

adaptTo()

APACHE SLING & FRIENDS TECH MEETUP
10-12 SEPTEMBER 2018

Application Integration

Alexander Berndt

About me – Alexander Berndt

Freelance IT Architect

- 10 years in large-scale projects (150-600 people), Accenture + TC
- Since 2011 CQ/AEM



https://www.xing.com/profile/Alexander_Berndt

What is an application?

What is an application?

- **Transaction Tools** (e.g. flight booking, online banking, appointments)
- **Interactive Content** (e.g. games, maps & routing)
- **Data Query Tools** (e.g. store finder)
- **Data Visualization** (e.g. data charts, 3d-viewer)
- **Usability Tools** (e.g. favorite list)
- **Configuration & Planning Tools** (e.g. car configurator, kitchen planner)
- **Calculators** (e.g. savings calculator)
- **Social Collaboration** (e.g. chat, product ratings)
- **Personalized Content** (e.g. recommendations)

Why is it complicated?

Why is it complicated?



iStock.com/TT

- Abnormal Conditions

Why is it complicated?



iStock.com/aapsky

- Abnormal Conditions
- Unstated requirements

Why is it complicated?



iStock.com/ChiccoDodiFC

- Abnormal Conditions
- Unstated requirements
- Steady scope increases

Why is it complicated?



