Drupal 8 Cache API

...and tacos!

CHROMATIC

Who?

Originally from Toronto, Canada

Lives in Tallinn, Estonia

Drupal since 2008

Works for Chromatic!

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https://chromatichq.com

@ChromaticHQ

What is Chromatic?

Mostly Drupal-focused with Front End and DevOps expertise

Been around for over 10 years

Distributed (No head office. No office, period.)

https://chromatichq.com

Taco time…

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Drupal 8 Cache API

...and tacos!

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Why cache at all?

- Buy a Big Mac or buy the ingredients and make one at home?
- Minutes vs Hours
- Cached page vs Non-cached page
- Milliseconds vs Seconds
- 281 milliseconds vs 2.97 seconds on my local

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Drupal render arrays

- Render arrays are the building blocks of a Drupal page
- Introduced in Drupal 7 and allow for flexibility in extending / altering / overriding parts of the page
- print render($content);

```
<div class="content"<?php print $content_attributes; ?>>
  <?php
    print render($content);
  ?>
</div>
```

- It's important that our render array - the thing that renders the HTML - knows to cache itself
- **From D.O.**: ”It is of the utmost importance that you inform the Render API of the cacheability of a render array." - From Cacheability of Render Arrays*

  * https://www.drupal.org/docs/8/api/render-api/cacheability-of-render-arrays

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Originally a blog post

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Got Slack? Get HeyTaco!

slack

HeyTaco!

- HeyTaco! is an integration app for Slack
- You hand out tacos to show appreciation and HeyTaco! keeps track of who gets them and how many they have.
- 5 tacos to hand out each day.

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HeyTaco! in Slack looks like this

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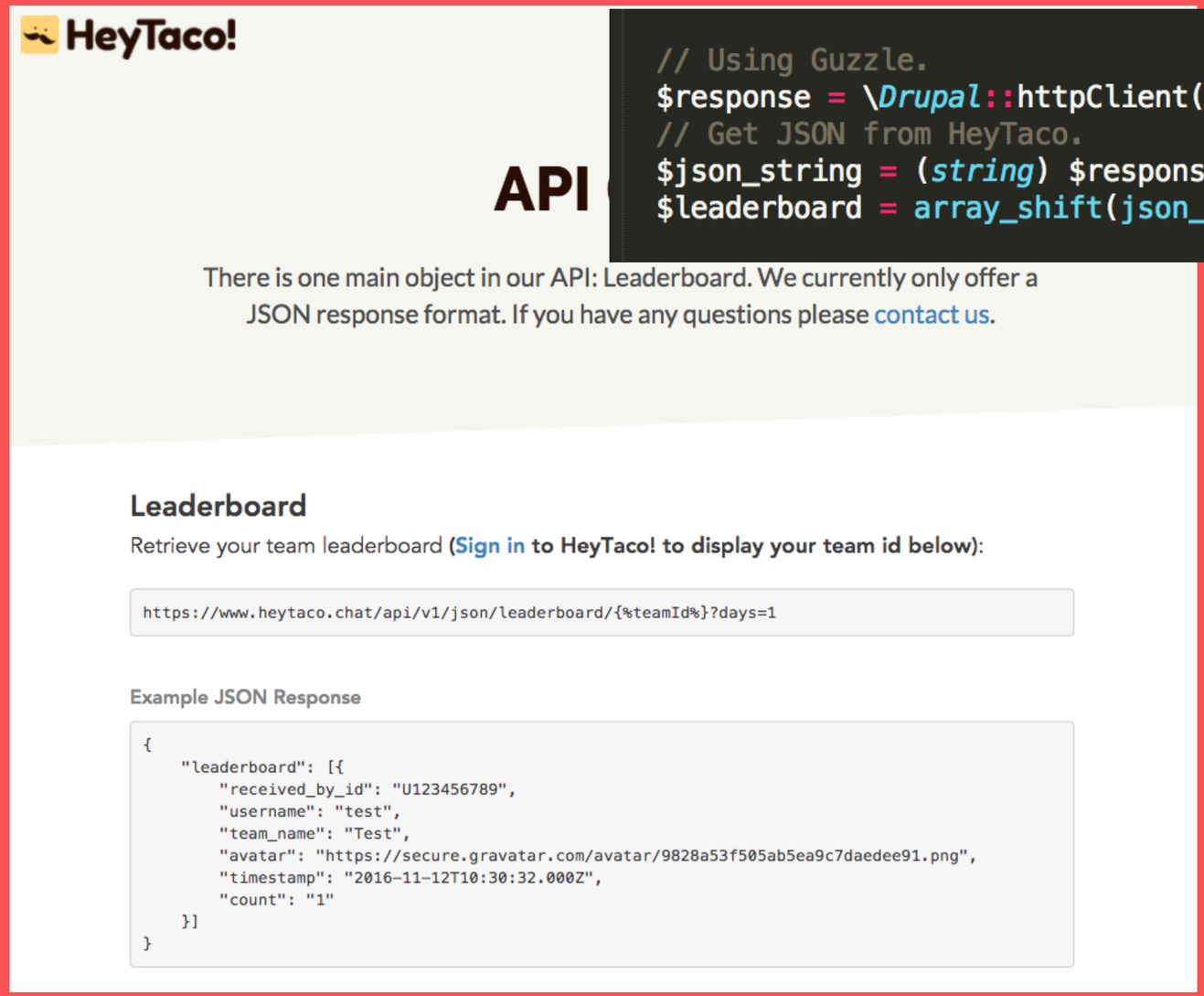
HeyTaco! API




```php
// Using Guzzle.
$response = \Drupal::httpClient()->get(HEYTACO_URL);
// Get JSON from HeyTaco.
$json_string = (string) $response->getBody();
$leaderboard = array_shift(json_decode($json_string, TRUE));
```

