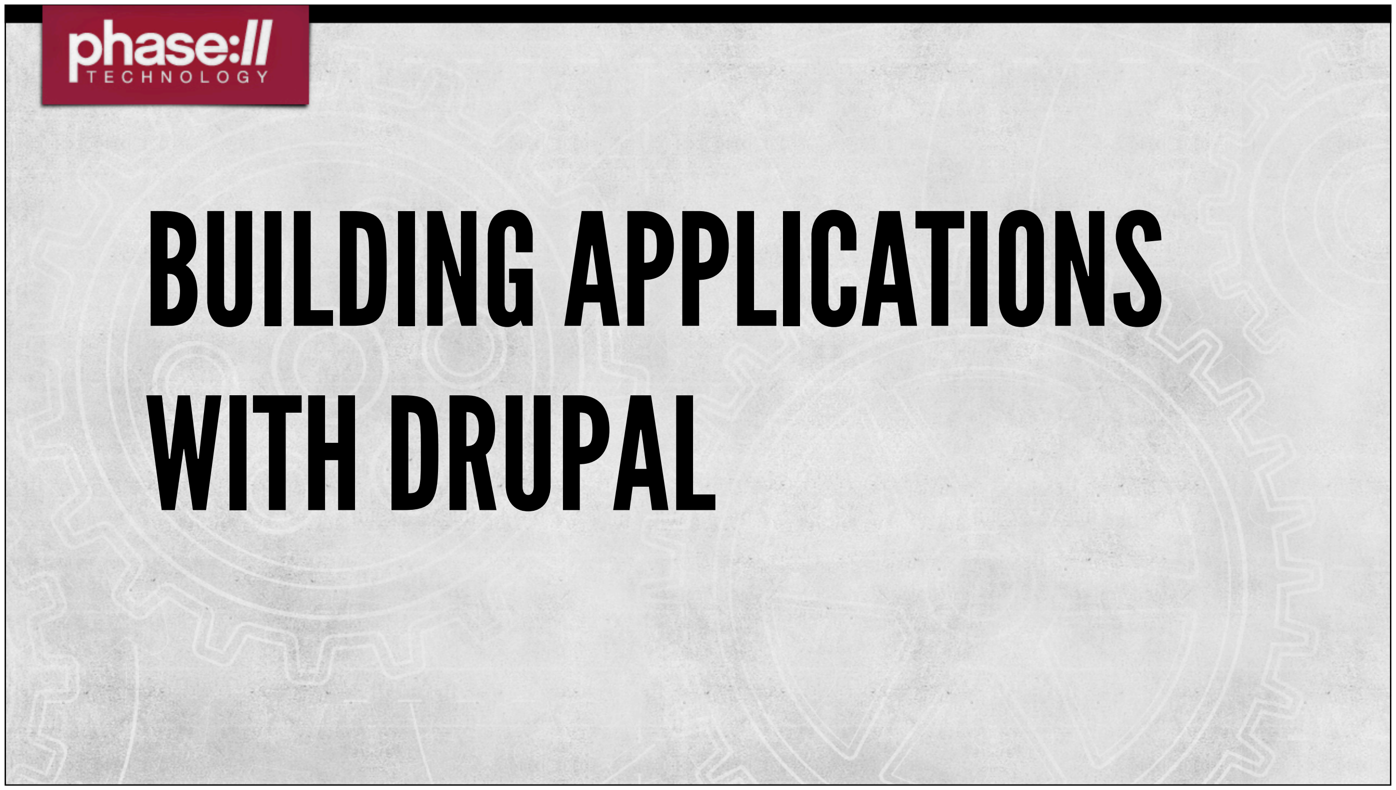


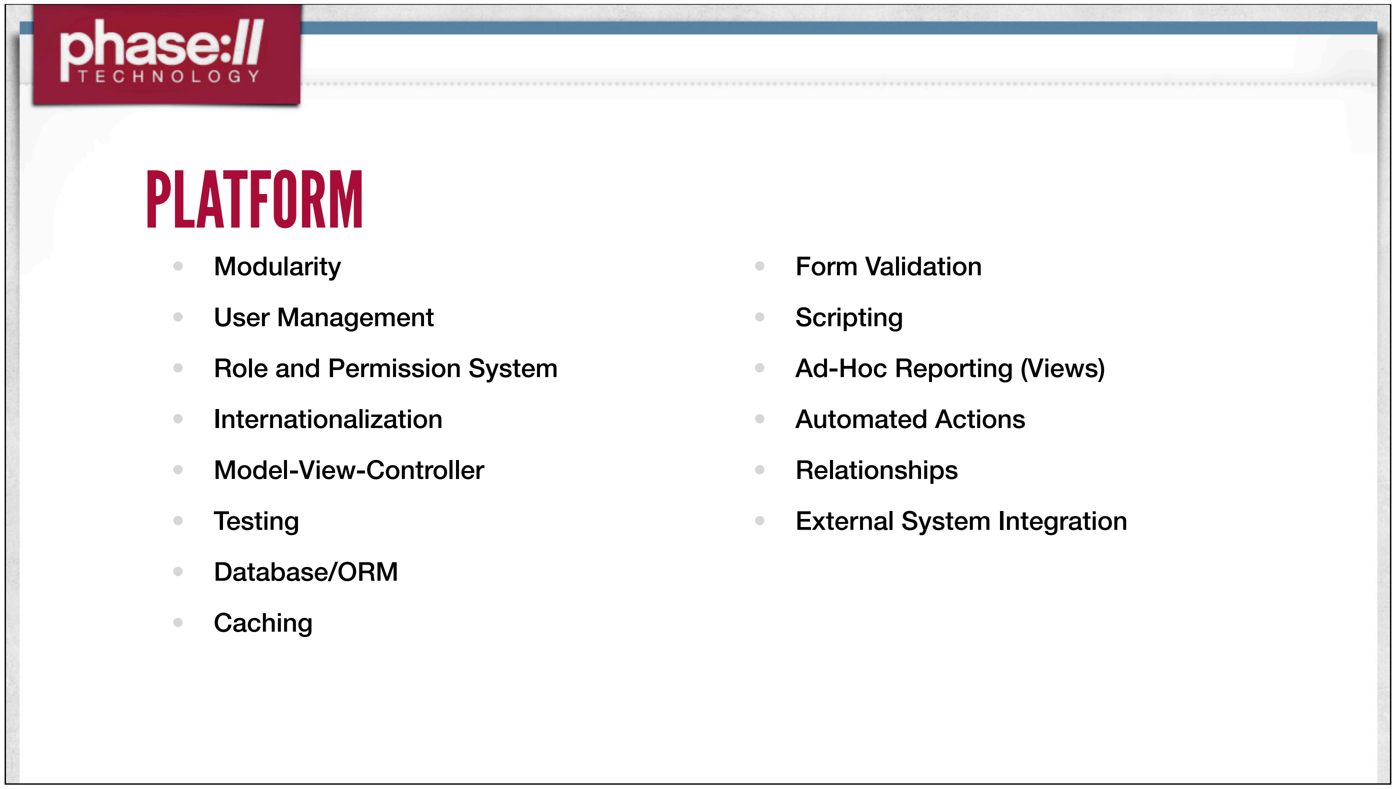
BUILDING APPLICATIONS WITH DRUPAL

I’m going to talk today about why you should consider building business applications with Drupal

phase:// TECHNOLOGY

WHY DRUPAL

The first question that leaps to mind likely is: why Drupal, isn't it a CMS? And the answer to this is yes and no. Drupal actually describes itself as a content management platform which is a subtle but important distinction from being a CMS. When you think of Drupal or any CMS what immediately jumps to your mind? Likely a website and publishing information right. The word content itself seems to summon the idea of "I have something to tell the world" and that is unfortunate.