iStock.com/sturti

- Abnormal Conditions
- Unstated requirements
- Steady scope increases

**It's not that easy,
as it might look first!**

Integration Patterns

Integration Patterns

Side-by-side

Side-by-side: Alternatives

a) Multiple Subdomains

- Demo

<https://www.thomascook.de>

Flights and Booking-Journey are independent Web-Apps

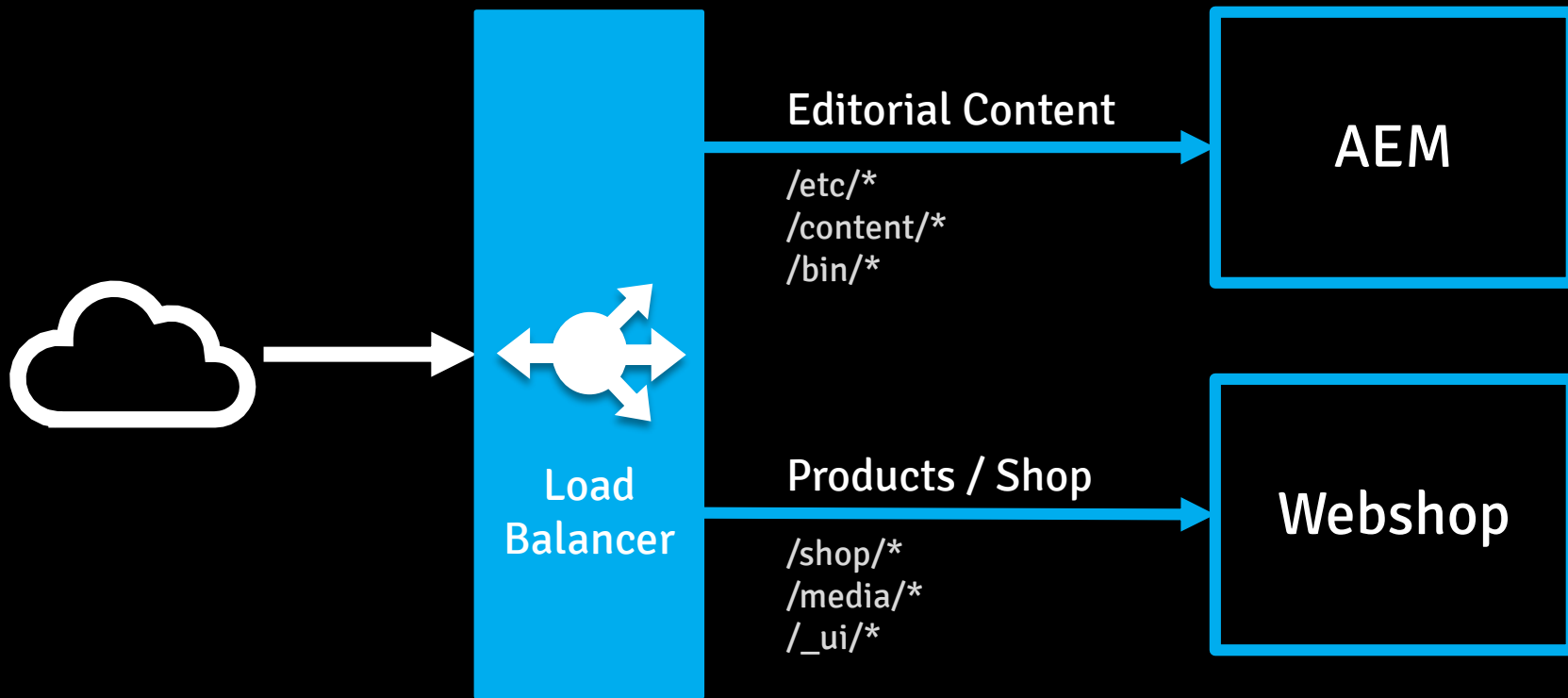
b) Path-based Routing

- Demo

<https://www.hilti.ch>

Web-Shop and AEM mapped into single domain

Path-based Routing



Evaluation: Side-by-side

Side-by-side

Development

Independence

-

Required skills

-

Operations

Root-cause analysis

+++

Independence

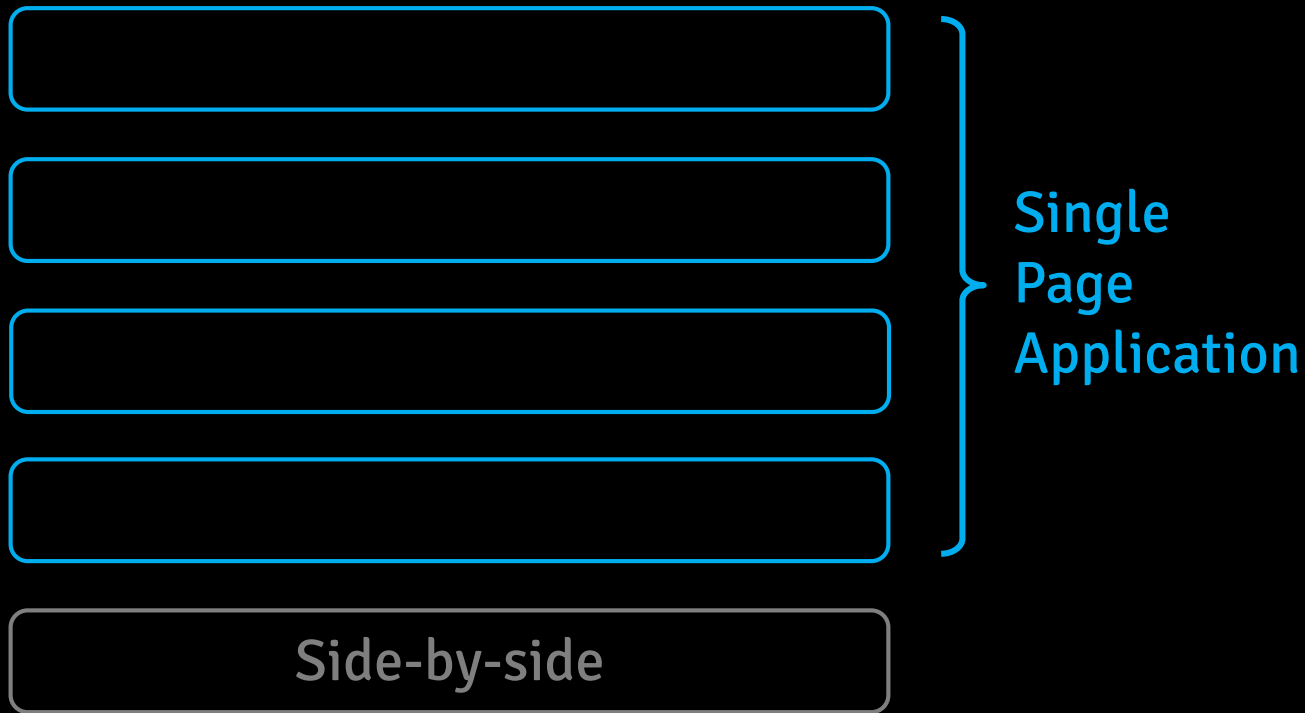
+++

User Experience

