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Drupal 8, Services and Decoupling Patterns

Dinesh Waghmare

About My Self

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Dinesh Waghmare, Drupal Mumbai, India

- I'm working with **Tata Consultnacy Services**, Powai-Mumbai, India
- Started my Drupal journey in 2009 with Drupal 6, long journey with Drupal 7
  Finally in :Love: of Drupal 8 https://www.drupal.org/u/dineshw
- Member of Drupal Mumbai, India
- I love Drupal Camps and Cons, Travelling, Yoga Camps, Make Friends and Learn
- Interested areas: E-Commerce, LMS and Decouple

Session Agenda

Drupal 8, Services and Decoupling Patterns

- What is Decoupled Drupal?
- Decoupled Drupal Architecture Patterns
- Factors while deciding Path for Decoupled Drupal 8
- Landscape of possibility with Decoupled Drupal 8
- Risk and Rewards in Decoupled Drupal 8
- User experience for Decoupled Drupal 8
- Modules / Frameworks and Process for bare minimum setup of Decoupled Drupal 8
- Big Picture
- Decoupled Drupal 8 Demo

What is Decoupled Drupal?

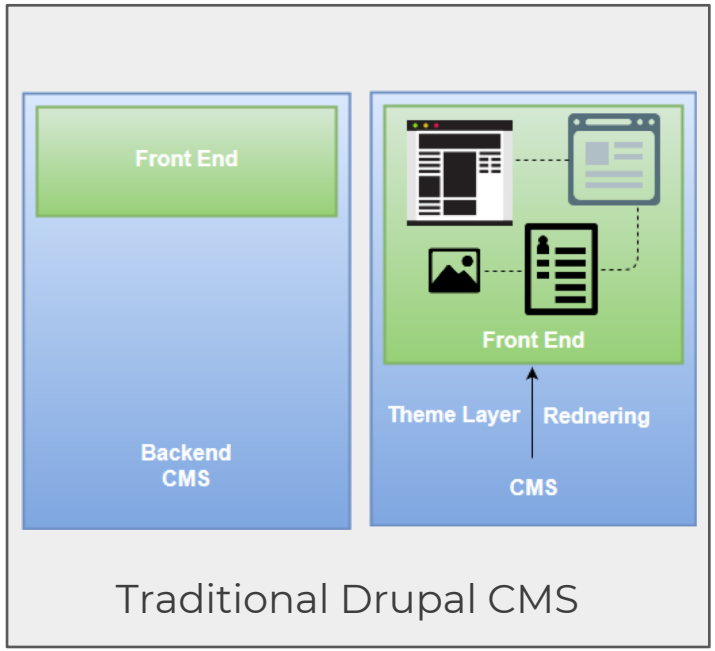
Drupal 8, Services and Decoupling Patterns

What is Decoupled Drupal?

- Decoupling is concept of separating applications backend layer from it's presentation layer
- Decoupling provides flexibility to front end developers while backend developers are allowed to more focus on content modelling and building data access layer
- Decoupling is a process of adding layer of technical abstraction between what content provider creates and what content consumer see
- Decoupled Drupal is concept of splitting content from Drupal website's Theme layer and how it gets displayed in single or multiple independent systems

What is Decoupled Drupal?

Traditional CMS



Traditional Drupal CMS

- Traditional CMS allows web editors to Add / Edit / Publish Content as well as provides control over Presentation logic
- It's monolithic in nature
- Front end or Presentation layer use Template engine from Theme Layer provided by CMS
- Front End could be Page, Widgets, Blocks etc.
- Example: https://goo.gl/ZR7e46

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What is Decoupled Drupal?

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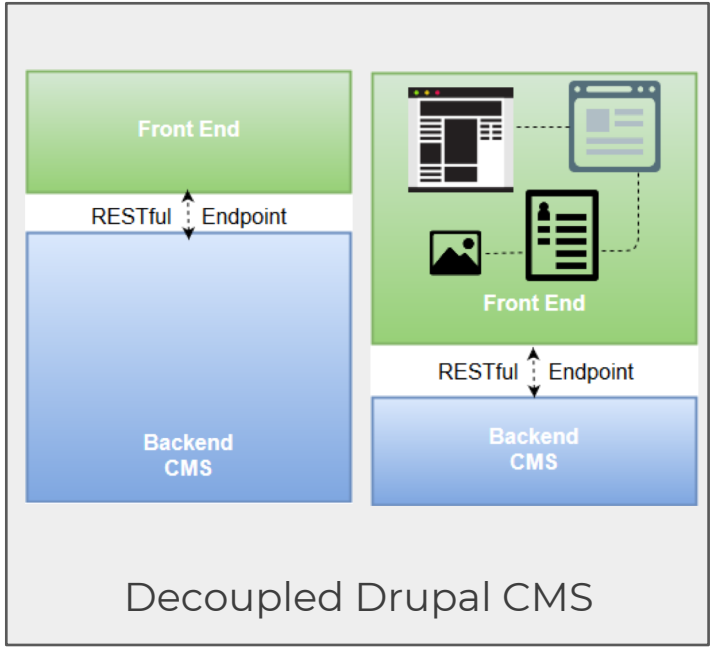
Decoupled CMS

- Decoupled CMS allows Web editor to Add / Edit / Publish Content as part of backend while front end is not part of CMS
- Front end developer will able to take full control over presentation logic
- Content of site is accessible via RESTful API's



What is Decoupled Drupal?

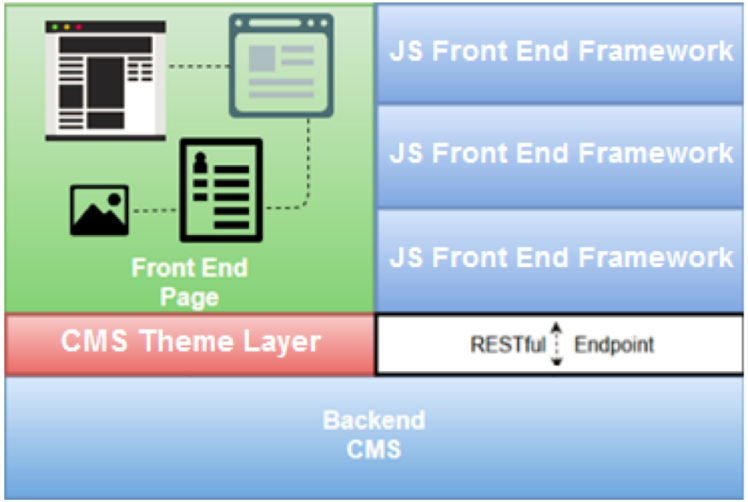
Progressively Decoupled

- In Decoupled CMS one may loos existing features of Drupal and it may increase cost to rewrite such features in front end frameworks
- With Decoupled CMS performance and development time may vary for personalised content blocks, a Deep integrations of Big Pipe and Theme layer may lost with adoption of front end framework
- Thus, rather than decupling entire page, a part of page or it's blocks were decoupled as Progressive decoupled Drupal which able to offer best of both Drupal 8 and Front End JS frameworks
- Drupal's HTML or serialised output, and then use a JavaScript framework to add client-side interactivity on the client side

What is Decoupled Drupal?