PLATFORM

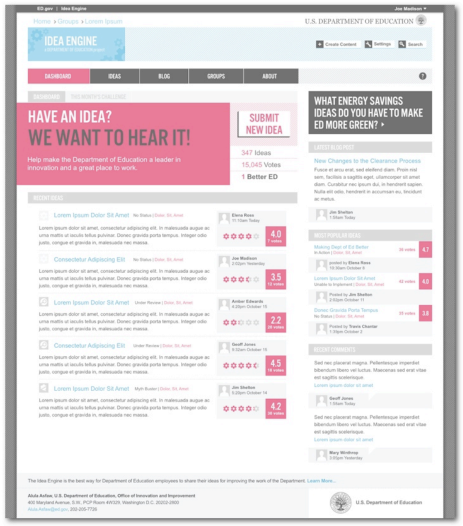
- Modularity
- User Management
- Role and Permission System
- Internationalization
- Model-View-Controller
- Testing
- Database/ORM
- Caching
- Form Validation
- Scripting
- Ad-Hoc Reporting (Views)
- Automated Actions
- Relationships
- External System Integration

When we say Drupal is a content management platform what exactly do we mean? Primarily we mean that Drupal is modular. With each release an ever growing number of components can be swapped out or have their behavior altered. Also, either out of the box or via the addition of some contributed modules you get all of the things you might think of when you think about a framework upon which to build an application.

Some of these Drupal does a little better job at than others, the internationalization system is pretty good, the model-view-controller can be pretty weak depending on how you approach that in the context of a web application, database abstraction is pretty good if you behave, ORM can be pretty weak.

NON CMS APPLICATIONS

- Ubercart/Commerce
  - Rooms
- OpenAtrium
  - Calendar
  - Case Tracker
- Ideation



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WE WANT TO HEAR IT!

Help make the Department of Education a leader in innovation and a great place to work.

347 Ideas
15,045 Votes
1 Better ED

Lorem Ipsum Dolor Sit Amet No Status | Dolor, Sit, Amet
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Elena Ross 11:10am Today — 4.0, 7 votes

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Joe Madison 2:02pm Yesterday — 3.5, 12 votes

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Amber Edwards 4:20pm October 15 — 2.2, 20 votes

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Geoff Jones 9:32am October 15 — 4.5, 18 votes

Lorem Ipsum Dolor Sit Amet Myth Buster | Dolor, Sit, Amet
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Jim Shelton 5:20pm October 14 — 4.2, 30 votes

WHAT ENERGY SAVINGS IDEAS DO YOU HAVE TO MAKE ED MORE GREEN? ▸

New Changes to the Clearance Process
Fusce et arcu erat, sed eleifend diam. Proin nisl sem, facilisis a sagittis eget, ullamcorper sit amet diam. Curabitur nec ipsum dui, in hendrerit sapien. Nulla elit odio, hendrerit in accumsan eu, tincidunt ac metus.
Jim Shelton 1:58am Today

Making Dept of Ed Better — In Action | Dolor, Sit, Amet — 36 votes 4.7
posted by Elena Ross 10:30am October 8
Lorem Ipsum Dolor Sit Amet — Unable to Implement | Dolor, Sit, Amet — 42 votes 4.0
Posted by Jim Shelton 2:02pm October 11
Donec Gravida Porta Tempus — No Status | Dolor, Sit, Amet — 35 votes 3.8
Posted by Travis Chantar 1:39pm October 2

Sed nec placerat magna. Pellentesque imperdiet bibendum libero vel luctus. Maecenas sed erat vitae est sagittis scelerisque.
Lorem ipsum dolor sit amet
Geoff Jones 1:58am Today

Sed nec placerat magna. Pellentesque imperdiet bibendum libero vel luctus. Maecenas sed erat vitae est sagittis scelerisque.
Lorem ipsum dolor sit amet
Mary Winthrop 3:05pm Yesterday

The Idea Engine is the best way for Department of Education employees to share their ideas for improving the work of the Department. Learn More...

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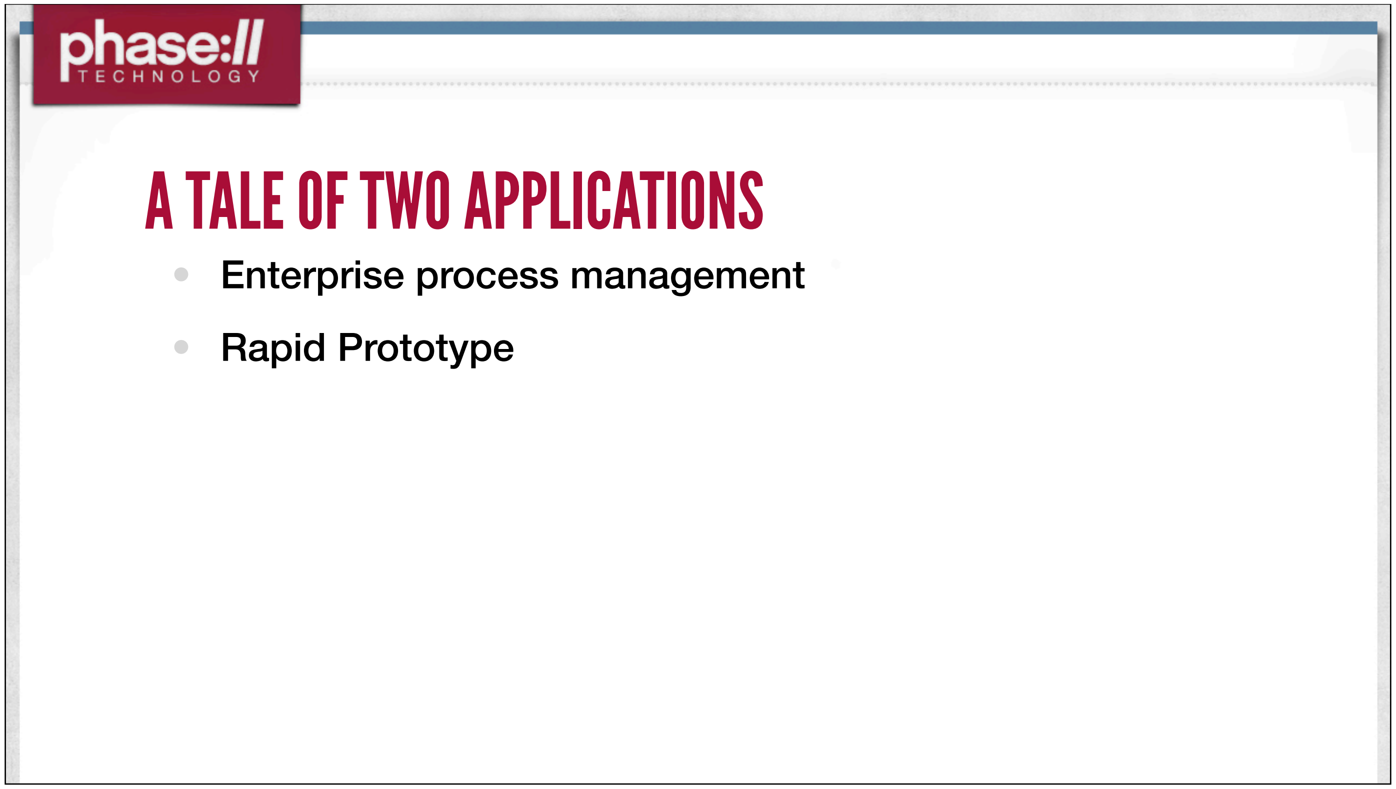
Some non CMS applications that already exist in Drupal