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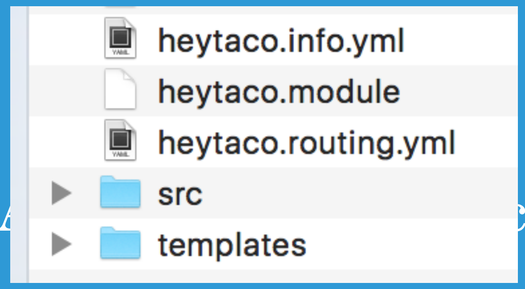
What's the plan?

- drush core-quick-drupal ("qd", "cutie")
- Drupal 8 custom module creates a Block
- Custom code grabs leaderboard from HeyTaco! A com/ ChromaticHQ/heytaco)
- Use D8 Cache settings to cache it separately for each user
- Add bonus tacos to the bosses' totals to make them think they're great
- A bit of Twig to theme it (heytaco-block.html.twig)



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Partner vs Non-partner Leaderboards

HeyTaco! Leaderboard

Hi chrisfree!

1. chrisfree **486**
2. davelook **386**
3. alanna **363**
4. ryanhagerty **357**
5. markdorison **341**
6. larrywalangitan **306**
7. adam **297**
8. guschilds **270**
9. märt **234**
10. ctorgalson **229**

HeyTaco! Leaderboard

Hi alanna!

1. chrisfree **486** *
2. davelook **386** *
3. alanna **363**
4. ryanhagerty **357**
5. markdorison **341** *
6. larrywalangitan **306**
7. adam **297**
8. guschilds **270**
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* Partners' results padded by 100 tacos

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```php
/**
 * Provides a Hey Taco Results block
 *
 * @Block(
 *   id = "heytaco_block",
 *   admin_label = @Translation("HeyTaco! Leaderboard"),
 * )
 */
class HeyTacoBlock extends BlockBase implements ContainerFactoryPluginInterface {