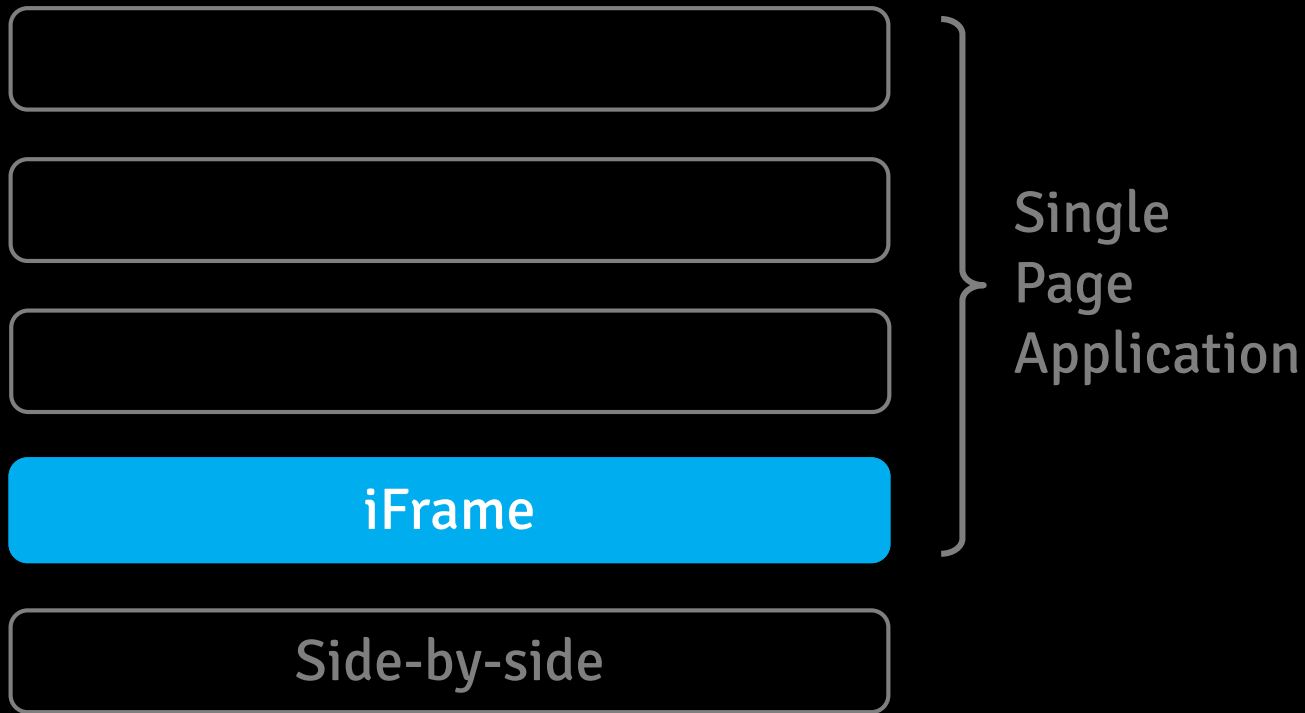
Integration Features

--

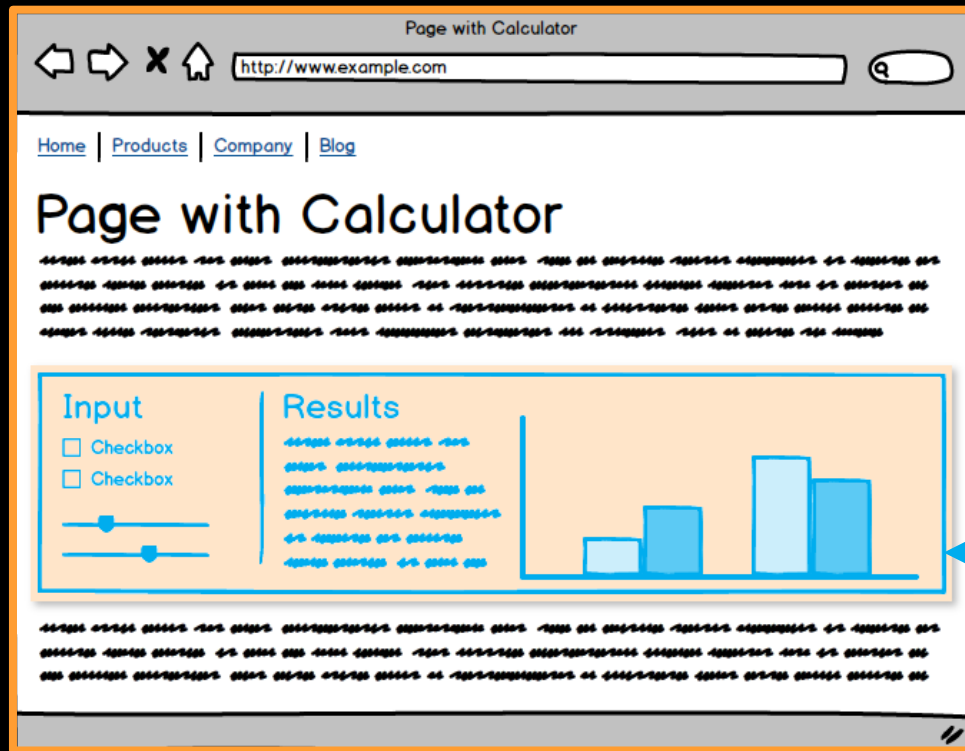
Integration Patterns



Integration Patterns



iFrame – Integration Pattern



Content Page
with iFrame

AEM

HTML/JS

+ Static Resources
+ Dynamic Endpoints

Application

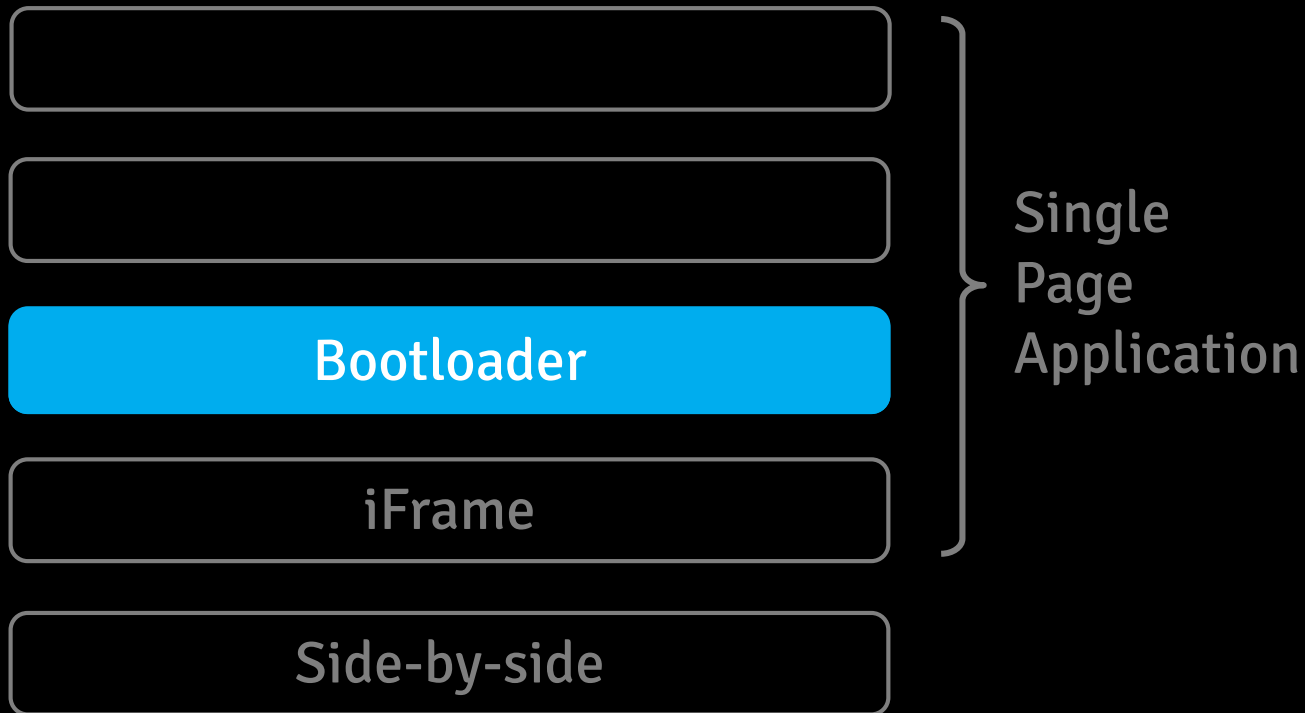
Example: iFrame of 123formbuilder.com

```
<iframe id="1535293493707_253331785549840"  
  src="//form.123formbuilder.com/js-form-username-18551.html?  
    _embedType_=embed.js&_iframeID_=1535293493707"  
  frameborder="0"  
  scrolling="no"  
  style="padding:0px; margin:0px; display:block; width:100%;  
    background-color:transparent; overflow:hidden;  
    height: 1289px;">  
</iframe>
```

