

Entities, Bundles, and Fields



Ted Bowman
sixmiletech.com



Ted Bowman

- tedbow @ drupal.org & twitter
- sixmiletech.com
- Training and Consulting



Entities, Bundles, and Fields



Contact Us for:

- Staff Training
- 1 on 1 Consulting
- Client Training
- Online Classes



Entities, Bundles & Fields

- You Need to Understand This!
- Why?!?

In Drupal you often?

- Use Different Entity types
- Install modules that create entities
- Create new Bundles
- Create new Fields
- Attach existing Fields to Bundles

Drupal let's you know when you.

- Use Different Entity types
- Install modules that create entities
- Create new Bundles
- Create new Fields
- Attach existing Fields to Bundles

Drupal's UI Doesn't Mention

- Entity Types
- Bundles

Entity Types & Bundles

- Key concepts about how Drupal Works!
- You Need to Learn this

Understanding Entity Types & Bundles

- Help you choose modules
- Help you understand how modules work
 - Views
 - Rules
 - Profile2
 - Others....

What are Entities and Bundles?

- Entity Types - core
 - Nodes
 - Terms
 - Users
 - Comments
 - Files (non-fieldable)

What are Entities and Bundles?

- Entity Type - contrib
 - Profiles – Profile2
 - Media asset – Media
 - Commerce Line Item
 - etc..

Drupal 8 Entities

- More Core Entities
- Configuration Items are (non-fieldable) Entities
 - Node type
 - Menu Link
 - Date format
- 32+ Entity types in Core
- Entities are Classed Objects

Entities of same type

- Share Properties
 - All Nodes
 - Sticky
 - Published
 - Changed Date
 - Created Date
 - All Comments
 - Subject
 - Node ID

How to spot an entity type

NAME	OPERATIONS
Article (Machine name: article) Use <i>articles</i> for time-sensitive content like news, press releases or blog posts.	edit manage fields manage display delete
Basic page (Machine name: page) Use <i>basic pages</i> for your static content, such as an 'About us' page.	edit manage fields manage display delete

FIELD NAME	USED IN	OPERATIONS
field_design_survey	Public Service Message Copy	manage fields manage display

LABEL	STATUS	OPERATIONS
Company Information (Machine name: company)	Overridden	edit manage fields manage display clone revert export

How to spot an entity type

View name *

Description

Show Content of type tagged

- Files
- Content
- Content revisions
- Taxonomy terms
- Users
- Maillog
- Field collection item
- Module/Theme/Theme engine
- Previewable Email Templates
- Profile types
- Profiles
- Rules configuration

Cr

Pa

pa

ht

Display format

of with links (allow users to add comments, etc.)

Bundles

- Most Entity types divided into Bundles

What are Entities and Bundles?

Bundles

- Node ->
 - Article
 - Basic Page

What are Entities and Bundles?

Bundles

- Term ->
 - Keywords
 - Tags

What are Entities and Bundles?

Bundles

- User->
 - User
 - ?
- Some Entity types can only have 1 bundle

What are Entities and Bundles?

- Bundles
 - User
 - User
 - Roles aren't bundles

How to spot a bundle

Company Information ⊕

[EDIT](#) [MANAGE FIELDS](#) [MANAGE DISPLAY](#) [PROFILE AUTO LABEL](#)

[Home](#) » [Administration](#) » [Structure](#) » [Profile types](#) » [Company Information](#)

[Show row weights](#)

LABEL	MACHINE NAME	FIELD TYPE	WIDGET	OPERATIONS
+ Company Name	field_company_name	Text	Text field	edit delete
+ Company Logo	field_company_logo	Image	Image	edit delete

Article ⊕

[EDIT](#) [MANAGE FIELDS](#) [MANAGE DISPLAY](#) [NODE AUTO LABEL](#)

[Home](#) » [Administration](#) » [Structure](#) » [Content types](#) » [Article](#)

[Show row weights](#)

LABEL	MACHINE NAME	FIELD TYPE	WIDGET	OPERATIONS
+ Title	title	Node module element		
+ Tags	field_tags	Term reference	Autocomplete term widget (tagging)	edit delete

How to spot a bundle

Show of type All

Create a page

Page title

Path

Display format
 of

Items to display

- Article
- Basic page
- Book page
- Call
- Cold Call
- Copy File
- District
- Install Pictures
- Public Service Message Approval
- Public Service Message Banner
- Public Service Message Copy
- Rep Documents
- School
- Wallboard Installment
- Wallboard Location
- Webform

How to spot a bundle

Show of type All sorted by

Create a page

Page title

Path
http://localhost/clients/aducation/

Why haven't I heard of bundles?