Progressively Decoupled

- Progressive decoupled Drupal uses Drupal to render initial HTML output and then use a JavaScript framework to add client-side or on server side



Architecture Patterns In Decoupled Drupal 8

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Architecture Patterns In Decoupled Drupal 8

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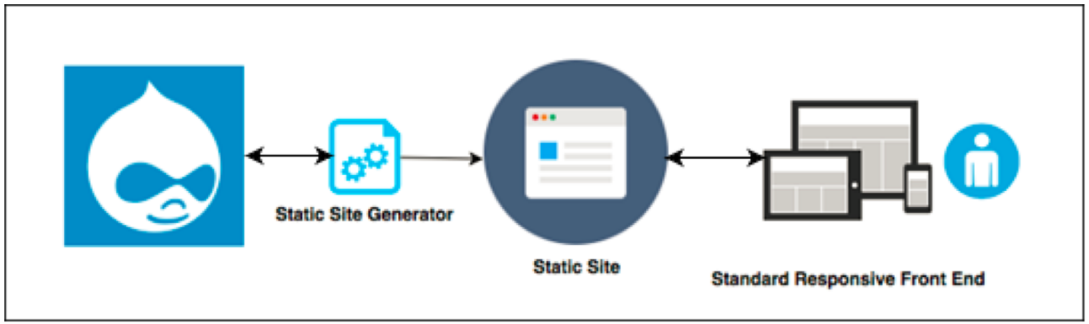
Decoupled Drupal Patterns for 'Static Sites'

- Static Sites : Central Content Hub pushing Content based on consumer and allowing to generate static content
- Suitable for little or not much end user interactivity
- Good for Responsive design



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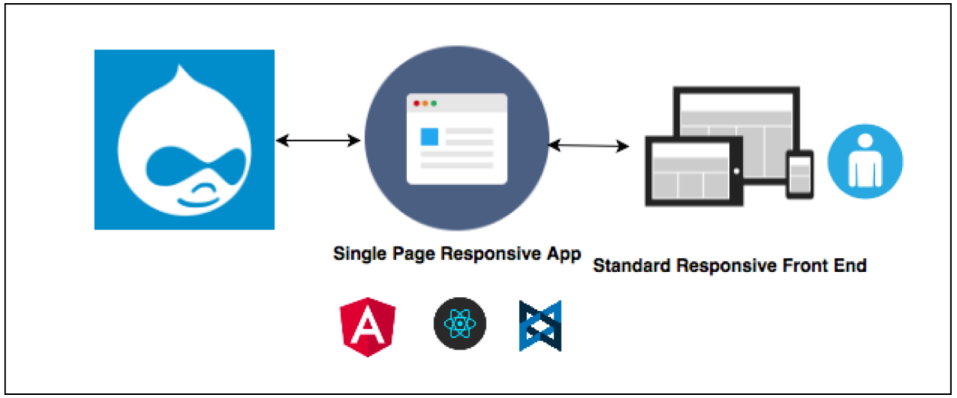
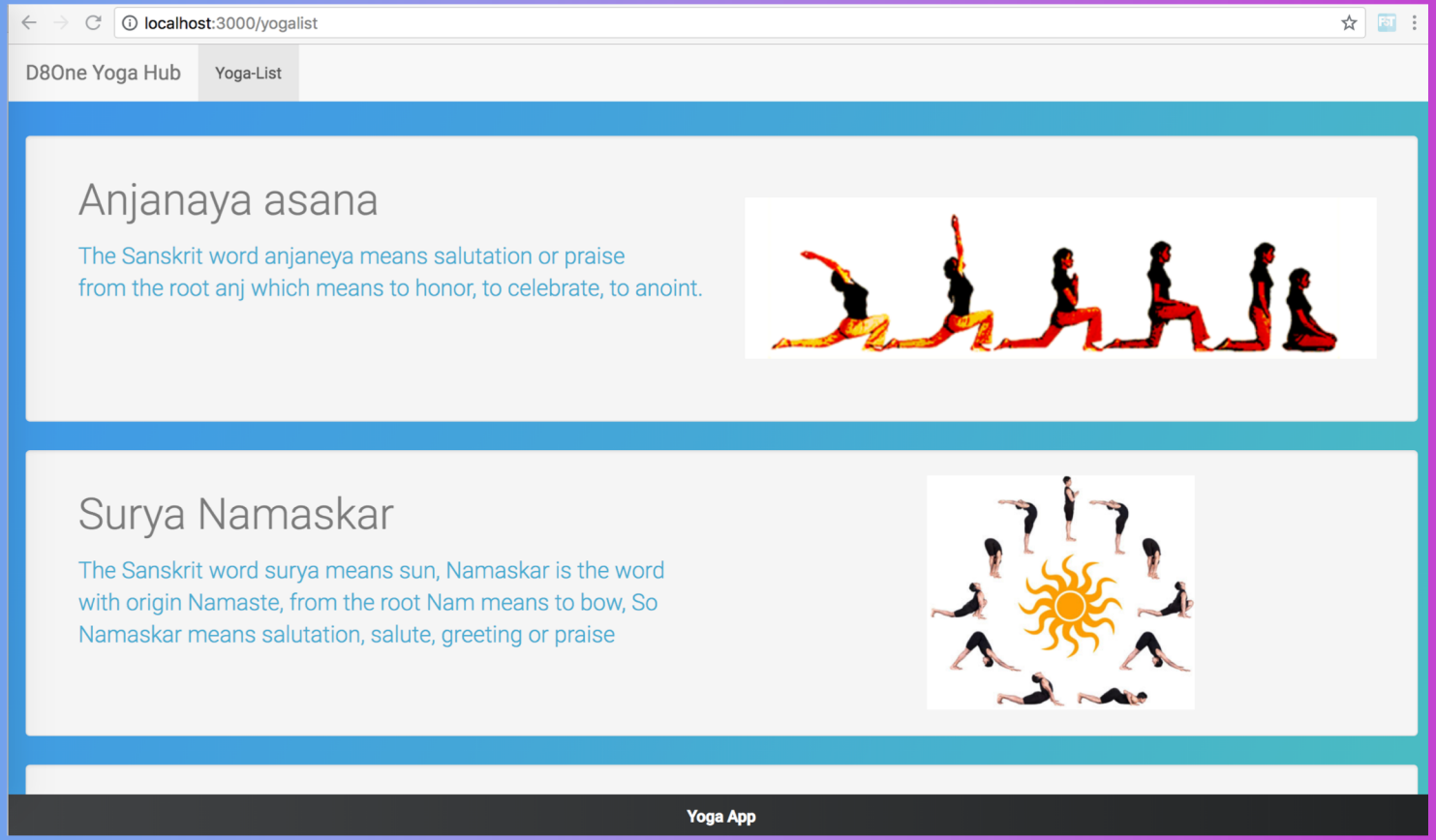
Decoupled Drupal Patterns for 'Single Page Web App'