phase:II TECHNOLOGY

A TALE OF TWO APPLICATIONS

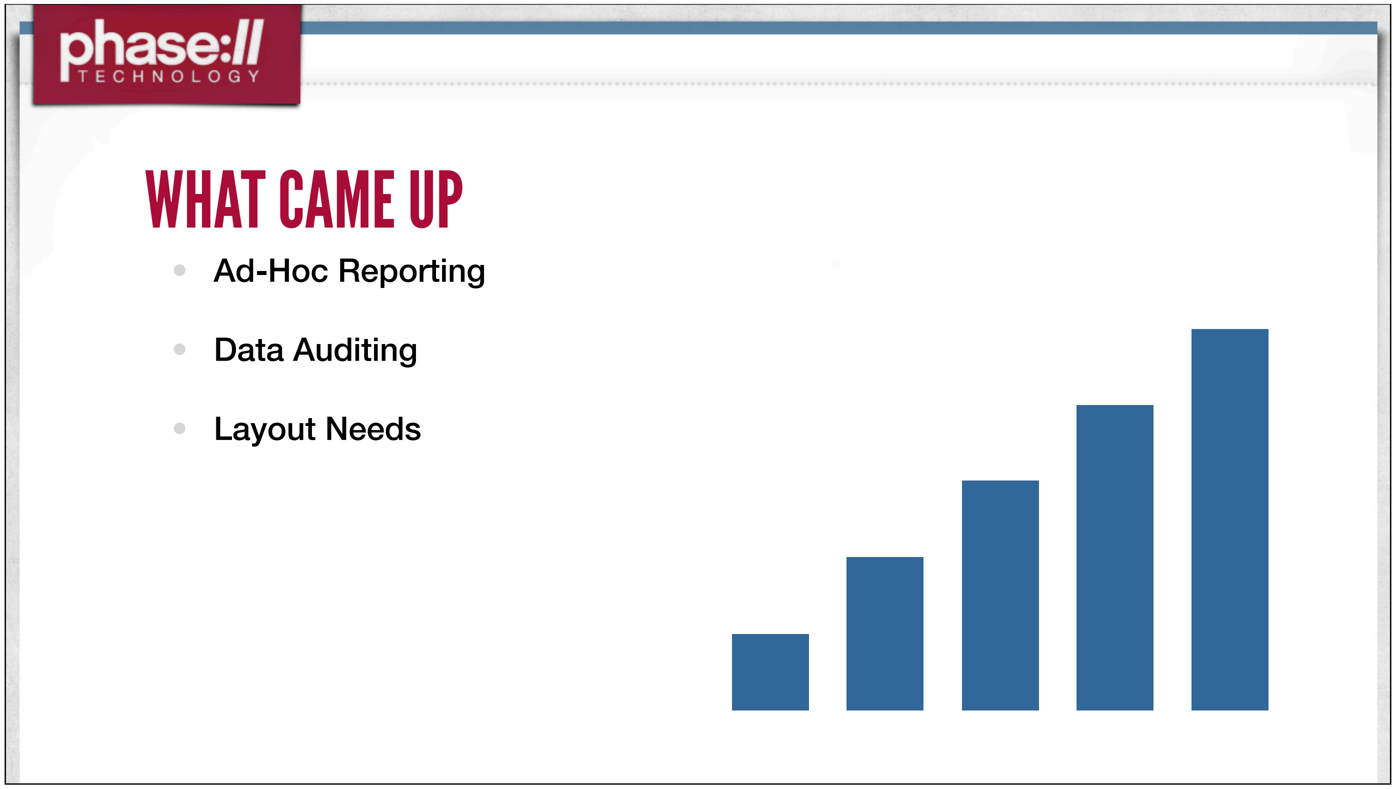
- Enterprise process management
- Rapid Prototype

in 2011, I was involved in a project that used Drupal as a platform for a large and very complex business application. To give you an idea about the size of this application at the end we wound up tracking and managing 30 custom entities with 200 data points along with 125 different fields (some complex ones like address with multiple data points). In addition, there were 10 different custom workflows that the data being tracked could process through, with certain steps in parallel and others happening sequentially.

The existing system used a combination of spreadsheets, a COTS system feeding a customized application and was all over the map.

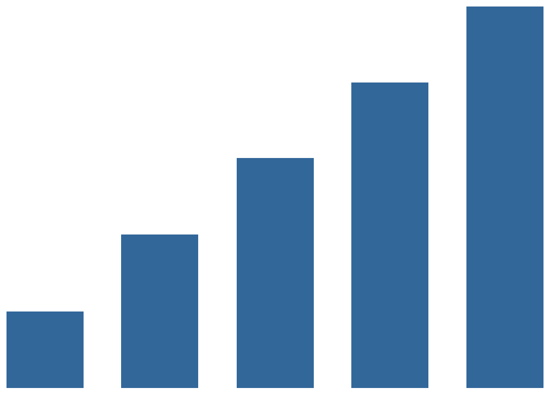
As part of this project we actually evaluated whether to use Drupal or write a custom application using something like Java or Rails or Python and any of a number of frameworks out there or whether to build it in Drupal. Our initial analysis was that from a development perspective, we thought the number of hours to leverage Drupal versus writing it from scratch were about the same. Due to some expertise at the client with Drupal, from a long term management and support standpoint, as well as evolving the system Drupal made sense.

So, you might be thinking, initial analysis was even and customer knowledge tipped the balance towards using Drupal. That's not the most glowing of recommendations.



WHAT CAME UP

- Ad-Hoc Reporting
- Data Auditing
- Layout Needs



Not having been involved in the initial analysis, I'll have to admit I was a bit nervous when I first read the project description and during the entire project I was always on the lookout for places where I felt like Drupal was in the way and where we would have been better served using another framework or just writing a completely custom application.

At the end, however, I never found one. And I think that speaks volumes about what is possible with Drupal. In addition, there were things that came up during the project that made me glad I had Drupal at my side. When it came to light that there was an expectation of free form reporting, views was able to let the client get at data without a deep understanding of the database structure.

When we discovered the expectation of tracking field by field changes, the revision system of nodes and the new entity system allowed for an easy framework to catch and log data that changed as it was being saved to the database.

As data entry screens took on ever increasingly complex information displays, the block and template system of Drupal meant it was generally a matter of placing an element differently rather than completely rewriting a page. While most of our system used code to determine what to display, we always had systems like context and panels that we could fall back on when needed.

So while going through this development, and constantly asking the question about whether we were doing the right thing by using Drupal I had a colleague show me something he was working on.

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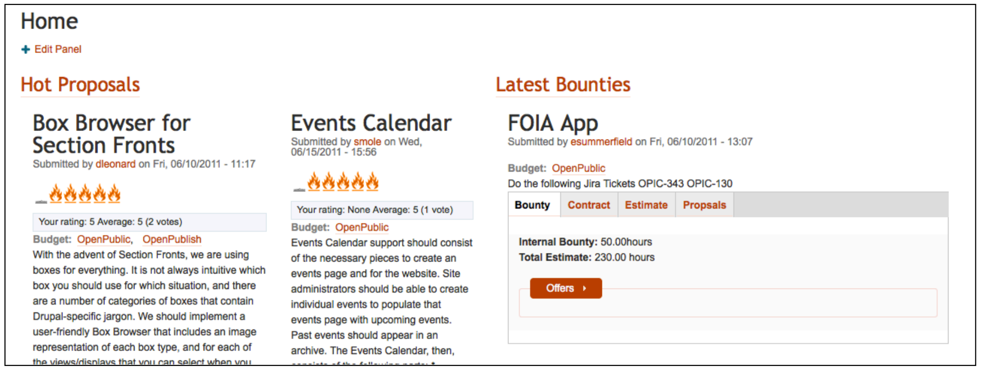
DRUPAL AS A RAPID PROTOTYPING TOOL

- Ideation++



Home

+ Edit Panel

Hot Proposals

Box Browser for Section Fronts
Submitted by dleonard on Fri, 06/10/2011 - 11:17

Your rating: 5 Average: 5 (2 votes)

Budget: OpenPublic, OpenPublish

With the advent of Section Fronts, we are using boxes for everything. It is not always intuitive which box you should use for which situation, and there are a number of categories of boxes that contain Drupal-specific jargon. We should implement a user-friendly Box Browser that includes an image representation of each box type, and for each of the views/displays that you can select when you

Events Calendar
Submitted by smole on Wed, 06/15/2011 - 15:56

Your rating: None Average: 5 (1 vote)

Budget: OpenPublic

Events Calendar support should consist of the necessary pieces to create an events page and for the website. Site administrators should be able to create individual events to populate that events page with upcoming events. Past events should appear in an archive. The Events Calendar, then, consists of the following parts: *