- Not labeled bundles in Drupal UI
- Referred to by different names per Entity type
 - Nodes = “content type”
 - Terms = “vocabulary”
 - Profile2 = “profile type”

Bundle Properties

Submission form settings Title	Title field label * Title
Publishing options Published , Promoted to front page	Preview before submitting <input type="radio"/> Disabled <input checked="" type="radio"/> Optional <input type="radio"/> Required
Display settings Display author and date information.	
Comment settings Open, Threading , 50 comments per page	
Menu settings	Explanation or submission guidelines

Bundle Properties

[Home](#) » [Administration](#) » [Structure](#) » [Taxonomy](#) » [Tags](#)

Tags

Name *

Machine name

Description

Save

Delete



An Entity

- Individual instance of an Entity type
- Every Entity belongs to a bundle (even users)
- Examples
 - User:User
 - admin User 1
 - Node:Blog Entry
 - Individual Blog post
 - Term:Tag
 - The Tag “awesome“

Entity types - SQL Backend

- All entities of a type share a “base table”
- Not separated by bundle
- Table column specifies bundle(if more than 1 bundle)
- Easy to query entities of same type but different bundles

Entity types - SQL Backend

				nid The primary identifier for a node.	vid The current node_revision.vid version identifier.	type The node_type.type of this node.	language The languages.language of this node.	title The title of this node, always treated as non-markup plain text.
<input type="checkbox"/>				1	1	webform	und	test
<input type="checkbox"/>				2	2	webform	und	new test form
<input type="checkbox"/>				3	3	page	und	demo page
<input type="checkbox"/>				4	4	webform	und	file tester

What about Fields?

- Entity Types can be fieldable or non-fieldable
- Each Bundle can have different fields
- All entities of a specific Bundle will have the same fields

What about Fields?

- Fields can be shared between Entity Types
- For example
 - Field State (field_state)
 - User:User:field_state
 - Node:Event:field_state
 - Profile2:Company:field_state
- Not in Drupal 8!
 - Shared between Bundles within Entity Type

Sharing Fields

- Using Views
 - CAN DO
 - List all nodes by where field_state = FL
 - NO CAN DO
 - List all nodes and users where field_state = FL
 - Because
 - Pages, Articles, Webforms, etc – Same table
 - Nodes and Users aren't stored in the same table

What about Fields?

- Examples
- Nodes
 - Article(bundle)
 - body, tags, image
 - Basic Page(bundle)
 - body
- Users
 - User(bundle not seen)
 - Address Field

Field Lingo

- Base field
 - Definition of Field
- Field instance
 - Base field attached to a bundle

Field Lingo - Example

- Field State (field_state) – Base Field
 - User:User:field_state – Field Instance
 - Node:Event:field_state – Field Instance
 - Profile2:Company:field_state – Field Instance

Field Lingo

- Creating a New Field
 - Form #1 – Base Field
 - Form #2 – Field Instance
- Re-using Field
 - Form #1 – Field Instance

Fields – SQL Backend

- For all field instances of base field
- 1 table - Current Data
- 1 table – Revision Data
- For Example
 - field_data_field_tags
 - field_revision_field_tags

Field – SQL Backend

field_data_field_tags

entity_type The entity type this data is attached to	bundle The field instance bundle to which this row belongs, used when deleting a field instance	deleted A boolean indicating whether this data item has been deleted	entity_id The entity id this data is attached to
node	webform	0	1
node	article	0	2
user	user	0	1

Entity API – Drupal 7 Contrib

- Entity Helper Functions
- Dependency of Many Contrib Entity Modules
- Provides Views and Rules Support
- Makes life easier for Contrib Maintainers

Entities and Views

- Views Can
 - List Entities of different Bundle but same type
- Views Can't
 - List Entities of different Entity types

Entities and Rules

- Rules Can
 - React to all Entity Events
 - Create New Entities
 - Figure out entity fields and properties

Programmer Helpers

- EntityFieldQuery
 - Easily Query Entities
 - Filter by Field Values
 - Filter by Properties
- EntityMetaData Wrappers
 - Easily Read and Set fields and properties

Modules: New Entities

- Profile2
- Entityforms
- Entity Contruction Kit

• Profile2: Fieldable User Profiles

- <http://drupal.org/project/profile2>
 - Provides multiple profiles for users
 - Can restrict Profiles based on Role
 - Why it's cool!
 - Kind of like Bundles for users
 - User entity type has 1 bundle “user“
 - Let's different roles have different fields
 - Example
 - Blogger Profile for fields that pertain only to bloggers

• Profile2: How it works

- 2 Entity types
 - Profile Type
 - Not fieldable
 - Contains bundle information “bundle of“
 - Profile
 - Fieldable

• Profile2: Example

- User Joe has a “blogger” profile
 - Instance of Profile entity
 - Bundle = “blogger profile”(profile type)
 - Fields
 - How long have you been blogging?(integer field)
 - Favorite Blog post (entityreference)

Profile 2: Why another Entity Type?