  /**
   * construct() and create() functions here
  **/

  /**
   * {@inheritdoc}
   */
  public function build() {
    $user_id = $this->account->id();
    return array(
      '#theme' => 'heytaco_block',
      '#results' => $this->returnLeaderboard($user_id),
      '#partner_asterisk_blurb' => $this->isNotPartner($user_id),
      '#cache' => [
        'keys' => ['heytaco_block'],
        'contexts' => ['user'],
        'tags' => ['user_list'],
        'max-age' => 3600,
      ],
    );
  }
}
```

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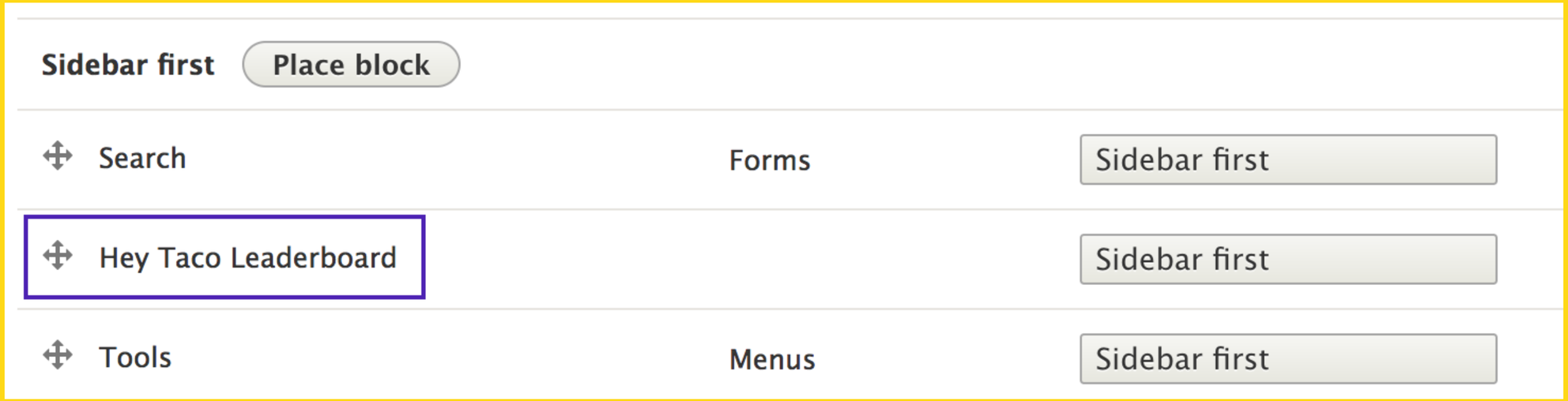
HeyTaco Leaderboard block



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#cache property's metadata

- keys
- contexts
- tags
- max-age

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```php
/**
 * {@inheritdoc}
 */
public function build() {
  // Dependency injection used create() and __construct() pattern.
  $user_id = $this->account->id();
  return array(
    '#theme' => 'heytaco_block',
    '#results' => $this->returnLeaderboard($user_id),
    '#partner_asterisk_blurb' => $this->isNotPartnerBlurb($user_id),
    '#display_name' => $this->account->getUsername(),
    '#cache' => [
      'keys' => ['heytaco_block'],
      'contexts' => ['user'],
      'tags' => ['user_list'],
      'max-age' => 3600,
    ],
  );
}
```

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```php
/**
 * {@inheritdoc}
 */
public function build() {
  // Dependency injection used create() and __construct() pattern.
  $user_id = $this->account->id();
  return array(
    '#theme' => 'heytaco_block',
    '#results' => $this->returnLeaderboard($user_id),
    '#partner_asterisk_blurb' => $this->isNotPartnerBlurb($user_id),
    '#display_name' => $this->account->getUsername(),
    '#cache' => [
      'keys' => ['heytaco_block'],
      'contexts' => ['user'],
      'tags' => ['user_list'],
      'max-age' => 3600,
    ],
  );
}
```

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```php
/**
 * {@inheritdoc}
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public function build() {
  // Dependency injection used create() and __construct() pattern.
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  return array(
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    '#results' => $this->returnLeaderboard($user_id),
    '#partner_asterisk_blurb' => $this->isNotPartnerBlurb($user_id),
    '#display_name' => $this->account->getUsername(),
    '#cache' => [
      'keys' => ['heytaco_block'],
      'contexts' => ['user'],
      'tags' => ['user_list'],
      'max-age' => 3600,
    ],
  );
}
```