- Single Page Apps : Act is Progressive application-in-browser
- It uses new end JS frameworks like Angular, React, Backbone
- Good for Responsive design





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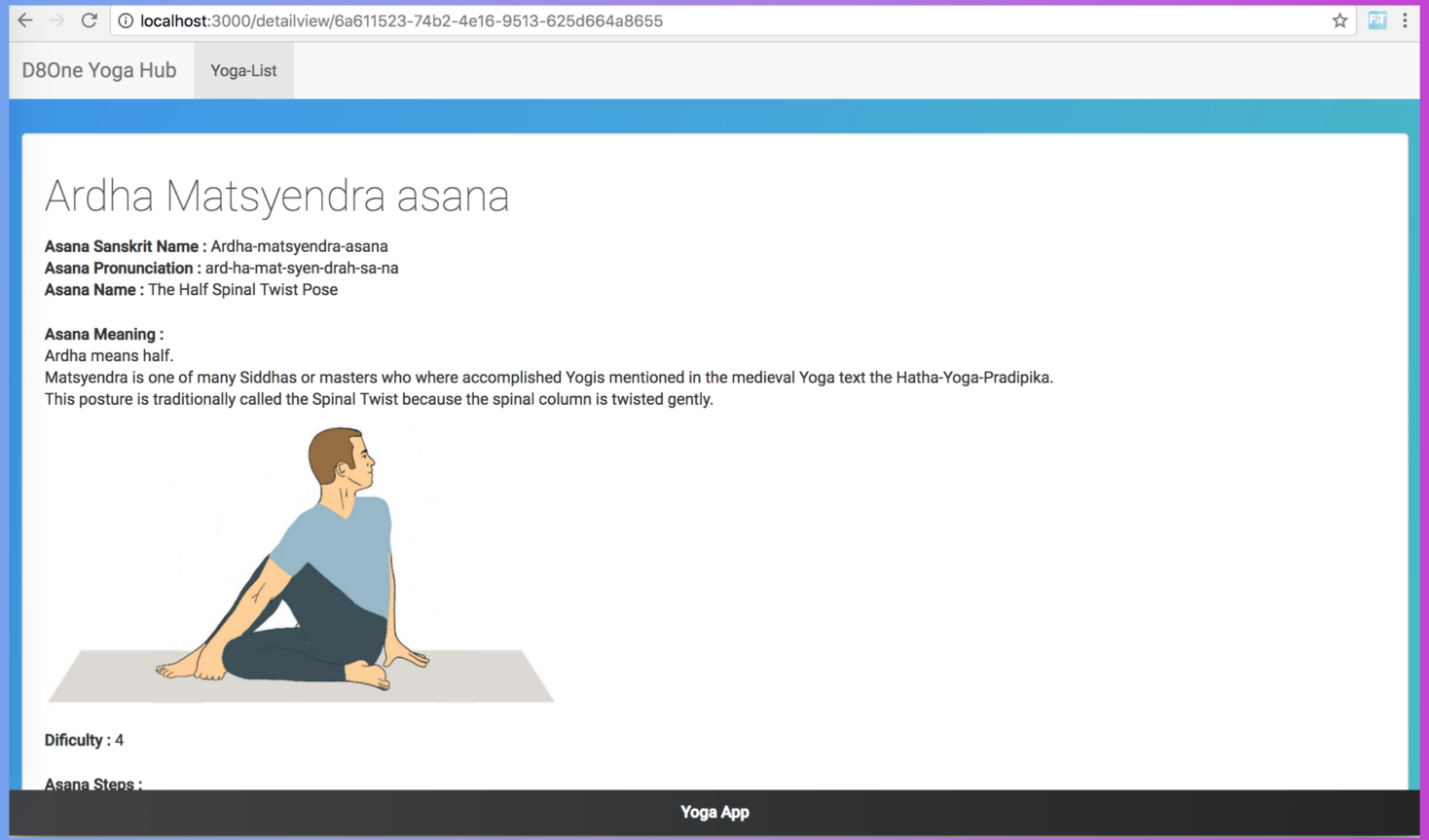
React Single Page Website URL – Listing Page : https://goo.gl/CGK1Qj



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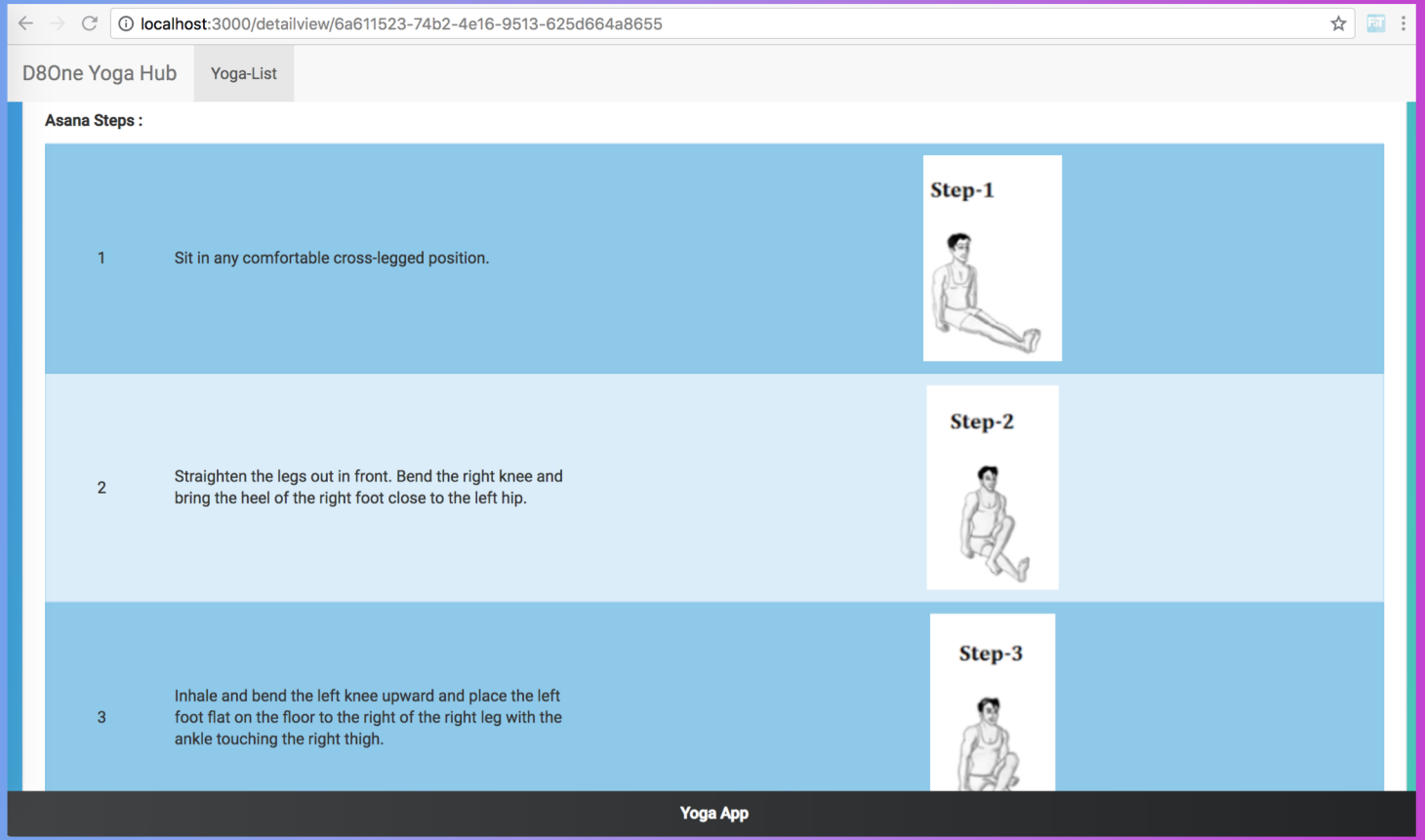
React Single Page Website URL – Details Page : https://goo.gl/CGK1Qj