Evaluation: iFrame

	Side-by-side	iFrame
Development		
Independence	-	+++
Required skills	-	+++
Operations		
Root-cause analysis	+++	+
Pro-active monitoring	++	---
Independence	+++	+++
User Experience		
Integration Features	--	--
Performance	++	--
Fall-back Mode	+++	---

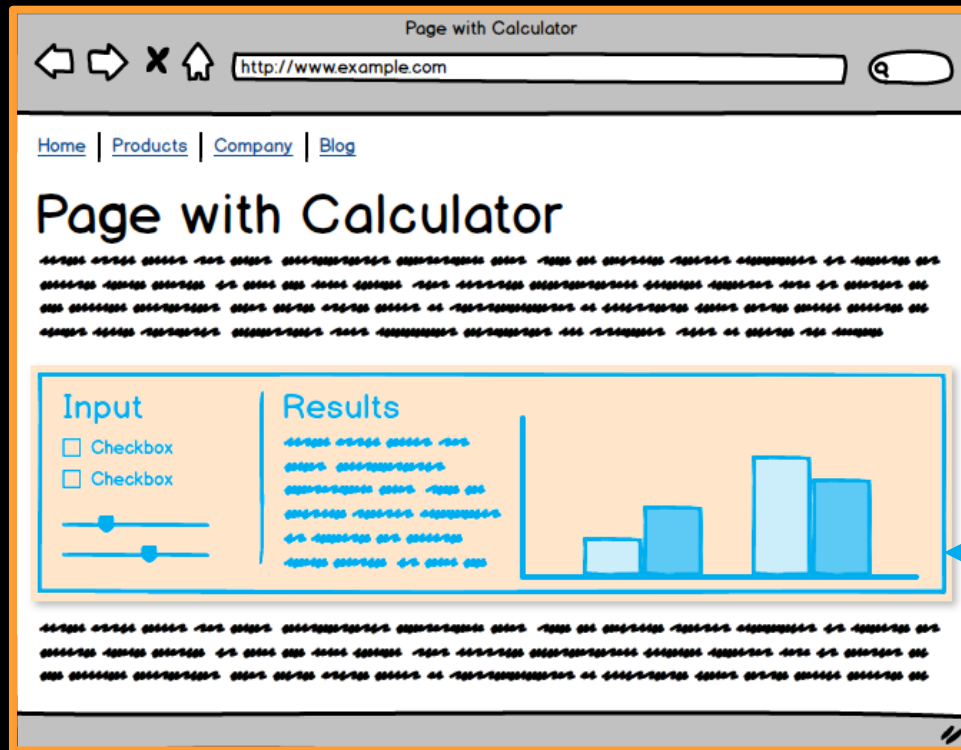
Integration Patterns



■ Example: Google Maps

```
<body>
<div id="map"></div>
<script>
  var map;
  function initMap() {
    map = new google.maps.Map(document.getElementById('map'), {
      center: {lat: -34.397, lng: 150.644}, zoom: 8});
  }
</script>
<script src="https://maps.googleapis.com/..." async defer></script>
</body>
```