Latest Bounties

FOIA App
Submitted by esummerfield on Fri, 06/10/2011 - 13:07

Budget: OpenPublic

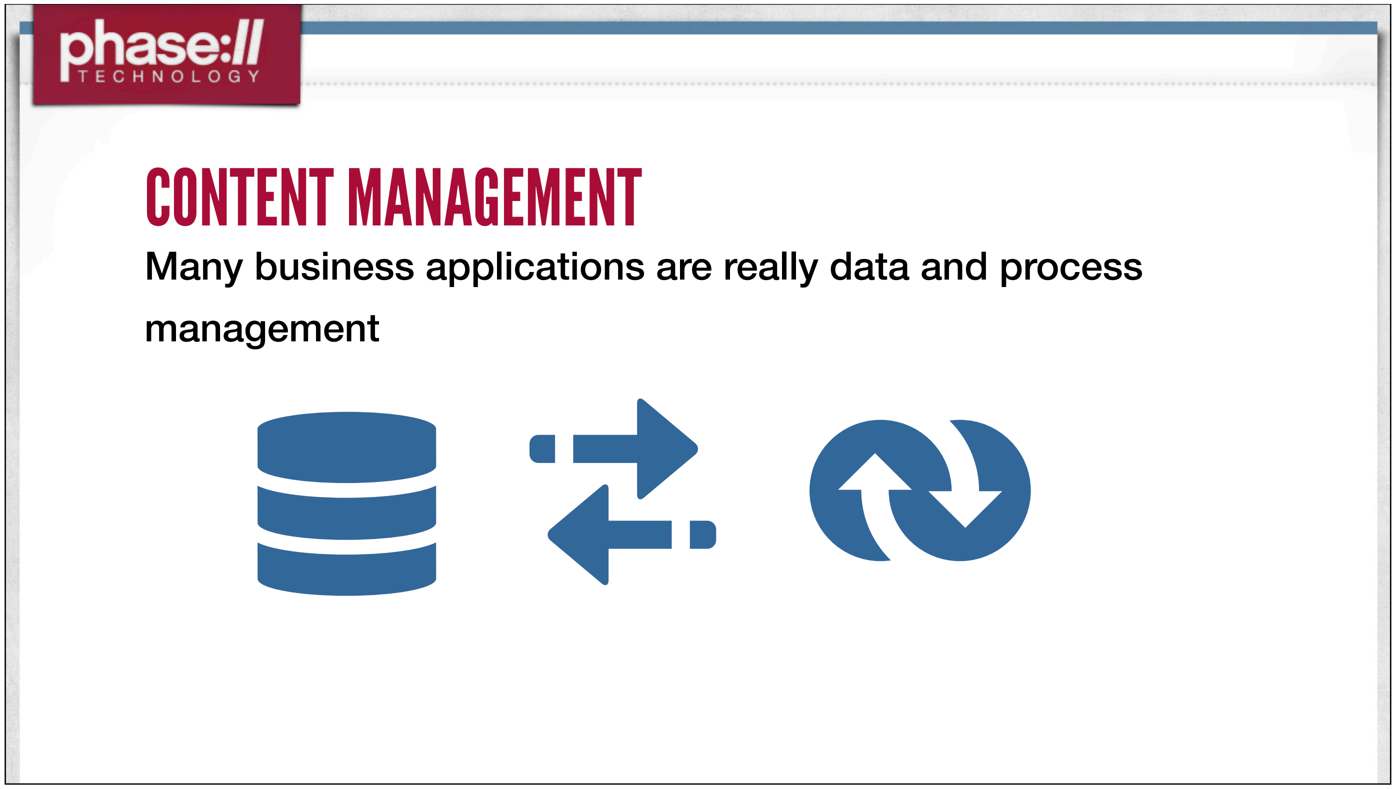
Do the following Jira Tickets OPIC-343 OPIC-130

Internal Bounty: 50.00hours
Total Estimate: 230.00 hours

There is a fundamental tension in firms that do work for clients and contribute to open source or have their own products as well between managing the amount of time dedicated to one type of work versus another. In a perfect world, everything we want to build and contribute would be exactly what clients need and want to and can pay for. In the real world, however, we usually find that we see a need that's a little bigger than the client's vision and need to invest some time to build the bigger solution and then we can use that over and over again in different client work.

So that tension always leads to the need to allocate time that is unbilled for which my colleague, who is an economist at heart as well as a great developer, proposed we solve by expanding on the concept of the ideation tool. So the way this would work is that people could submit proposals about what needs they saw across clients, or how getting some additional time would allow for a solution for a specific client to be made reusable and then those could get selected, and approved and that would allocate extra hours to the budget for the project.

Now, the most interesting thing about this was that he put a system together that did that over the course of conference calls throughout the week and while showing it to me he mentioned how pleasantly surprised he was at how little code he actually had to write to make it work.



CONTENT MANAGEMENT

Many business applications are really data and process management

So if we think about the fundamental nature of most business applications, and if we change Drupal's definition of "content management platform" to "data management platform" or even to "process management platform" it starts to become clear what types of applications Drupal can pretty easily start to shine in.

How many of you can think of a process in your own organizations or one you deal with that is basically this:

Fill out an application
Have person A review it and perform an approval or a check, sends it to person B who reviews it and performs a different type of approval or check, sends it to person C and so on until at the end you or your customer gets a permit or a license or access to some service?

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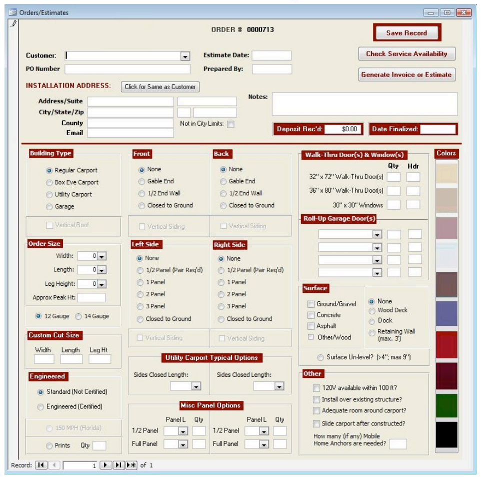
EMAIL, ACCESS AND EXCEL

- Access control
- Sharing
- Automation


Orders/Estimates
Save Record
Check Service Availability
Generate Invoice or Estimate
Click for Same as Customer
Colors

ORDER # 0000713

Customer:
PO Number
Estimate Date:
Prepared By:

INSTALLATION ADDRESS:
Address/Suite
City/State/Zip
County
Email
Not in City Limits: ☐
Notes:
Deposit Rec'd: $0.00
Date Finalized:

Building Type: [✓ Regular Carport] Box Eve Carport / Utility Carport / Garage
☐ Vertical Roof

Front: [✓ None] Gable End / 1/2 End Wall / Closed to Ground
☐ Vertical Siding

Back: [✓ None] Gable End / 1/2 End Wall / Closed to Ground
☐ Vertical Siding

Walk-Thru Door(s) & Window(s)

	Qty	Hdr
32" x 72" Walk-Thru Door(s)		
36" x 80" Walk-Thru Door(s)		
30" x 30" Windows		

Roll-Up Garage Door(s)

Order Size
Width: 0
Length: 0
Leg Height: 0
Approx Peak Ht:
[✓ 12 Gauge] 14 Gauge

Left Side: [✓ None] 1/2 Panel (Pair Req'd) / 1 Panel / 2 Panel / 3 Panel / Closed to Ground
☐ Vertical Siding

Right Side: [✓ None] 1/2 Panel (Pair Req'd) / 1 Panel / 2 Panel / 3 Panel / Closed to Ground
☐ Vertical Siding

Surface
☐ Ground/Gravel
☐ Concrete
☐ Asphalt
☐ Other/Wood
[✓ None] Wood Deck / Dock / Retaining Wall (max. 3')
Surface Un-level? (>4"; max 9")

Custom Cut Size
Width Length Leg Ht

Utility Carport Typical Options
Sides Closed Length:
Sides Closed Length:

Engineered: [✓ Standard (Not Certified)] Engineered (Certified)
150 MPH (Florida)
Prints Qty