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keys

```
'#cache' => [
  'keys' => ['heytaco_block'],
  'contexts' => ['user'],
  'tags' => ['user_list'],
  'max-age' => 3600,
],
```

- **From Drupal.org**: ...what identifies the thing I'm rendering?
- This is the "what", as in "What entity is being rendered?”
- Can be more than a single string

```
'#cache' => [
  'keys' => ['view', $view_id, 'display', $display_id],
],
```

- Cache keys must only be set if the render array should be cached

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contexts

```
'#cache' => [
  'keys' => ['heytaco_block'],
  'contexts' => ['user'],
  'tags' => ['user_list'],
  'max-age' => 3600,
],
```

- **From Drupal.org**: Does the representation of the thing I'm rendering vary per ... something?
- This is the "which", as in, "Which version of the block should be shown?”
- Contexts aren't just user-based; they can also be based on
  cookies
  ip
  theme
  timezone
  url
  and more…modules can also define their own (https://www.drupal.org/docs/8/api/cache-api/cache-contexts)
- There is a list of cache contexts in core.services.yml

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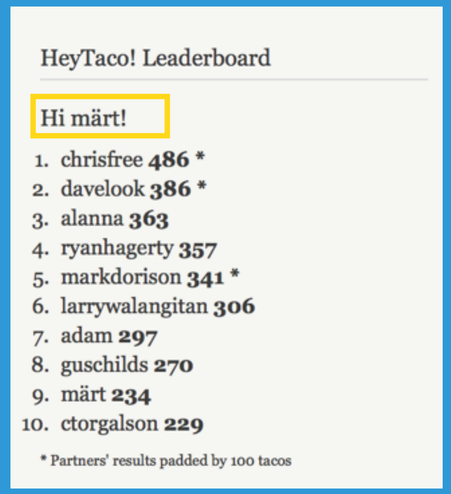
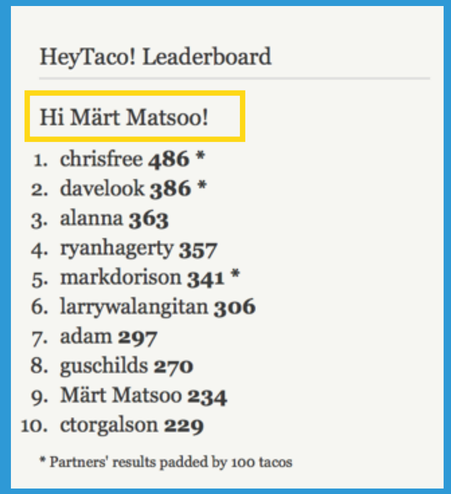
tags

```
'#cache' => [
  'keys' => ['heytaco_block'],
  'contexts' => ['user'],
  'tags' => ['user_list'],
  'max-age' => 3600,
],
```

- **From Drupal.org**: What data does it depend upon, so that when that data changes, so should the representation?
- String, cannot contain spaces, generally in the form <entity type>:<entity ID>
- Can be in sets: [‘user:3’, ‘user:4’, ‘user:5’]





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max-age

```
'#cache' => [
  'keys' => ['heytaco_block'],
  'contexts' => ['user'],
  'tags' => ['user_list'],
  'max-age' => 3600,
],
```

- Max amount of time to cache this rendering
- Measured in seconds (3600 = 1 hour)
- Defaults to forever (Cache::PERMANENT)

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Helpful Info from D.O.

From D.O.*: Cache **contexts**, **tags** and **max-age** ***must always be set***, because they affect the cacheability of the entire response. Therefore they "bubble": parents *[ie. the page that contains our Hey Taco block]* automatically receive them.

and…

Cache **keys** must only be set if the render array should be cached.

