



**DRUPAL**  
JUNE 15-16-17

**DEVELOPER**  
DAYS BARCELONA

*Development, Contribute*

*Sprints, Sun and more...*

# Debugging 101: Tools & Techniques

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# About me



- 4 year experience with Drupal
- Member of the Drupal Security Team
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- ONE Agency

# General: Avoid Bugs (Duh...)



- Drupal Coding Standards:  
<http://drupal.org/coding-standards>

# General: Avoid Bugs (Duh...)



- Drupal Coding Standards



# General: Avoid Bugs (Duh...)



- Write comments
- Do not hack core
- IDE syntax checking or  
`php --syntax-check` / `php -l` (demo)
- Peer review
- Automated testing
- Use version control

# General: Dealing with bugs

- Understand the problem!
- Fix problems, not symptoms

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	string	result	browser
1 <sup>st</sup> check_plain()	<script>	&lt;script &gt;	<script>
2 <sup>nd</sup> check_plain()	&lt;script&gt;	&amp;lt;sc ript&amp;g t;	&lt;script &gt;
html_entity_ decode()	&amp;lt;script& amp;gt;	&lt;script &gt;	<script>

- Reproduce (non-production environment)
- Have a backup strategy

# Errors, warnings, notices and WSOD

- White Screen of Death





# Errors, warnings, notices and WSOD

- White Screen of Death
- Show errors:
  - `ini_set('display_errors', TRUE);`
  - [demo](#)
- Log files
  - Location depends on OS, Web Server, Configuration, ...
  - `locate --basename "\error.log"`
  - `tail -f error.log`
  - [Demo](#)
- Avoid error suppression (@-operator)

# Dumping

- Quick and dirty
- PHP functions:
  - `var_export($expr, $return)`
  - `print_r($expr, $return)`
  - `var_dump($expr1, $expr2, ...)`
  - **demo**
- Wrap in `<pre></pre>` (or view source)
- Output to screen
- Can mess up your theme, AJAX callback, ...
- Usually not suited for production sites

# Dumping

- Dumping to file:

```
file_put_contents('/tmp/log.txt',  
    print_r($data, TRUE), FILE_APPEND);
```

- Or, using output buffering:

```
ob_start();  
var_dump($_GET);  
$data = ob_get_clean();  
file_put_contents('/tmp/log.txt', $data,  
    FILE_APPEND);
```

# Dumping

- Environmental info
  - `phpinfo($what)`
  - `php -i` / `php --info`
  - `php -m` / `php --modules`
- Drupal has `phpinfo()` built in

# Drupal Contrib: Devel

- Enhanced dumping:
  - [Http://drupal.org/project/devel](http://drupal.org/project/devel)
  - `dpq()`
  - access devel information
  - **Demo...**

	Human-readable	<code>var_export</code> Drupal Coding Standards
Message	<code>dpm()</code> (== <code>dsm()</code> )	<code>dvm()</code>
Screen or String	<code>dpr()</code>	<code>dvr()</code>

# Logging

- Less Quick, less dirty
- Do not log too often (flooding)
- Do not log too little / log meaningful data

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- Less Quick, less dirty
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Belgacom Proximus Skynet

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**Technical error**  
A Technical Error appears

together with



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# Logging: watchdog()

- Drupal's default logging mechanism
- `watchdog($type, $message, $variables, $severity, $link)`
- `$type`: best practice, use module name
- `$severity`:
  - `WATCHDOG_DEBUG`
  - `WATCHDOG_INFO`
  - `WATCHDOG_WARNING`
  - `WATCHDOG_ERROR`
  - ...
- **Demo**

# Logging: Devel

- `drupal_debug($data, $label = NULL);`
- `dd()`
- Writes `print_r($data)` to `temporary://drupal_debug.txt`

# FirePHP



- Enhanced logging & dumping
- Extension for Firebug
- Requires a Server-side PHP library
- Keeps HTML clean
- Avoid use on live sites (information disclosure)
- <http://www.firephp.org/HQ/Install.htm>
- Chrome-version?
- **Demo**

# Drupal Contrib: Devel

- FirePHP Support
  - Install library
    - under devel module folder
    - use 'libraries' project
    - drush dl devel
  - `dfb()`;
  - `dfbt($label)`;
  - **Demo**

# PHP: Stack trace

- `debug_backtrace()`
- Returns full stack trace as array
- Add to error handler in `includes/errors.inc`
- `debug_print_backtrace()`
- <http://drupal.org/node/1158322>: Add backtrace to all errors
- **Demo**

# Drupal Contrib: Devel

- Query log
- Backtrace error handler  
`ddebug_backtrace()` ;
- Demo...