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React Single Page Website URL – Details Page : https://goo.gl/CGK1Qj

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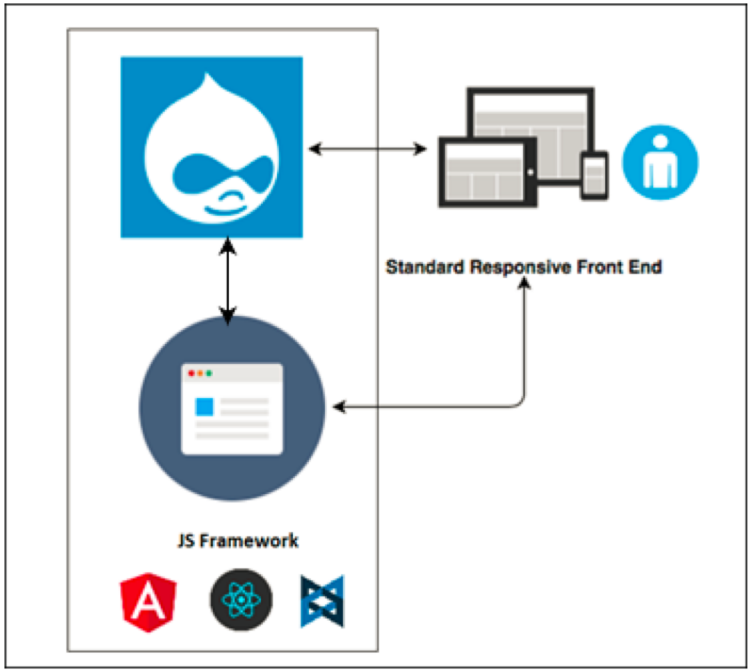
Decoupled Drupal Patterns for 'Hybrid Websites'

- Hybrid Websites Both Drupal Front end and JS framework combine to serve front end either loosed or tight integration
- Good for applications like : Dashboard's, Quiz, Polls, Graphs, Reports etc.
- Part of front end may communicate with Drupal RESTful API's



Architecture Patterns In Decoupled Drupal 8

Decoupled Drupal Patterns for 'Hybrid App' (Android/iOS/Windows etc)

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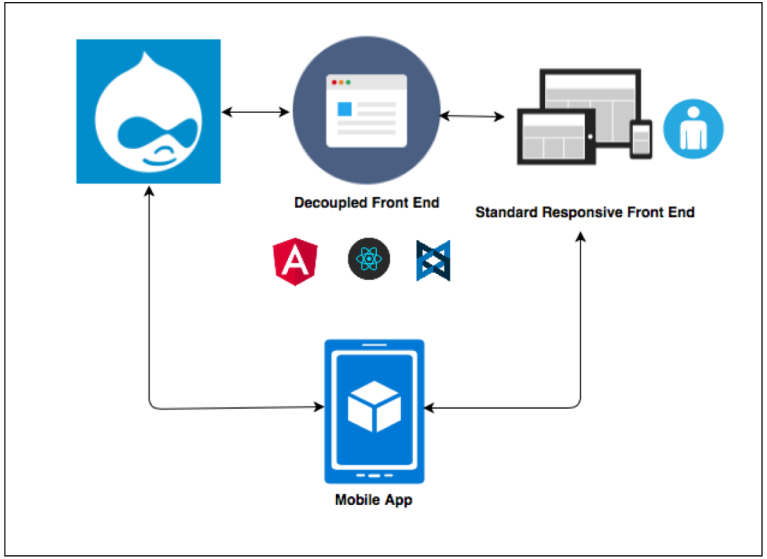
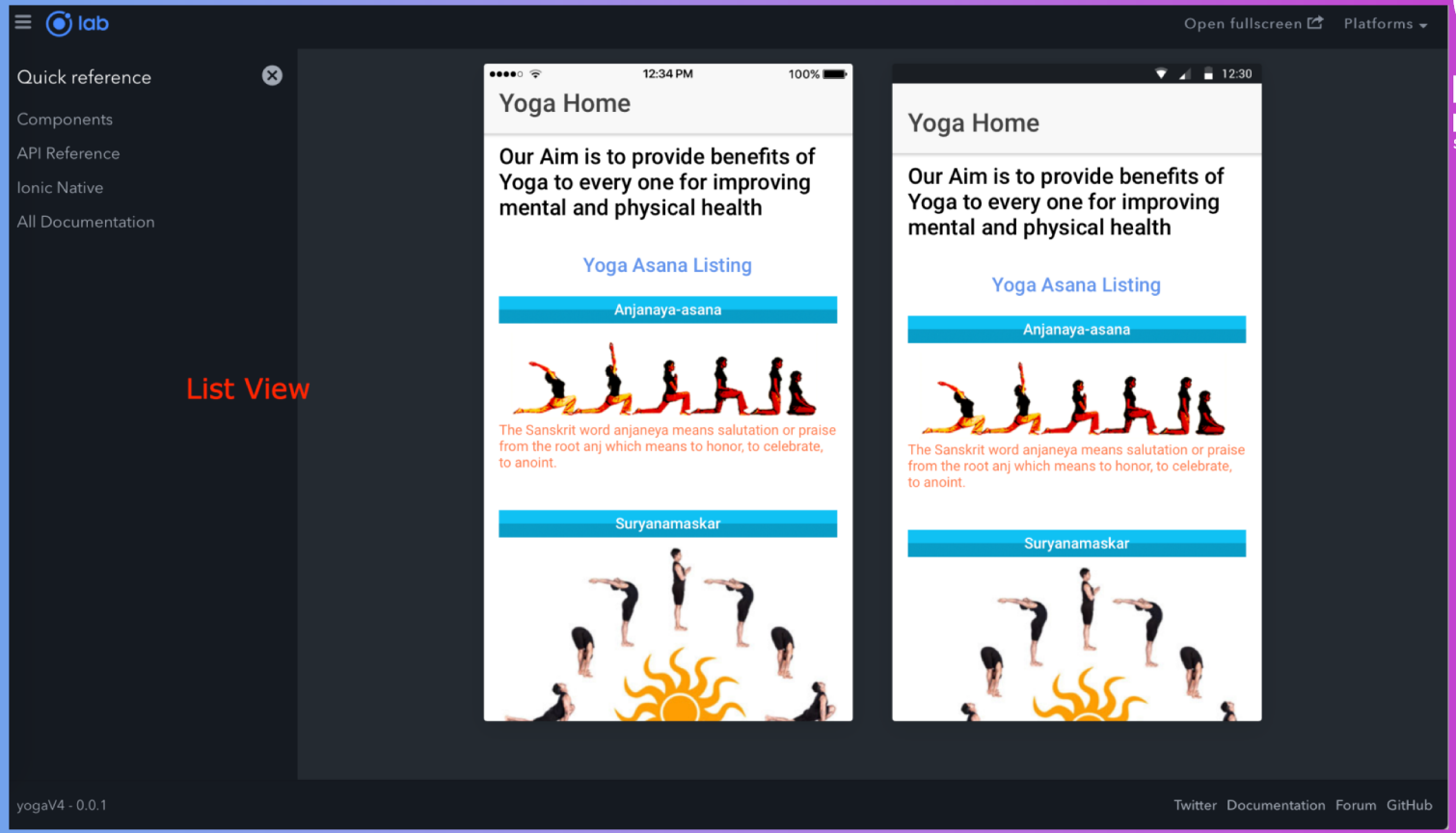
- Native and Hybrid App : Drupal serves back end and RESTful API's and acts as Content Repository
- Frontend usually served as native mobile app
- Despite App presence, some user still may prefer to access responsive website