* https://www.drupal.org/docs/8/api/render-api/cacheability-of-render-arrays

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Theming

```
/**
 * {@inheritdoc}
 */
public function build() {
  // Dependency injection used create() and __construct() pattern.
  $user_id = $this->account->id();
  return array(
    '#theme' => 'heytaco_block',
    '#results' => $this->returnLeaderboard($user_id),
    '#partner_asterisk_blurb' => $this->isNotPartnerBlurb($user_id),
    '#display_name' => $this->account->getUsername(),
    '#cache' => [
      'keys' => ['heytaco_block'],
      'contexts' => ['user'],
      'tags' => ['user_list'],
      'max-age' => 3600,
    ],
  );
}
```

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Theming

```php
/**
 * {@inheritdoc}
 */
public function build() {
  // Dependency injection used create() and __construct() pattern.
  $user_id = $this->account->id();
  return array(
    '#theme' => 'heytaco_block',
    '#results' => $this->returnLeaderboard($user_id),
    '#partner_asterisk_blurb' => $this->isNotPartnerBlurb($user_id),
    '#display_name' => $this->account->getUsername(),
    '#cache' => [
      'keys' => ['heytaco_block'],
      'contexts' => ['user'],
      'tags' => ['user_list'],
      'max-age' => 3600,
    ],
  );
}
```

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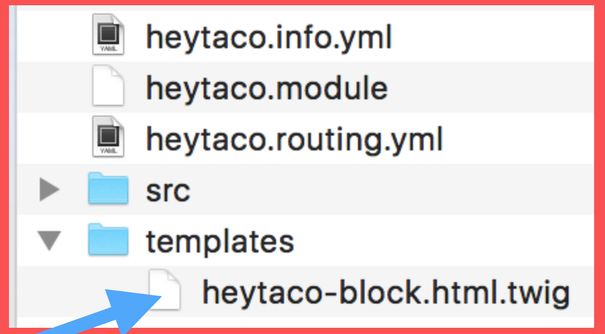
heytaco.module




```php
/**
 * Implements hook_theme().
 */
function heytaco_theme($existing, $type, $theme, $path) {
  return array(
    'heytaco_block' => array(
      'variables' => array(
        'results' => NULL,
        'partner_asterisk_blurb' => NULL,
        'display_name' => NULL
      ),
    ),
  );
}
```

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heytaco-block.html.twig

HeyTaco! Leaderboard

Hi Märt Matsoo!

1. chrisfree **486** *
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* Partners' results padded by 100 tacos

```
<h2>HeyTaco! Leaderboard</h2>
{% if display_name|render is not empty %}
  <h3>Hi {{ display_name }}!</h3>
{% endif %}
<ol>
  {% for result in results %}
    <li>{{ result.name }} <strong>{{ result.score }} {{ result.asterisk }}
    </strong></li>
  {% endfor %}
</ol>

{% if partner_asterisk_blurb|render is not empty %}
  <small>{{ partner_asterisk_blurb }}</small>
{% endif %}
```

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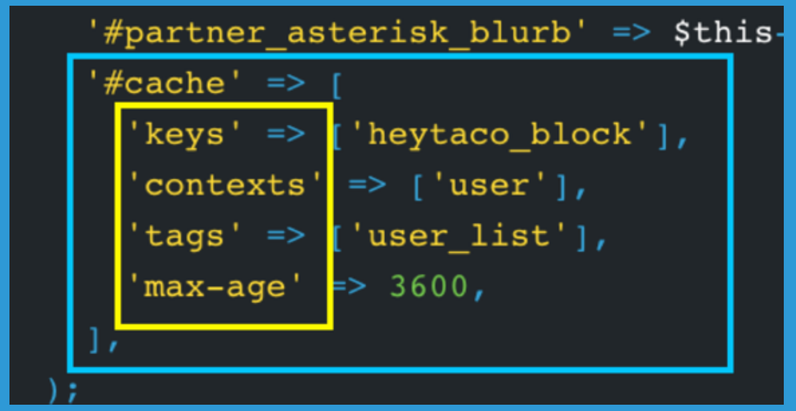
In Cache-tastic Conclusion



- Cache metadata: keys, contexts, tags, max-age
- Render arrays and the #cache property go hand in hand
- Try different use cases to better grasp what each metadata piece does
- Sample code: https://github.com/ChromaticHQ/heytaco

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Thanks!

Märt Matsoo

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