Bootloader – Integration Pattern



Content Page
with Bootloader

AEM

JavaScript

+ Static Resources
+ Dynamic Endpoints

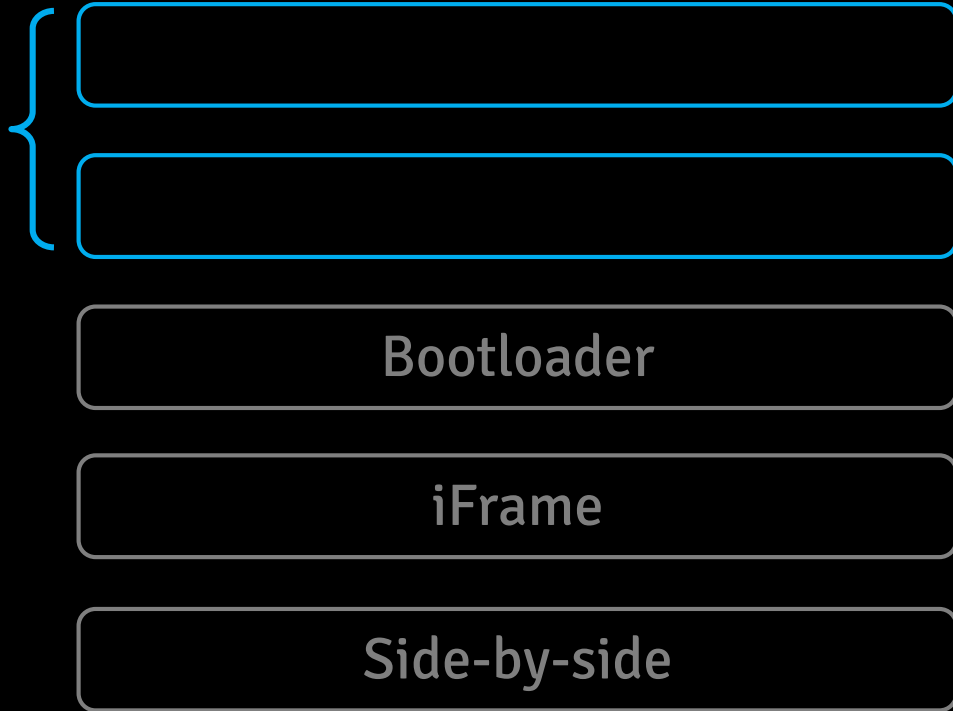
Application

Evaluation: Bootloader

	Side-by-side	iFrame	Bootloader
Development			
Independence	-	+++	++
Required skills	-	+++	+
Operations			
Root-cause analysis	+++	+	+
Pro-active monitoring	++	---	---
Independence	+++	+++	++
User Experience			
Integration Features	--	--	++
Performance	++	--	--
Fall-back Mode	+++	---	---