Misc Panel Options

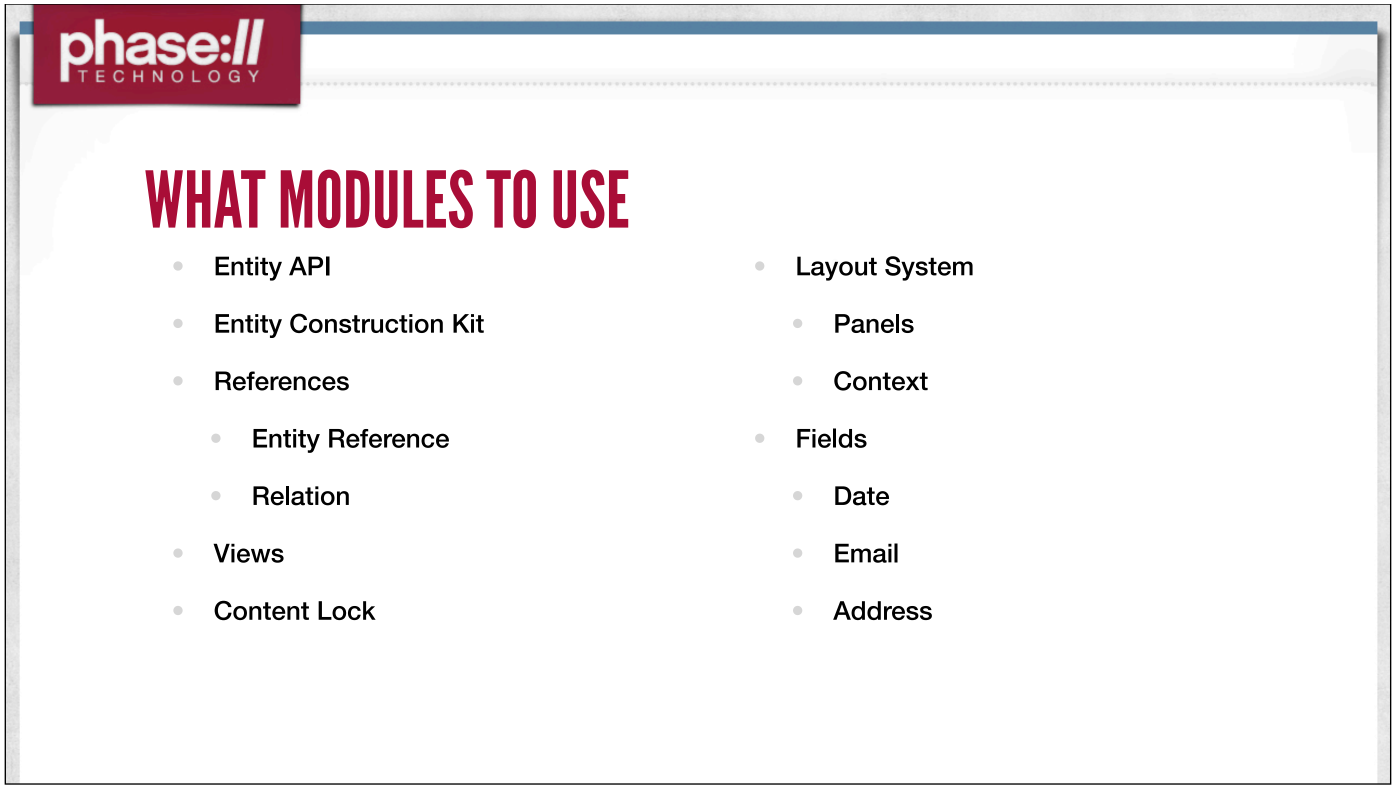
	Panel L	Qty		Panel L	Qty
1/2 Panel			1/2 Panel		
Full Panel			Full Panel		

Other
☐ 120V available within 100 ft?
☐ Install over existing structure?
☐ Adequate room around carport?
☐ Slide carport after constructed?
How many (if any) Mobile Home Anchors are needed?

Record: 1 of 1

or, how many times do you have to does your job involve sending out for approvals from other organizations and then when you get that information back continuing on to another step. How many of you have your own little systems for managing that process, and for how many of you is that invisible to others in your department

You probably already have a lot of business applications you might not even think of as an application. That spreadsheet you have on a shared drive. Those calendar reminders you set to check back in with X, those access databases with the little form builders and query tools you've cobbled together to help keep track of your work are all applications where Drupal might offer a valuable alternative.



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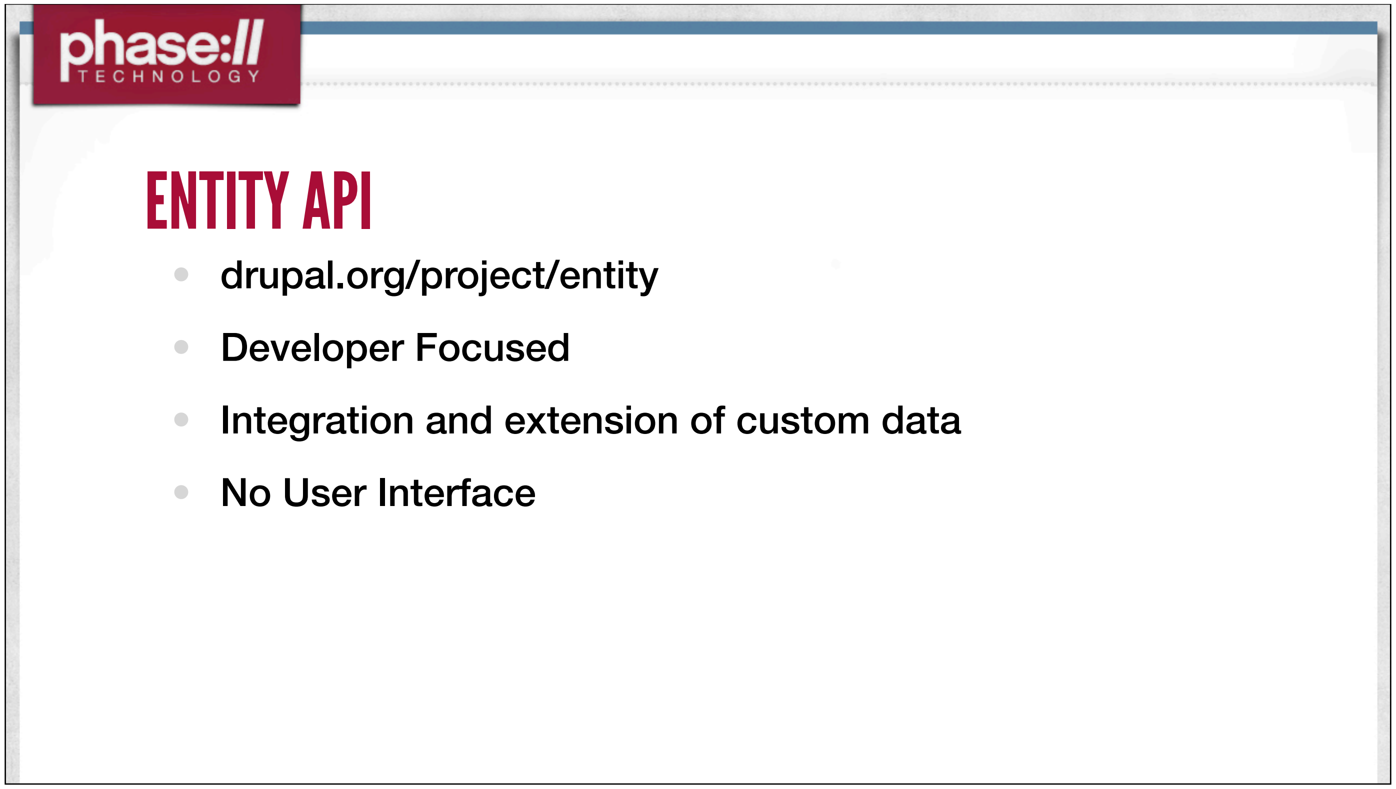
WHAT MODULES TO USE

- Entity API
- Entity Construction Kit
- References
  - Entity Reference
  - Relation
- Views
- Content Lock
- Layout System
  - Panels
  - Context
- Fields
  - Date
  - Email
  - Address

So there are generally a set of modules that you’ll find very important when thinking about Drupal as an application platform instead of a CMS.