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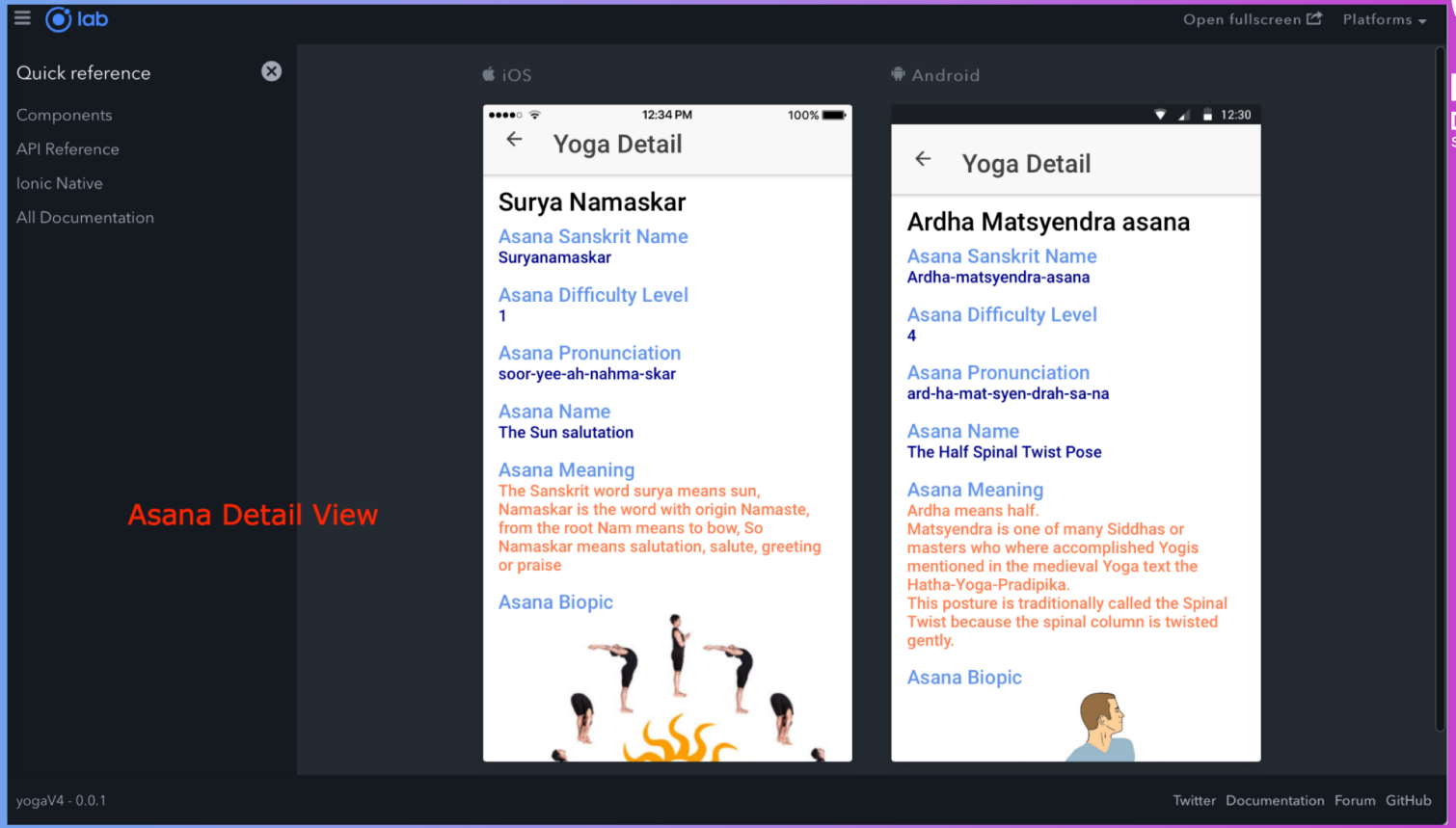
Android App Download URL build within Ionic : https://goo.gl/GV8mhp or https://goo.gl/6mAoqm



Asana Detail View

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Android App Download URL build within Ionic : https://goo.gl/GV8mhp or https://goo.gl/6mAoqm