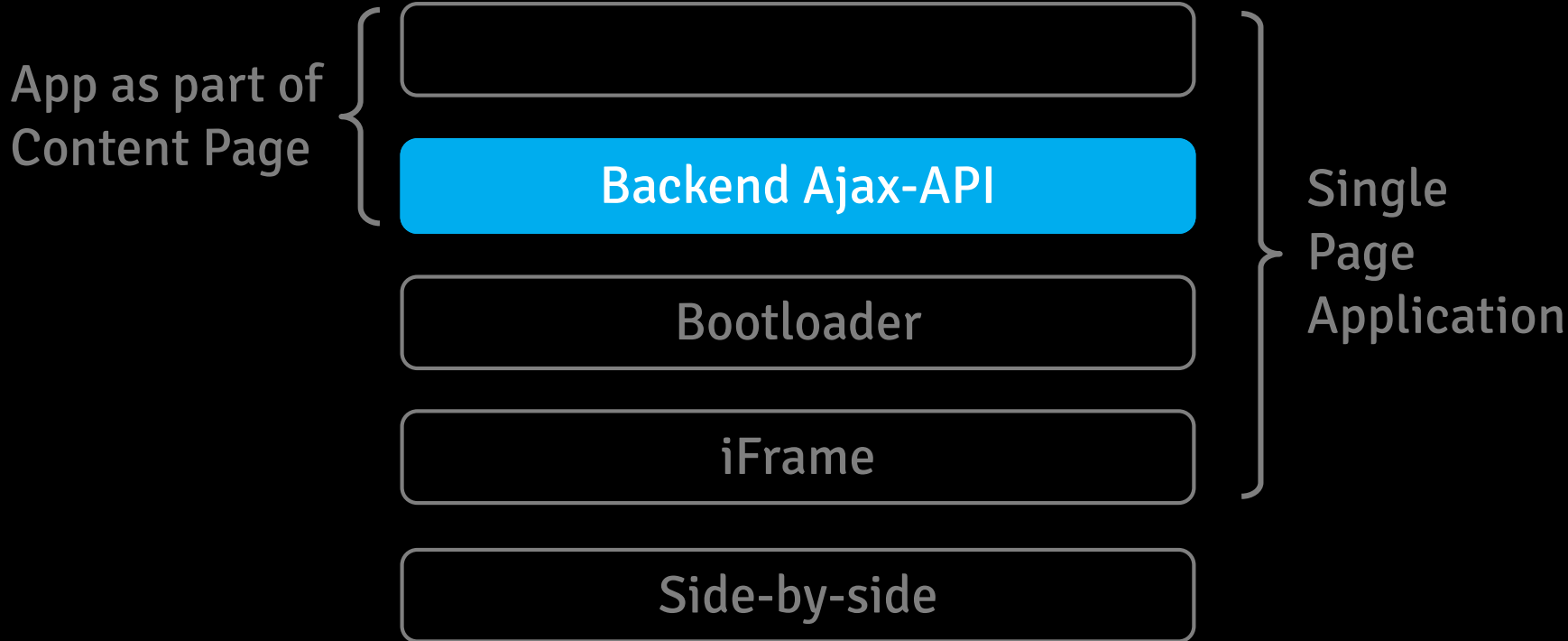
Integration Patterns

App as part of
Content Page

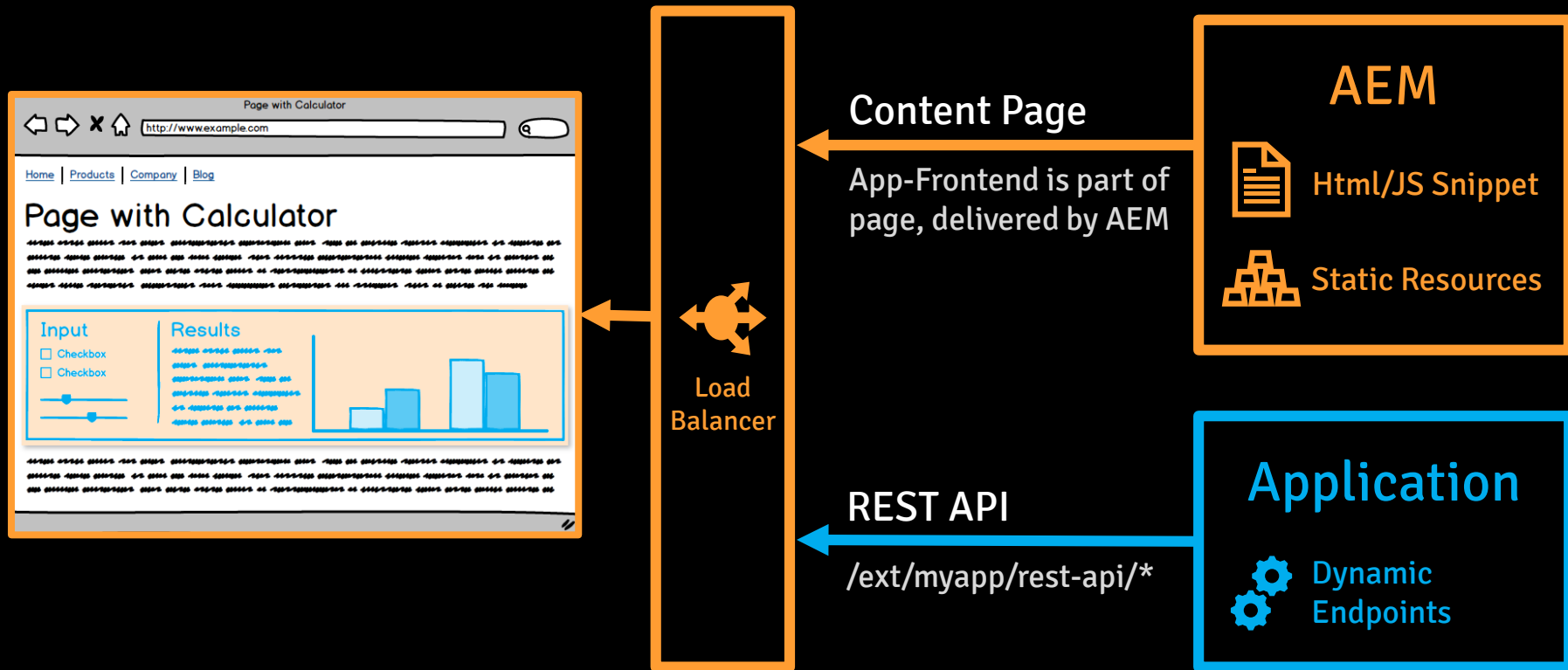


Single
Page
Application

Integration Patterns



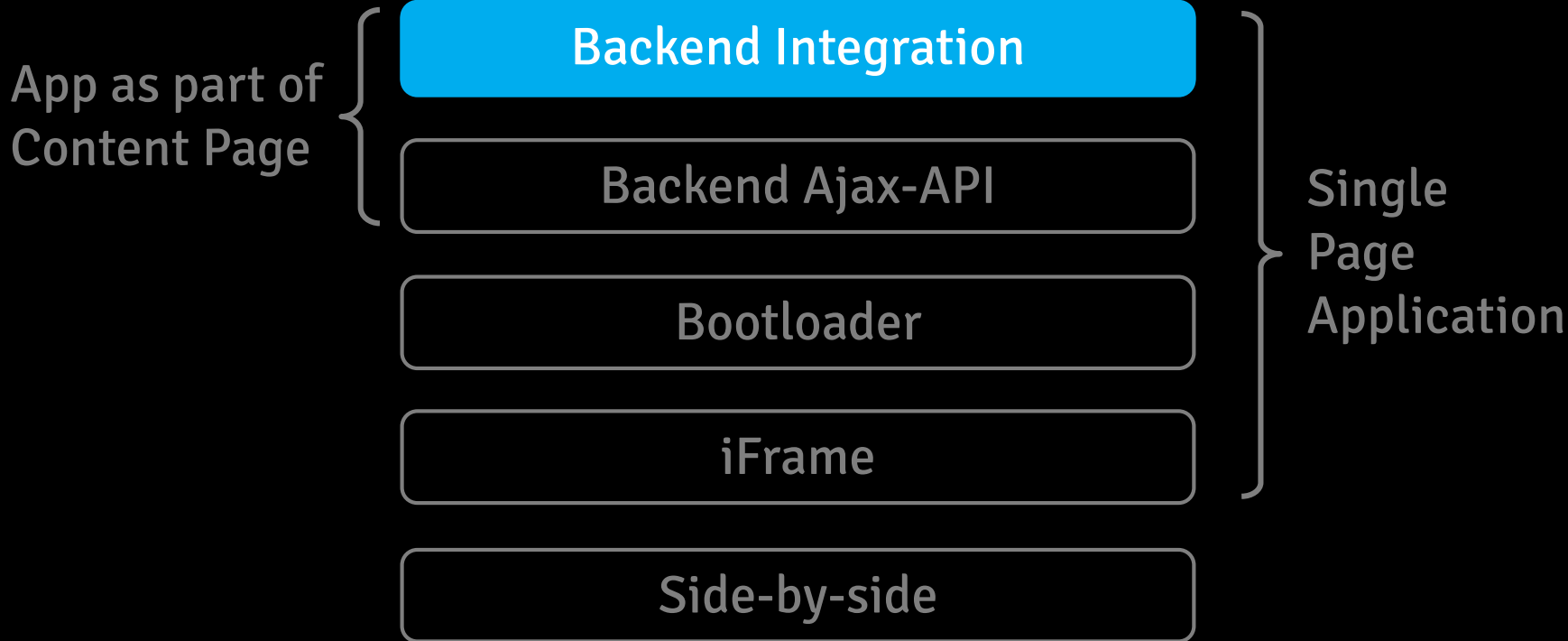
Backend Ajax API



Evaluation: Backend Ajax API

	Side-by-side	iFrame	Bootloader	Backend Ajax API
Development				
Independence	-	+++	++	---
Required skills	-	+++	+	+
Operations				
Root-cause analysis	+++	+	+	++
Pro-active monitoring	++	---	---	++
Independence	+++	+++	++	---
User Experience				
Integration Features	--	--	++	+++
Performance	++	--	--	+++
Fall-back Mode	+++	---	---	++