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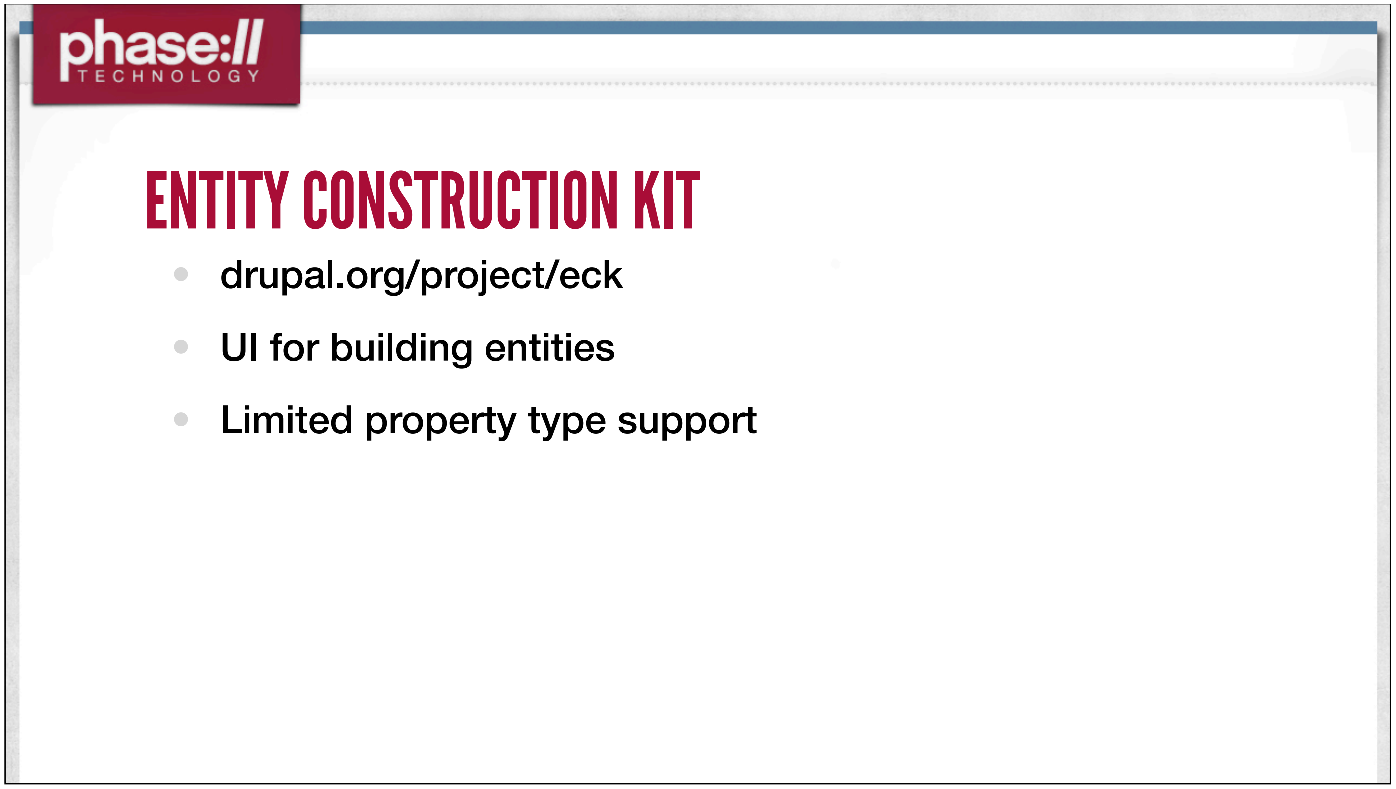
ENTITY API

- drupal.org/project/entity
- Developer Focused
- Integration and extension of custom data
- No User Interface

A lot of the finishing of the entity system in Drupal 7 in terms of allowing for custom data to be treated as a first class member of the Drupal system happens in the entity module.
For developers, the entity API module is essential if you are going to write custom tables for storing data. It has all kinds of shortcuts for describing your data to views, rules and with a little work can be switched to help allow for revisions as well.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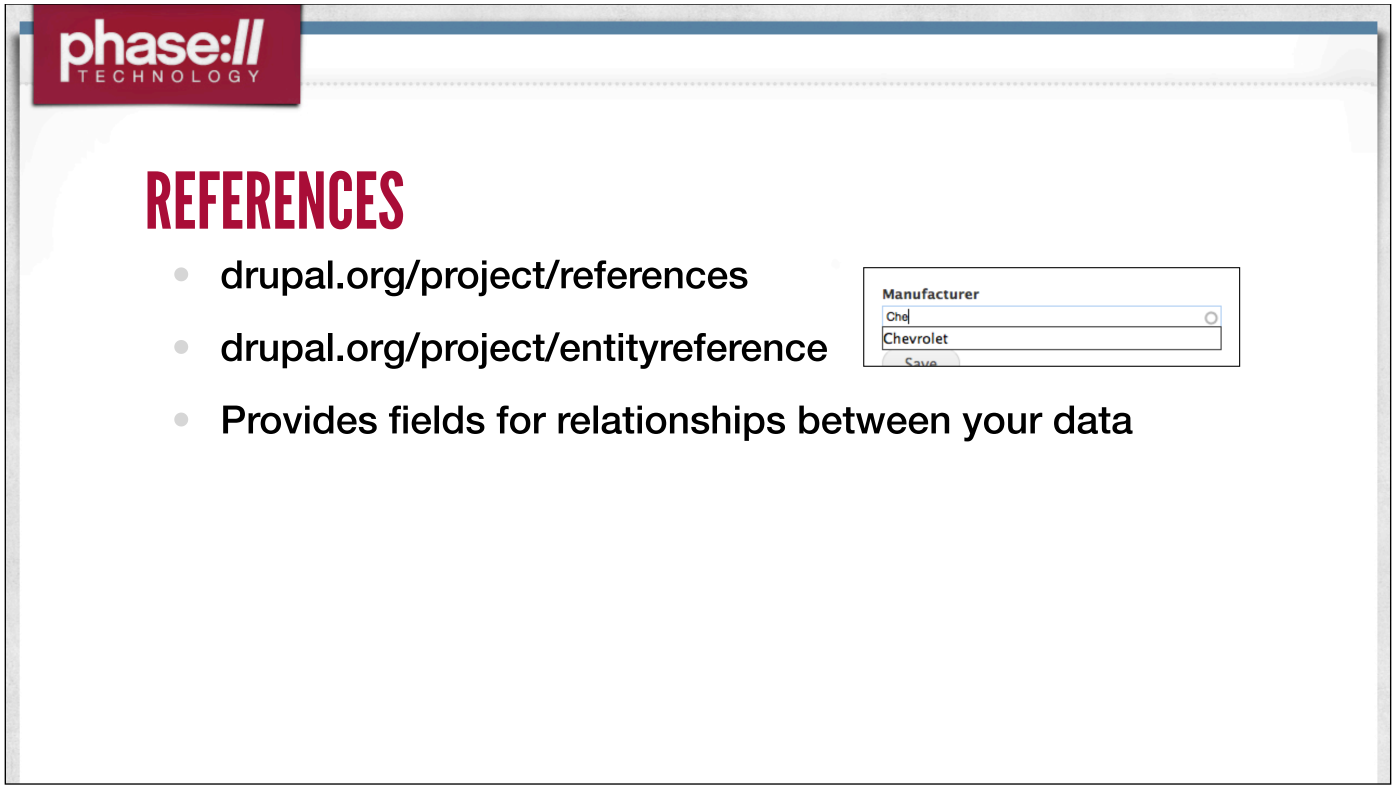
ENTITY CONSTRUCTION KIT

- drupal.org/project/eck
- UI for building entities
- Limited property type support

Entity construction kit fills a whole in the entity system which was that site builders who might not be developers were kind of left out.

Without entity construction kit, if you want to build an application in Drupal 7 but aren't comfortable enough to write PHP code you sometimes have to fall back to previous Drupal concepts of everything is a node as the node system, being fairly mature has the tools for creating new content types. Entity construction kit actually lets you create new base types so that you can create a type like an automobile make or model or a donor or cause without it being a node. Lets you reserve nodes for publishing related activities.