Architecture Patterns In Decoupled Drupal 8

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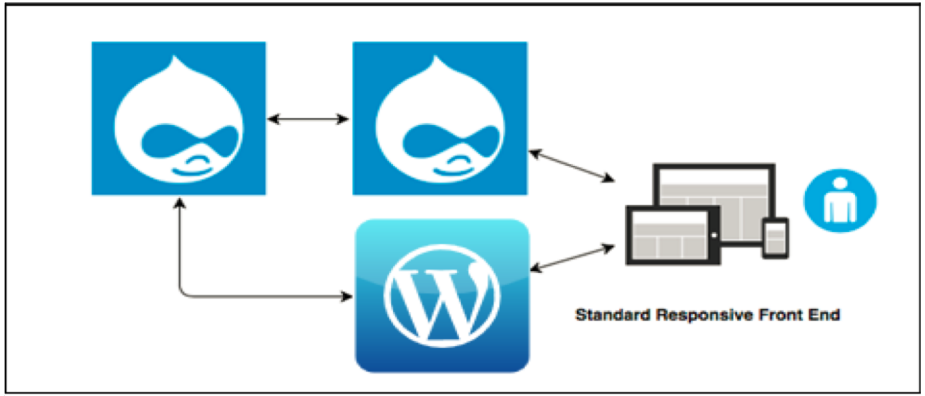
Decoupled Drupal Patterns for 'Multi CMS'

- Multi CMS : Decouple a Drupal CMS may exist with one ore more Drupal or Non-Drupal CMS
- Helps in separation of concerns between content and layout / presentation and still gives Web Editor flexibility of CMS



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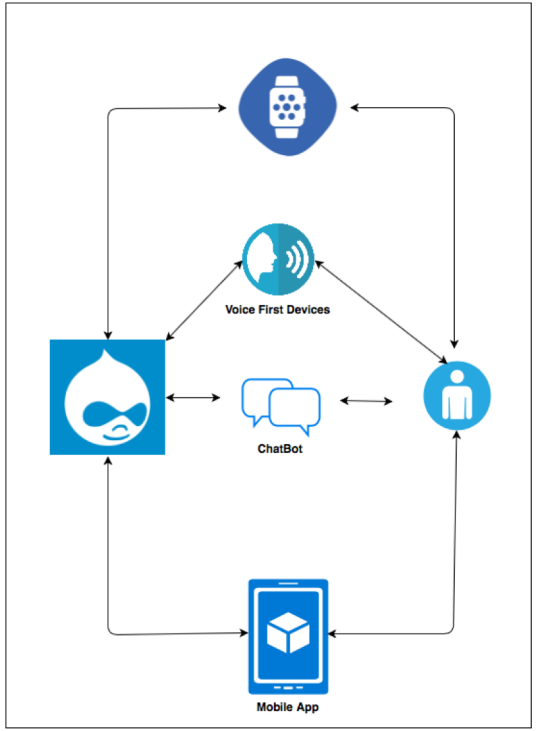
Decoupled Drupal Patterns for 'Integrations'

- Integrations :
- Voice first integration : Alexa / Google Home etc.
- Chabot's
- IoT Devices: Push button, Monitoring Tools etc.
- Digital Signage
- Wearables



Drupal 8 + Alexa Demo Video on Youtube : Yoga Asana Listing and Details
https://goo.gl/LDkiCb

Factors while deciding Path for Decoupled Drupal 8

Drupal 8, Services and Decoupling Patterns

Deciding Path for Decoupled Drupal 8

- Front End Freedom Vs Drupal Theme
- Integration Point and Omni Channel Touch Points Vs Website : Website, Responsive Mobile Sites, App, Digital Signage, IoT Devices, Wearables, Bot's and many more...
- One Publisher to Many Consumer : Central content hub and Many Consumers
- Multi-channel and Multi-part Content : Multiple CMS, Media(Videos / Audio / Docs), Social feeds etc.
- Multiple Teams : Mobile App Team, Web Team, Integration Team, Content Team, Review or Compliance Team

Deciding Path for Decoupled Drupal 8

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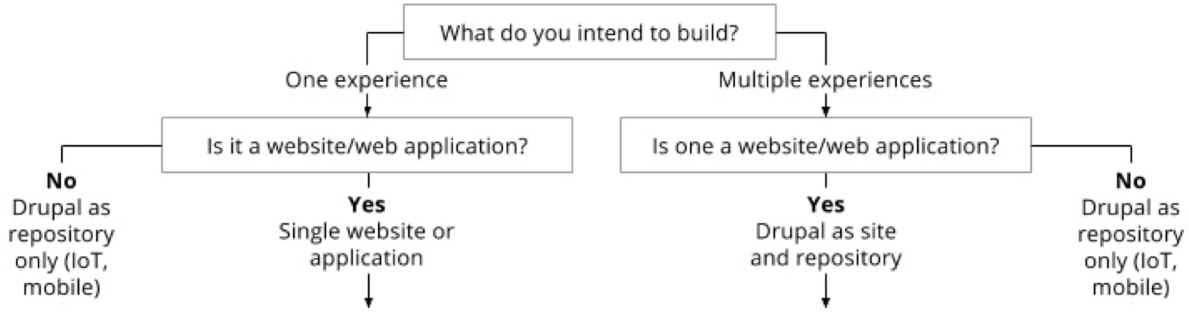
- What do you intend to build : one experience or multi omni channel experience
- Want to create a single standalone website or web application?
- Want to create multi experiences echo system (app, sites, integration points, bots etc.)



Ref: https://dri.es/how-to-decouple-drupal-in-2018

Deciding Path for Decoupled Drupal 8

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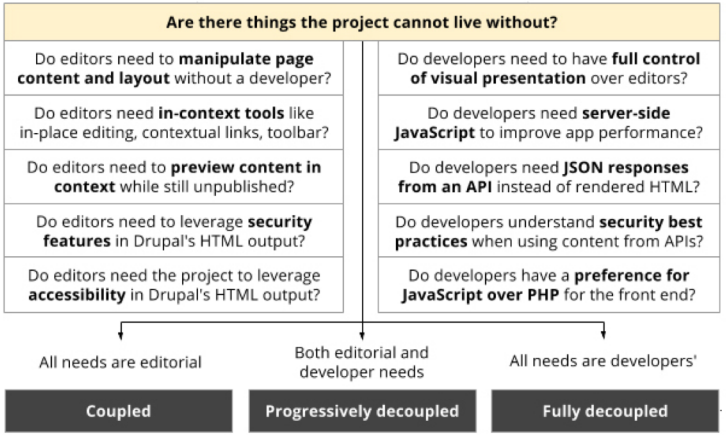
- Are there things you can't live without : Views, Caching, Role/Access Management
- Check Web Editorial requirements : Preview Content, In Line Editing, Layout Editor
- Check requirements of Developer both front end developer and back end developer



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Deciding Path for Decoupled Drupal 8

