForm",
 *     },
 *     "list_builder" = "Drupal\event\Controller\EventListBuilder",
 *     "local_action_provider" = {
 *       "collection" = "Drupal\entity\Menu\EntityCollectionLocalActionProvider",
 *     },
 *   },
 *   links = {
 *     "canonical" = "/event/{event}",
 *     "add-form" = "/admin/content/events/add/{event_type}",
 *     "edit-form" = "/admin/content/events/manage/{event}",
 *     "delete-form" = "/admin/content/events/manage/{event}/delete",
 *     "collection" = "/admin/content/events",
 *     "version-history" = "/event/{event}/revisions",
 *     "revision" = "/event/{event}/revisions/{event_revision}",
 *     "revision-revert-form" = "/event/{event}/revisions/{event_revision}/revert",
 *   },
 *   bundle_entity_type = "event_type",
 *   admin_permission = "administer event",
 *   permission_granularity = "bundle",
 *   field_ui_base_route = "entity.event_type.edit_form",
 * )
 */
```

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