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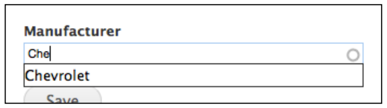
REFERENCES

- drupal.org/project/references
- drupal.org/project/entityreference
- Provides fields for relationships between your data

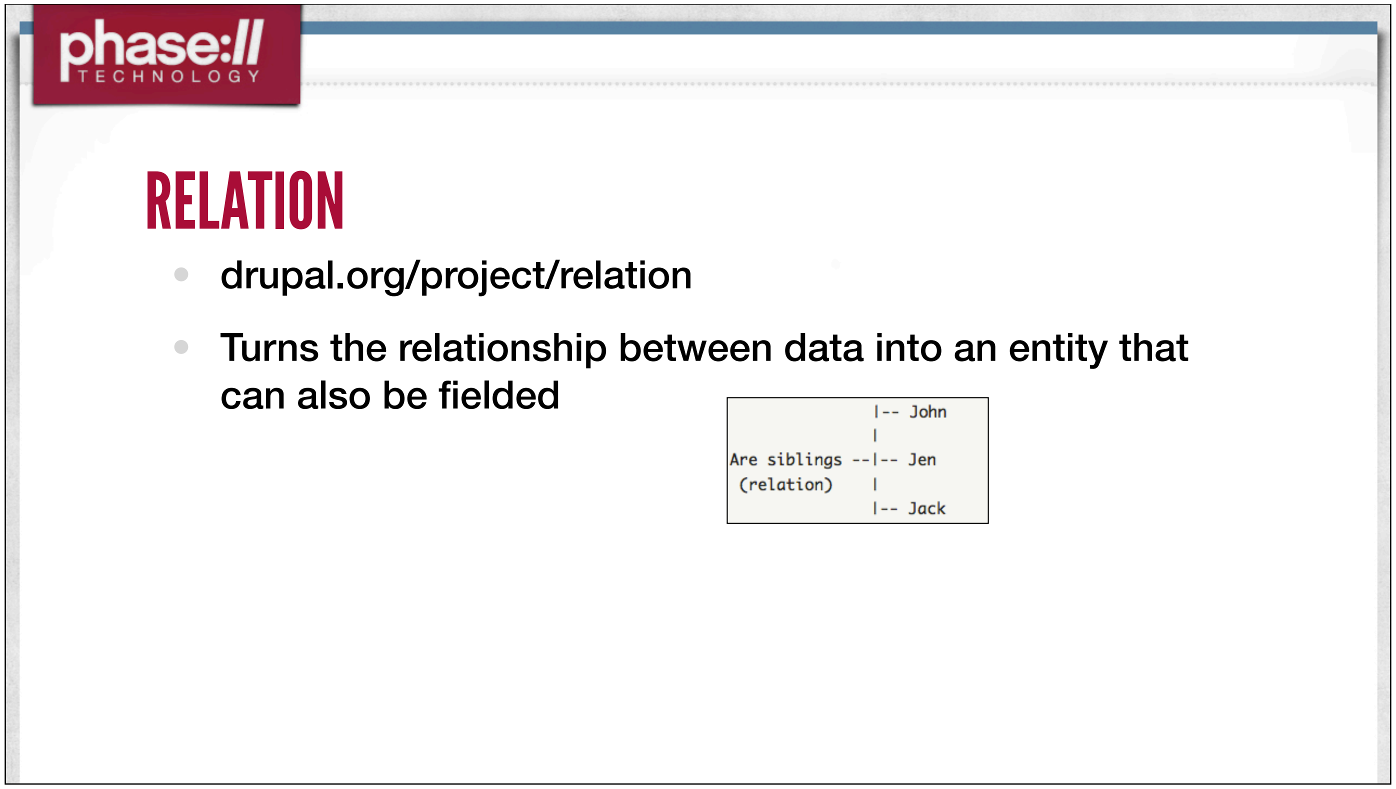


Manufacturer

Che

Chevrolet

References provides two fields, user and node reference. These allow you to set up relationships between your data when you work in the “everything is a node” model (in terms of references). Entity reference is more generic and allows you to set up data so that you can say things like “ford is a manufacturer of cars”



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RELATION

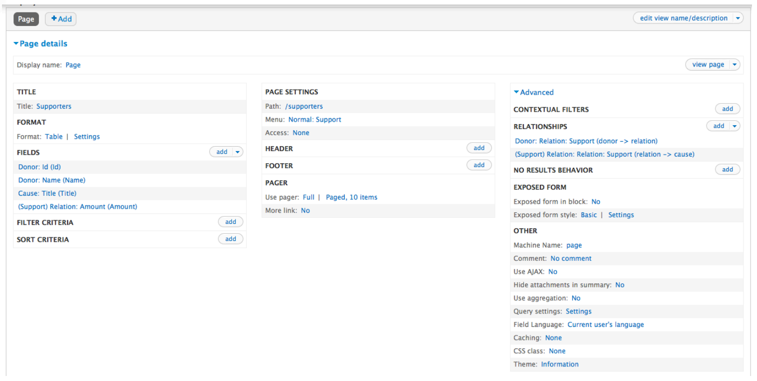
- drupal.org/project/relation
- Turns the relationship between data into an entity that can also be fielded

```
                      |-- John
                      |
Are siblings --|-- Jen
 (relation)      |
                      |-- Jack
```

Relation allows you to create interesting relationships amongst your data. So, for example, if had an entity of person and you wanted to field that person’s siblings, if you used entity reference you would need to fill out the siblings on each person. With relation you can say that these three people are related.

In addition, you can say things like “support” as a relationship and log that person x supports cause y and then on that relationship you could have a field that was amount for recording the amount of donations.

VIEWS



Page | Add | edit view name/description

Page details

Display name: Page | view page

TITLE
Title: Supporters

FORMAT
Format: Table | Settings

FIELDS | add
Donor: Id (Id)
Donor: Name (Name)
Cause: Title (Title)
(Support) Relation: Amount (Amount)

FILTER CRITERIA | add

SORT CRITERIA | add

PAGE SETTINGS
Path: /supporters
Menu: Normal: Support
Access: None

HEADER | add

FOOTER | add

PAGER
Use pager: Full | Paged, 10 items
More link: No

Advanced

CONTEXTUAL FILTERS | add

RELATIONSHIPS | add
Donor: Relation: Support (donor -> relation)
(Support) Relation: Relation: Support (relation -> cause)

NO RESULTS BEHAVIOR | add

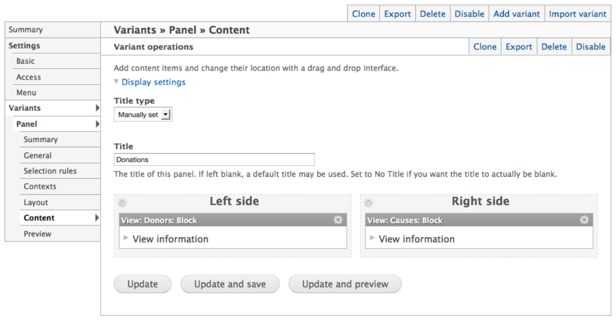
EXPOSED FORM
Exposed form in block: No
Exposed form style: Basic | Settings

OTHER
Machine Name: page
Comment: No comment
Use AJAX: No
Hide attachments in summary: No
Use aggregation: No
Query settings: Settings
Field Language: Current user's language
Caching: None
CSS class: None
Theme: Information

- drupal.org/project/views
- Views UI - graphical construction of queries
- Blocks and Pages

LAYOUT SYSTEMS

- Panels
  - drupal.org/project/panels
- Context
  - drupal.org/project/context



Variants » Panel » Content

Variant operations

Add content items and change their location with a drag and drop interface.