Integration Patterns



AEM



Content Page

Application



Single Html Page



Static Resources



Dynamic Endpoints

Development Time vs. Runtime

AEM



Content Page
+ HTML Snippet of App



Static Resources

Application



Single Html Page



Static Resources



Dynamic Endpoints

Potential Approaches

- ~~Copy & Paste~~ 
- ~~Maven Build~~ 
- ~~Reverse Proxy~~ 
- Backend Crawler

Backend Integration



- Query Instances
- Evaluate Context
- Load HTML Page
- Verify HTML
- Extract Html Snippet
- Extract Static Resources

Extract HTML Snippet

```
<html lang="en" manifest="cache.manifest">
<head>
  <title>Sample Calculator Test Page</title>
  <meta name="keywords" content="Sample, Calculator, adaptTo()">
  <link rel="stylesheet" href="css/style.css" data-webapp="export">
</head>
<body>
  <h1>Sample Calculator Test Page</h1>
  <div class="sample-calculator" data-webapp="export">
    <!-- here is the calculator html! -->
  </div>
  <script src="js/jquery.min.js"></script>
  <script src="js/calculator-ui.js" data-webapp="export"></script>
</body></html>
```

Backend Integration



- Load Cache Manifest
- Load Static Resources
- Extract References
- Verify

Cache Manifest

```
# Files, to be cached = static resources
```

```
CACHE:
```

```
css/style.css
```

```
js/calculator-ui.js
```

```
img/background.png
```

```
# Only online
```

```
NETWORK:
```

```
rest-api/sendOffer
```

```
FALLBACK:
```

```
static.html
```

Backend Integration



- A/B Switch
- Clear Dispatcher Cache
- Calculate Overall Status
- Next Run

- Source Code

<https://github.com/alberndt/aem-app-integration>

Evaluation: Backend Integration

	Side-by-side	iFrame	Bootloader	Backend Ajax API	Backend Integration
Development					
Independence	-	+++	++	---	+++
Required skills	-	+++	+	+	++
Operations					
Root-cause analysis	+++	+	+	++	++
Pro-active monitoring	++	---	---	++	++
Independence	+++	+++	++	---	+++
User Experience					
Integration Features	--	--	++	+++	++
Performance	++	--	--	+++	+++
Fall-back Mode	+++	---	---	++	++

Further Integration Patterns

- External Content
- Multi-Page Applications
- POST Requests
- Structured Content Import (xml/json)

Questions

Appendix

Outbound Patterns

Content Snippets

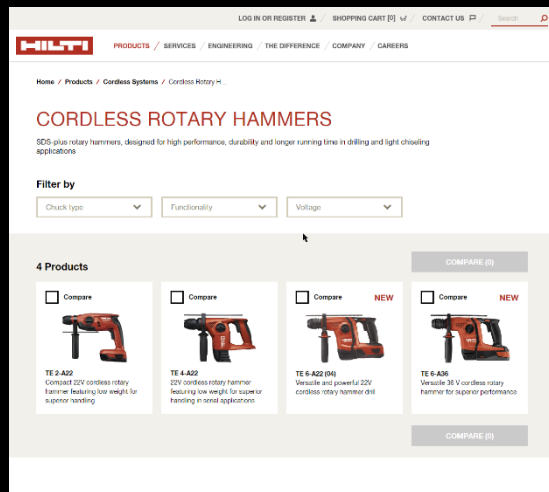
Shared Resources

Frontend JS-Libraries

Site Master Data

App.-Configuration

Application Rules



LOG IN OR REGISTER | SHOPPING CART (0) | CONTACT US

PRODUCTS / SERVICES / ENGINEERING / THE DIFFERENCE / COMPANY / CAREERS

Home / Products / Cordless Systems / Cordless Rotary H.





CORDLESS ROTARY HAMMERS

SDS-plus rotary hammers, designed for high performance, durability and longer running time in drilling and light chiseling applications

Filter by

Chuck type | Functionality | Voltage

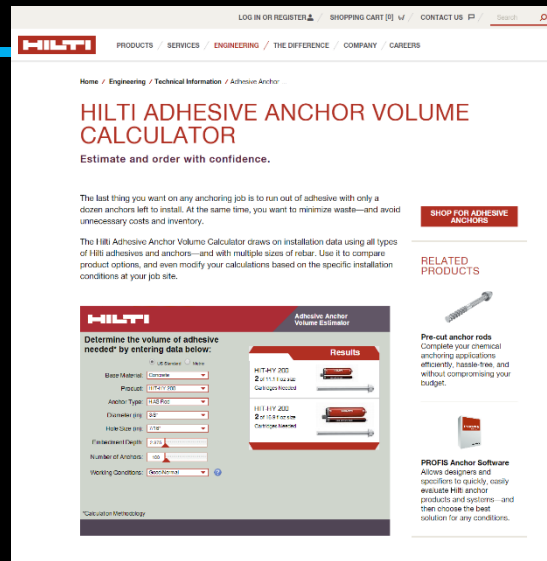
4 Products

Compare	Compare	Compare NEW	Compare NEW
			
TE 2-A2Z Compact SDS-plus cordless rotary hammer featuring low weight for superior handling	TE 4-A2Z SDS-plus cordless rotary hammer featuring low weight for superior handling in several applications	TE 6-A2Z (H) Versatile and powerful SDS-plus cordless rotary hammer drill	TE 6-A36 Versatile 36 V cordless rotary hammer for superior performance

COMPARE (0)

Product Page
(Shop)

Editorial Page
(Adobe AEM)



LOG IN OR REGISTER | SHOPPING CART (0) | CONTACT US | Search

PRODUCTS / SERVICES / ENGINEERING / THE DIFFERENCE / COMPANY / CAREERS

Home / Engineering / Technical Information / Adhesive Anchor

HILTI ADHESIVE ANCHOR VOLUME CALCULATOR

Estimate and order with confidence.