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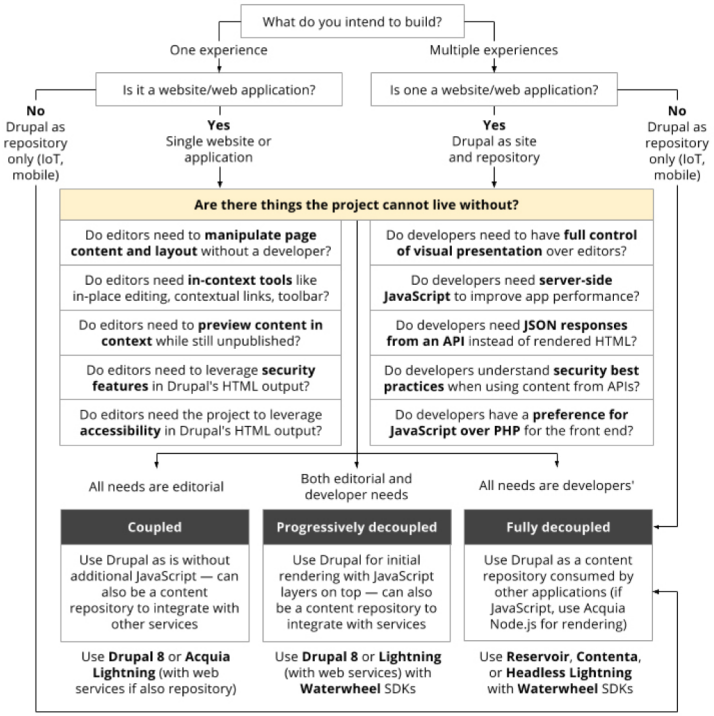

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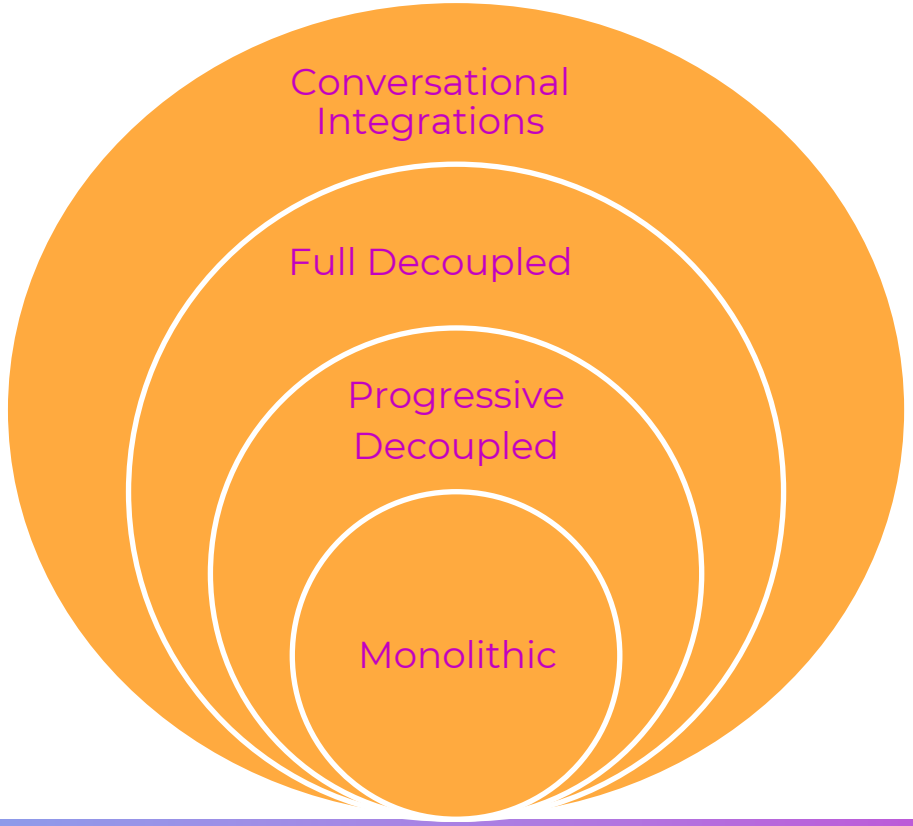
Landscape of possibility with Decoupled Drupal 8

Drupal 8, Services and Decoupling Patterns

Landscape with Decoupled Drupal 8



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Risk and Rewards in Decoupled Drupal 8

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Rewards in Decoupled Drupal

- Reduced dependency or reliance on Drupal Developers for Backend or Front-End
- Frontend developers have full Flexibility and control on Presentation Logic and framework, redesign of website is possible without re-implementing backend CMS
- True Agility with Decoupled teams : Front-end and back-end developers no longer need to understand the complex theming layer, modular structures of Drupal 8 architecture, both team can work independently allows differentiated development velocities hence improve the velocity and agility of a project
- Faster Content Publishing : Decouple CMS are build with mind-set of easing content creation and content workflow to speed up content publishing for editors

Rewards in Decoupled Drupal

- Flexible and Clean API's : All Integration points consumes relatively same API with power of Query, Filters, Include relations etc.
- Helps in Diversity and Innovation, Interactive Experience beyond Website : API first, API Ready model allows building quality content and increases app development with various integration points like Conversational UIs, digital signage, Voice First Integrations, IoT, WebVR, Chabot, Augmented Reality etc.
- Write Once, Publish Everywhere : Allows to build Eco-System
- Get combined benefits of using RESTful API's, client-side frameworks, Caching for front end helps in various facts like

Rewards in Decoupled Drupal

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- Upgrade proof approach : Front end is independent of upgrade
- Benefits of client-side frameworks
  - ➢ Better HTML Templating with clean mark-up
  - ➢ Component based design helps reuse and overriding presentation logic
  - ➢ Faster Performance by means of maintaining content in a virtual DOM and is rendered to the actual DOM when content changes occur, so auto refresh possible
  - ➢ Data Management : application state is managed within the framework's data models instead of scattered throughout the DOM

Risks in Decoupled Drupal

- One Point of Failure : Sometimes decoupled architecture is complex to understand in situation of troubleshooting or debugging
- Good testing strategy for API's and UI should be in placed
- Strict separation must be followed for front end logic : Business requirements needs to be evaluated carefully while drafting abstraction and constraints of Decoupled application
- High Skilled team with relatively large team size is required
  - ➢ Full Stack Developer Army : team with different skillsets
  - ➢ Drupal Ninja's : team with multiple skills sets along with Drupal 8

Risks in Decoupled Drupal

- "There is module for that" does not apply : deep integration provided by contrib modules becomes useless for decouple architecture
- Effort to Reinvent the features like analytics, SEO, UI Layout, Display management, Content and Site Preview, Access Control, Routing etc.
- Loss of Drupal benefits like Security and Input sanitization (CSRF, XSS), improved performance, caching, accessibility, Big Pipe Rendering, Theme Layer and Templating
- Hard to build UI with Personalized content
- Limitation of Client side rendering with slow internet connection
- Pain of Review and Audit

User experience for Decoupled Drupal 8

Drupal 8, Services and Decoupling Patterns

User experience for Decoupled Drupal 8

Front End

- Learn new JS frameworks and select right framework
- Consider security and performance measures
- Understanding of request formats e.g. JSON / GraphQL

Site Builder and Backend

- Strong content modelling considering
- Multi channel content distribution
- RESTful API standards And formats JSON API , GraphQL
- Strategy for Testing and Documenting API's
- Strong Authentication