Display settings

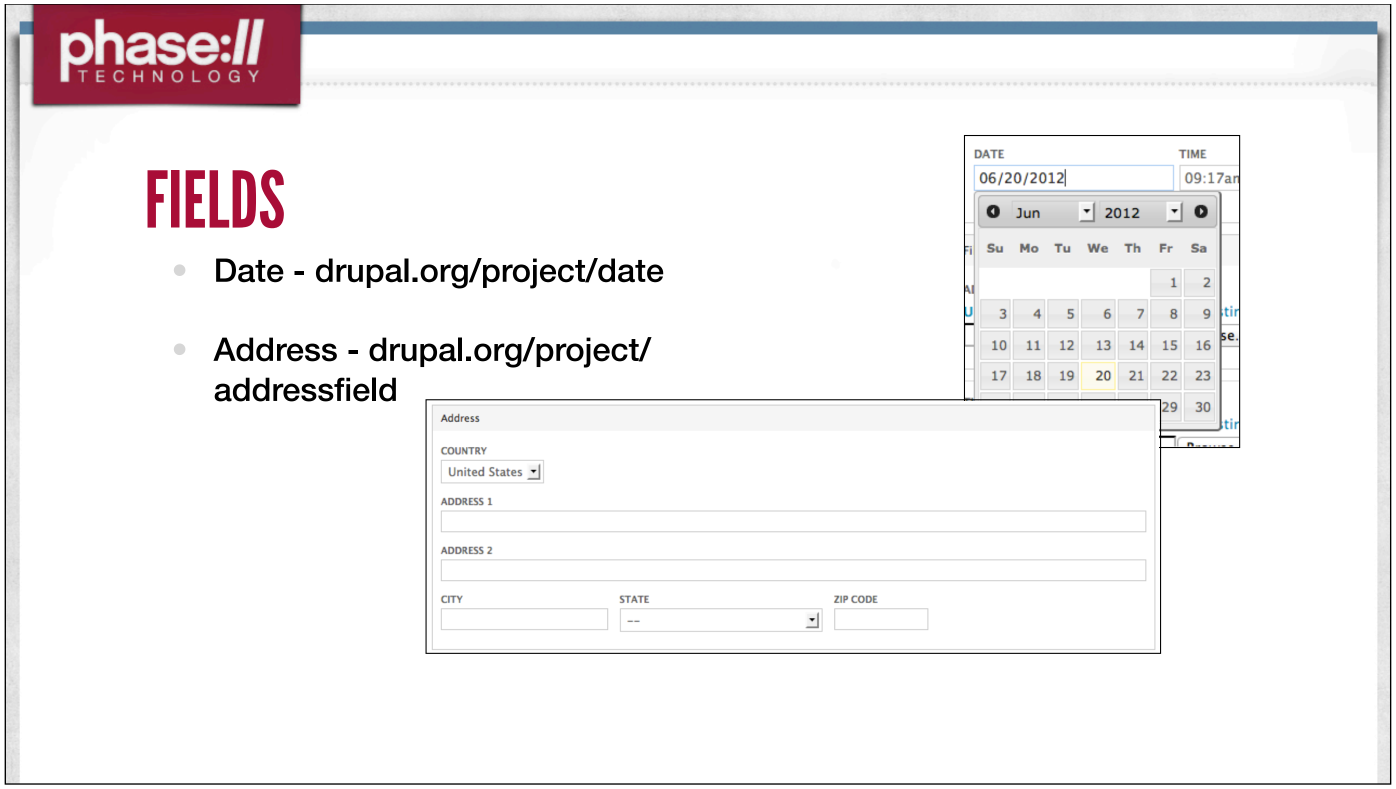
Title type: Manually set

Title: Donations

The title of this panel. If left blank, a default title may be used. Set to No Title if you want the title to actually be blank.

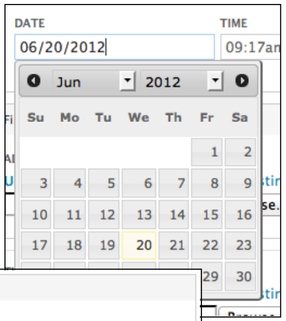
Left side: View: Donors: Block — View information

Right side: View: Causes: Block — View information



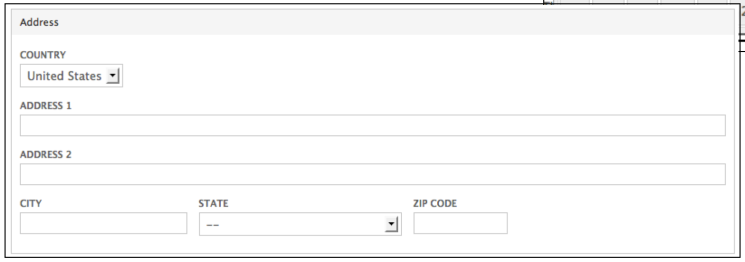
FIELDS

- Date - drupal.org/project/date
- Address - drupal.org/project/addressfield



DATE 06/20/2012
TIME 09:17am

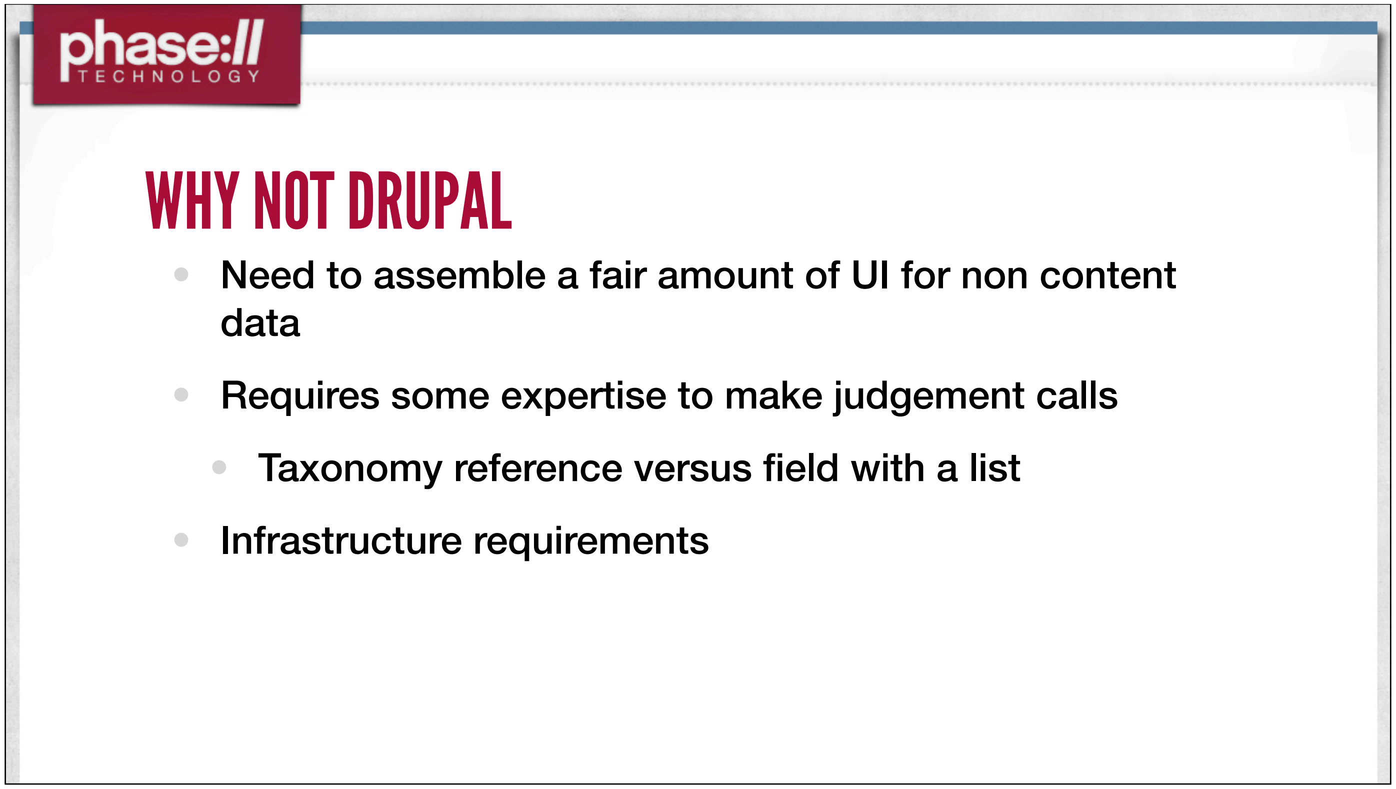
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
					29	30



Address

COUNTRY: United States
ADDRESS 1:
ADDRESS 2:
CITY:
STATE: --
ZIP CODE:

Ensure that you use the correct type of field for the type of data you want to store



WHY NOT DRUPAL

- Need to assemble a fair amount of UI for non content data
- Requires some expertise to make judgement calls
  - Taxonomy reference versus field with a list
- Infrastructure requirements

As much as I would like you to use Drupal for building an application, this talk is really meant to expand your thinking about what is possible. Drupal isn't going to be appropriate for all things. You still have to make smart decisions about when it is appropriate for an application and when it isn't. There is a higher learning curve in that it's more difficult than an email and spreadsheet based system that most users can set up on their own.

It can bring many benefits, however, in terms of having a natural multiuser application from the start and allowing outside visibility into the process.