The last thing you want on any anchoring job is to run out of adhesive with only a dozen anchors left to install. At the same time, you want to minimize waste—and avoid unnecessary costs and inventory.

The Hilti Adhesive Anchor Volume Calculator draws on installation data using all types of Hilti adhesives and anchors—and with multiple sizes of rebar. Use it to compare product options, and even modify your calculations based on the specific installation conditions at your job site.

SHOP FOR ADHESIVE ANCHORS

RELATED PRODUCTS

Pre-cut anchor rods
Complete your chemical anchoring applications efficiently, hassle-free, and without compromising your budget.

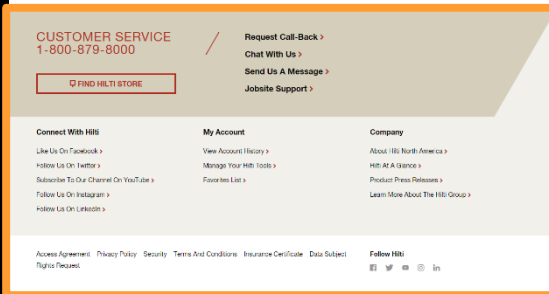
PROFIS Anchor Software
Allow designers and specifiers to quickly, easily evaluate Hilti anchor products and options—and then choose the best solution for any conditions.

Determine the volume of adhesive needed* by entering data below:

Input	Value	Results
Base Material	Concrete	Results HILTI 202 2 x 11.1 m ea ea Setback needed HILTI 202 2 x 11.1 m ea ea Customer needed
Rebar	11.1 x 11.1 mm	
Anchor Type	HILTI 202	
Diameter (mm)	22	
Hold Size (mm)	112	
Fastener Depth	112	
Number of Anchors	1	
Working Conditions	Normal	

*Calculation Methodology

Exported Footer



CUSTOMER SERVICE
1-800-879-8000

Request Call-Back >
Chat With Us >
Send Us A Message >
Jobsite Support >

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- Follow Us On Twitter >
- Subscribe To Our Channel On YouTube >
- Follow Us On Instagram >
- Follow Us On LinkedIn >

My Account

- View Account History >
- Manage Your Hilti Tools >
- Favorite List >

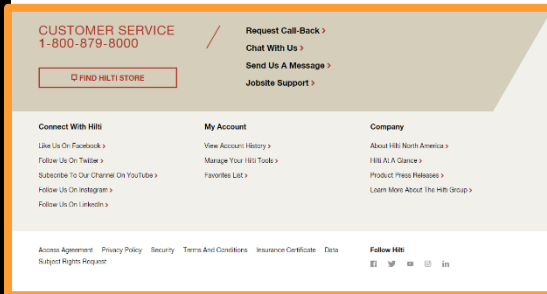
Company

- About Hilti North America >
- Hilti At A Glance >
- Product Press Releases >
- Learn More About The Hilti Group >

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Export Servlet vs. Deep URL

- Use an export servlet!
 - Nicier API's
 - Content structure remains flexible
 - Entry point for mappings (e.g. UK vs. GB)

Export Content Snippets – Export Servlet

```
@Override
protected void doGet(SlingHttpServletRequest request, ...) {
    ResourceResolver resolver = resolverFactory.getServiceResourceResolver();
    SlingHttpServletRequestWrapper wrappedRequest =
        new SlingHttpServletRequestWrapper(request) {
            @Override
            public ResourceResolver getResourceResolver() {
                return resolver;
            }
        };
    RequestDispatcher dispatcher =
        wrappedRequest.getRequestDispatcher("/content/myproject/...");
    request.setAttribute(WCMMode.REQUEST_ATTRIBUTE_NAME, WCMMode.DISABLED);
    dispatcher.forward(wrappedRequest, response);
}
```

Outbound Patterns

Content Snippets

Shared Resources

Frontend JS-Libraries

Site Master Data

App.-Configuration

Application Rules

- AEM provides resources (=API)
 - Fonts
 - JS Libraries (e.g. jQuery, ...)
 - Icons, Images
 - CSS (careful!)

Outbound Patterns

Content Snippets

Shared Resources

Frontend JS-Libraries

Site Master Data

App.-Configuration

Application Rules

- AEM provides JavaScript-API's
 - Dynamic Layouting
 - Pop-ups, Flyouts, Layer, ...
 - Web-Analytics
 - Footnotes
 - Personalization
 - Navigation (forward/backward button)

Outbound Patterns

Content Snippets

Shared Resources

Frontend JS-Libraries

Site Master Data

App.-Configuration

Application Rules

- AEM provides back-end interface
 - Site master data
(countries, languages, domain-names, logo, ...)
 - Link API
 - e.g. Mercedes Benz:
BE → fr → E-Class → Configurator
CH → de → A-Class → Homepage

Outbound Patterns

Content Snippets

Shared Resources

Frontend JS-Libraries

Site Master Data

App.-Configuration

Application Rules

Application Configuration

- AEM is “the” User Interface for Authors
- Property-files within the App are
“non-configurable”

Outbound Patterns

Content Snippets

Shared Resources

Frontend JS-Libraries

Site Master Data

App.-Configuration

Application Rules

Application Rules

- Mixing multiple Applications requires rules
- Example:
 - CSS Namespaces
 - JS Namespaces
 - ...

Further Outbound Patterns

- Service Management
- Platform Services
- Governance