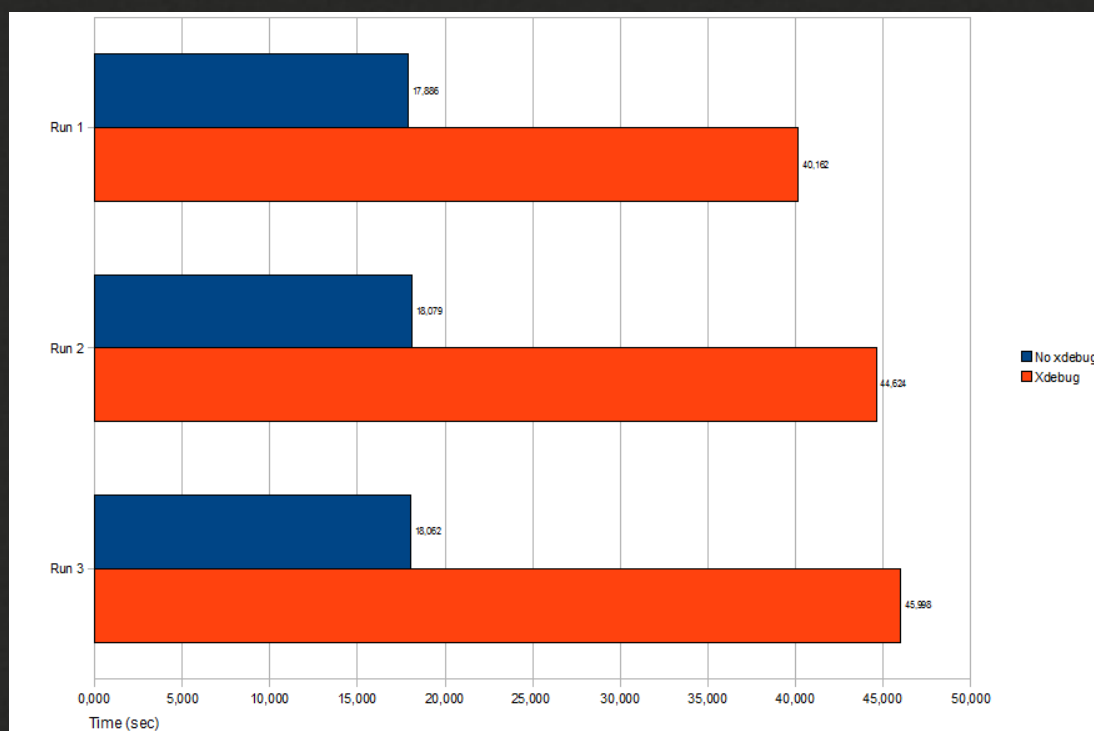
# Test-drive Snippets

- Run snippets:
  - `php --interactive`
- Inside Drupal context:
  - `devel/php`
  - `drush php-eval`
- **Demo**

# Advanced: Xdebug



- More than just step-through debugging.
- Installation: <http://drupal.org/node/260854>
- Avoid use on live sites





# Advanced: Xdebug



- Variable Display Features
- var\_dump enhancements (colors, formatting)
- stack trace on error
- demo

# Advanced: Xdebug



- Function Traces
- Log all function calls...
- ... and their parameters
- ... and their return values
- Drupal function traces are big (> 4Mb)
- **demo**

# Advanced: Xdebug



- Step-through Debugging
- Step through your code
- Inspect (and change) variables live
- Breakpoints
- `xdebug_break();`
- **Demo**
- Remote debugging supported

# Advanced: Profiling

- Troubleshoot performance issues
- Xdebug
  - requires additional parser (kcachegrind)
  - not suitable for live sites
- Xhprof
  - Installation (not so easy):  
<http://drupal.org/node/946182>
  - can be used on live sites (Facebook)
  - nice devel integration
  - includes a basic web interface
  - GraphViz for Call Graph
- **demo**

A promotional banner for Drupal Developer Days Barcelona. The banner features a central circular logo with a blue flame-like shape and a white mustache. To the left of the logo is a white rabbit head with a gear for an eye. The background includes silhouettes of a city skyline, a Ferris wheel, and a stadium. The text is arranged in a banner format with a white background and blue borders.

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**Questions?**