- Why not use a content type?
 - Different Properties
 - No Published status, sticky, etc.
 - Different behaviors
 - 1 profile per bundle per user(at most)
 - No comment attached
 - Separation for contrib modules
 - Rules
 - Views

• Entityforms: Fieldable Forms

<http://drupal.org/project/entityform>

- Provides fieldable forms for surveys, polls, etc.
- Why it's cool!
 - Allows use of any Drupal Field in forms
 - Provides automatic Rules, Views integration
 - Reduces amount of code needed
 - I made it!
- Example
 - Create surveys with Geofields

• Entityforms: How it works

- 2 Entity types
 - Entityform Type
 - Not fieldable
 - Contains bundle information “bundle of“
 - Entityform (submission)
 - Fieldable

• Entityform: Example

- Customer Survey
 - Instance of Entityform entity
 - Bundle = “customer_survey“(Entityform type)
 - Fields
 - How was your experience?(Long text)
 - Employ who helped you (entityreference)

Entityforms: Why not Webforms?

- Use any Drupal Field
 - Field Collection, Addressfield, Entityreference
- Rules integration
 - Knows all values of the submissions
- Views integration
 - Knows all values of the submissions
- Easy to extend

• Entity Construction Kit: ECK

<http://drupal.org/project/eck>

- Create Entity Types and Bundles through the browser
- Why it's cool!
 - Allows creation of new Entity Types without coding
 - Provides developer framework for creating Entity Types
- Example
 - Employ Entity

Does X module provide an Entity type?

- Read the Docs!
- Docs don't say! What Docs?
- Search Files for:
 - “Implements hook_entity_info().”

Making Your Own Entities

- Storing data in you own table?
- Make it an entity!
- Implement hook_entity_info
- Thats it! (if you don't want a UI)

Modules: New Fields & Entities

- Field Collections
- Organic Groups
- Drupal Commerce

• Field Collections

http://drupal.org/project/field_collection

- Fields that fieldable Entities
- Why it's cool!
 - Allows bundling Fields together
 - Like Field Groups but with multiple values and reuse
- Example
 - Reuse a Business Info Field Collection in Entityform Type, Profile2, and Node

• Field Collections: How it works

- Entity Type: field_collection_item
- Bundle: Each Field Collection Field
- Fields attached to bundle

Field Collections: Why not use a reference?

- Field Collection Item always have a parent entity
- Field Collection Items are deleted when parent is deleted
- Relationship is built in
- Field Collection don't need their own properties

Field Collections

WORK EXPERIENCE

Company Name *
NASA

DATES
 Show End Date
*
10/11/2013
Format: 10/11/2013

to:
10/11/2013
Format: 10/11/2013

Remove

Company Name *
Green Peace

DATES
 Show End Date
*
10/11/2013
Format: 10/11/2013

Remove

Organic Groups

- <https://drupal.org/project/og>
- Why it's cool!
 - User Create-able Groups
- Example
 - Team Content Type

Organic Groups

■ Fields

- Provides new Widgets and Behaviors for Existing Field types
- Make a Node a Group
 - Boolean Field
- Make Groups content
 - Entity Reference + OG Reference Widget
- Content Visibility
 - List Field

Organic Groups

- New Entity Types
 - Membership Types
 - Membership
- Allows
 - Different Fields per Membership Type
 - Rules to react to subscriptions

Drupal Commerce

- <https://drupal.org/project/commerce>
- Why it's cool!
 - Everything is an Entity
 - Super Flexible Commerce System

Drupal Commerce

- Entity Types
 - Payment Transaction
 - Products
 - Orders
 - Customer Profile
 - Line Item
 - Order

Drupal Commerce

- Field Types
 - Line Item Reference
 - Customer Profile Reference
 - Price
 - Etc...

Drupal Commerce

- Built on Entities and Fields
- Drupal Community Benefited
 - Address Field Module
 - Inline Entity Form
 - Etc...

Module Selection

References vs Entity Reference

References Module

Provides:

- User Reference Fields
- Node Reference Fields

Entity Reference Module

Provides:

- Entity Reference Field

Works with any Entity Type

Winner?????

References vs Entity Reference

Winner!!!!

Entity Reference

- More Flexible

Evaluating Modules

- Does module X store new Data Type?
- Is Data stored in a new Entity Type?
- Is Entity Type Field-able?
- Does module x use Entity API?

Yes = More Flexible, Less Code, More Integration

Evaluating Modules

- Does module X attach data to existing Entity Types?
- Is data stored in a Field?
- Is module Entity agnostic?

Yes = More Flexible, More Control, More Integration

Maybe less code

Performance?

Entity Hooks

- Provided by Entity API
- Other modules can react to/ alter:
 - Create
 - Update
 - Delete
 - View

Entities, Bundles, and Fields



Ted Bowman
sixmiletech.com
@tedbow

Questions?