Business and Editorial

- Re-align with separation of front end and back end
- Revisit Site Preview, Content Publishing workflow
- Auditing and compliance

Modules or Frameworks, Process for setup of Decoupled Drupal 8

Drupal 8, Services and Decoupling Patterns

Modules for setup of Decoupled Drupal 8

Modules for RESTful API and Documentation

	REST	JSON API	GraphQL
Modules	✓ *rest* ✓ *serialization* ✓ *basic auth* ✓ *hal* ✓ *restui*	✓ *jsonapi* ✓ *jsonapi extras* ✓ *jsonapi defaults* ✓ *jsonapi include*	✓ *graphql* ✓ *graphql twig / views* ✓ *graphql json / xml* ✓ *graphql metatag*
Docs	✓ *rest api doc*	✓ *openapi ui + openapi ui swagger or redoc*	✓ *self documenting* ✓ *graphql explorer*
Specification	✓ *RESTful* ✓ *for non-entity data* ✓ *any format, any logic, any HTTP method*	✓ *jsonapi* ✓ *for entity, out-of-box*	✓ *query language for APIs*

Big Picture : Decoupled Drupal 8

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Landscape with Decoupled Drupal 8

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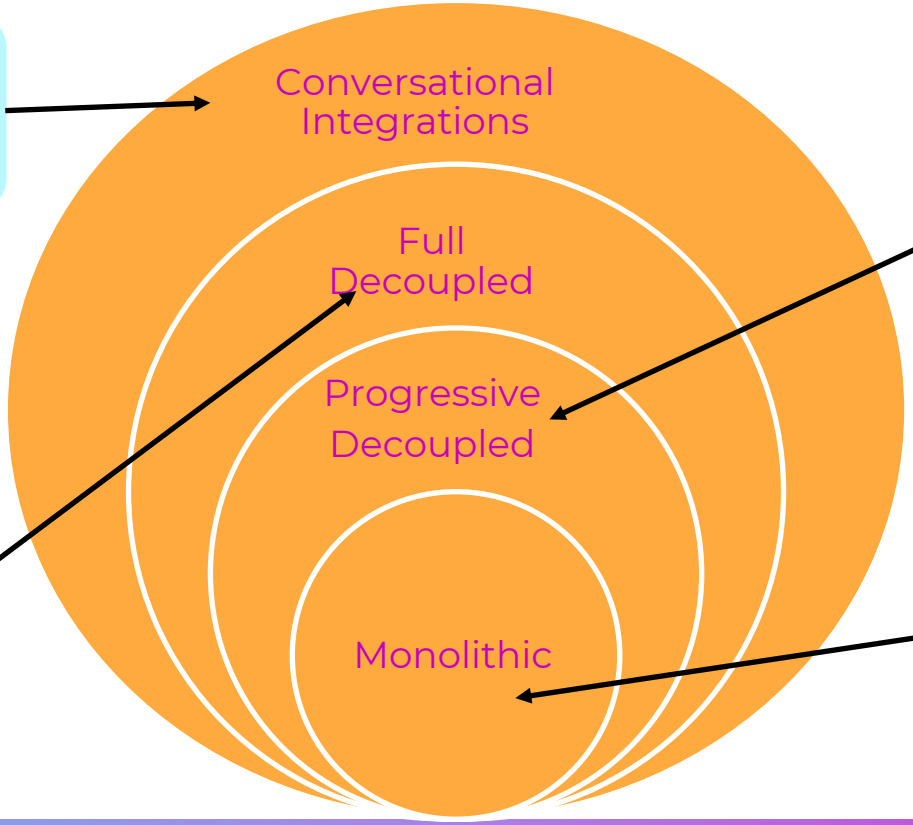
- IoT,
- Voice First,
- AI First,
- Distributed CMS



- Multi Front End
- Rich UI/UX
- Power of CMS and Front End Frameworks

- API First-API Ready
- Cloud Ready
- Mobile Apps
- Single Page Apps
- Bots
- Static Sites

- Traditional Factory model
- Multi Site
- Single Sites

Demo: Decoupled Drupal 8

Drupal 8, Services and Decoupling Patterns

Demo: Decoupled Drupal 8

Drupal 8 as Decoupled CMS

- Content Modelling :
  - ➢ Content Type : Yoga Asana (https://goo.gl/FoihMW)
  - ➢ Paragraphs Type : Asana Steps (https://goo.gl/2qmk4u)
  - ➢ Vocabulary : Asana Benefits , Asana Difficulty Level ; (https://goo.gl/LLH5YC)
- RESTful API and Modules :
  - ➢ RESTful API : JSONAPI (8.x-1.23), JSONAPI Extras (8.x-2.8)
  - ➢ API Documentation : OpenAPI (8.x-1.0-beta2), OpenAPI UI (8.x-1.0-rc1)
- Configure CORS :
  - ➢ Git Code https://goo.gl/TxkjnC

Demo: Decoupled Drupal 8

Drupal 8 and Single Page React App

- Install Node and Test Node and NPM : ***node –v , npm –v***
- Install create-react-app using NPM : ***npm install -g create-react-app***
- Create react app with project name : ***npm create-react-app “drupal8-yoga-react”***
- Start the App : ***cd drupal8-yoga-react*** and then ***npm start***
- Use suitable HTTP client for the browser and node.js : ***npm install axios***
- Code snippets API Call , Headers and Data Rendering:
- Use App :
  - ✓ ***git clone git@github.com:drupal8-decouple-yoga/drupal8-yoga-react.git***
  - ✓ ***npm install***
  - ✓ ***npm start*** and visit ***http://localhost:3000*** then ***npm build*** *(if required)*

Demo: Decoupled Drupal 8

Drupal 8 and Hybrid Ionic App

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- To Start with Ionic App Creation
  - ✓ Install Node and Test Node and NPM : ***node –v , npm –v***
  - ✓ install the Ionic and Cordova CLI: ***npm install -g ionic cordova***
  - ✓ Create ionic app with project name : ***ionic start drupal8yoga***
  - ✓ Start the App : ***cd drupal8yoga*** and then ***ionic serve***
- Use Angular 4 within Ionic App for Templating, also Typescript and sass can be used
- ✓ ***import { Component, ViewChild } from '@angular/core',***
  - ✓ ***import { Config, Nav, Platform } from 'ionic-angular'***
- Use App : ***git clone git@github.com:drupal8-decouple-yoga/drupal8-yoga-ionic.git npm install*** followed by ***ionic serve*** and visit ***http://localhost:8100***

Demo: Decoupled Drupal 8

Drupal 8 and Alexa with AWS Cloud

Alexa Yoga App Architecture

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Rajan Konar

Frontend Developer
Tata Consultancy Services

@rajankonar

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Become a Drupal contributor Friday from 9am

- First timers workshop
- Mentored contribution
- General contribution, I'll be there too

Warm Thank You Drupal Europe