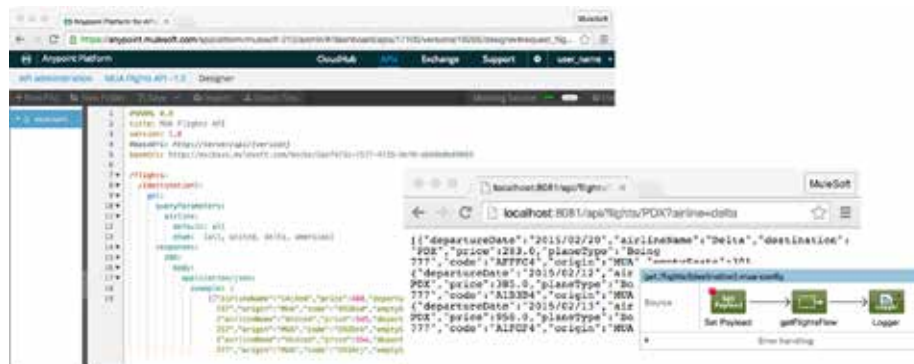




Module 10: Building RESTful Interfaces with RAML and APIkit

Goal



Objectives

- In this module, you will learn:
 - To define an API with RAML
 - To create RAML files with Anypoint Designer
 - To implement a RAML file as a RESTful web service with Anypoint Studio and APIkit

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Using API Designer to define APIs with RAML

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RAML: RESTful API Modeling Language



- A simple and succinct way of describing RESTful APIs
 - Resources, schema, parameters, responses, and more
- Developed to help out the current API ecosystem
 - Encourages reuse, enables discovery and pattern-sharing, and aims for merit-based emergence of best practices
- A non-proprietary, vendor-neutral open spec
- Built on broadly-used standards such as YAML and JSON
 - YAML Ain't a Markup Language
 - A human-readable data serialization format where data structure hierarchy is maintained by outline indentation
- <http://raml.org>

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RAML example

```

1  #%RAML 0.8
2
3  title: World Music API
4  baseUrl: http://example-api.com/{version}
5  version: v1
6  traits:
7    - paged:
8      queryParams:
9        pages:
10         description: The number of pages to return
11         type: number
12    - secured: !include http://raml-example.com/secured.yml
13  /songs:
14    is: [ paged, secured ]
15    get:
16      queryParams:
17        genre:
18         description: filter the songs by genre
19    post:
20      /{songId}:
21        get:
22          responses:
23            200:
24              body:
25                application/json:
26                  schema: |

```



RAML example: Resources and methods

```

8  mediaType: application/json
9  /flights: ← Resource
10  /{destination}: ← URL parameter / nested resource
11    get: ← Method pairing for flights/{dest}
12    description: Makes a call to ...
13    responses:
14      200: ← Describes a 200 response
15      body:
16        application/json:
17          example: [ {
18                    "key" : "value"
19                  } ]
20

```

Defines the response type

Example JSON

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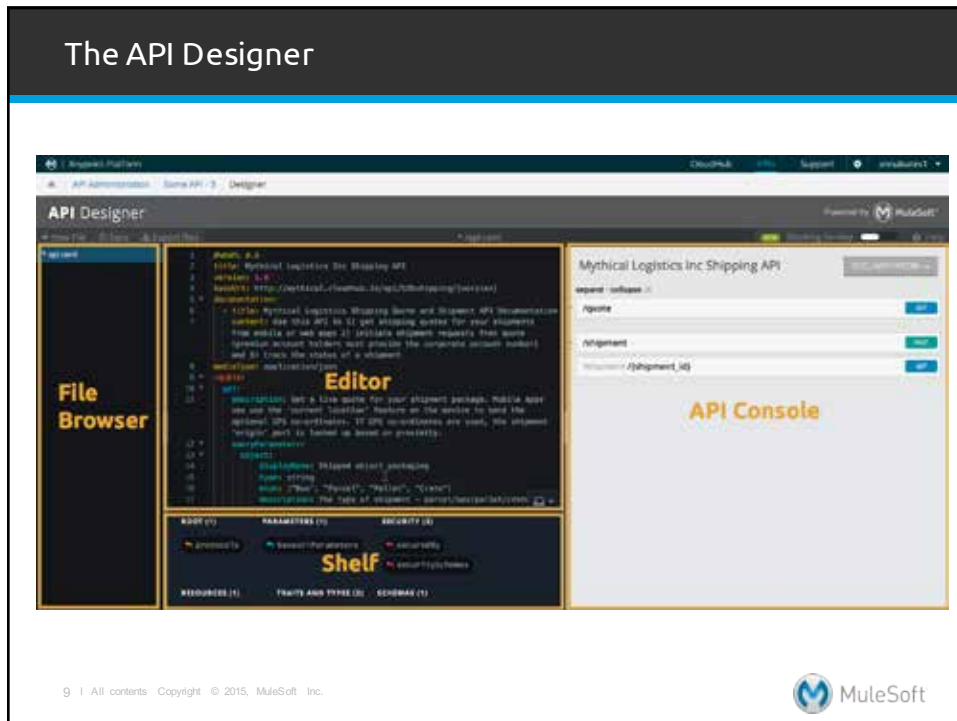
Anypoint Platform RAML tooling

- API Designer
 - A web-based API development tool for creating RAML API definitions
- API Manager
 - A web-based tool for making the APIs manageable and discoverable
- API Console
 - A graphical representation of the API that exposes the API's structure and provides access to interactive documentation
- API Notebook
 - A web-based persistent JavaScript console that enables live testing and exploring of APIs and saving API use cases

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The API Designer



Walkthrough 10-1: Use API Designer to define an API with RAML

- In this walkthrough, you will:
 - Add a new API to the Anypoint Platform
 - Use the API Designer to create a RAML file
 - Use a nested resource for the destination and a query parameter for the airline



RAML resources

- RAML has a lot more to offer than our example in class
 - raml.org – Website
 - raml.org/docs – Documentation / tutorial
 - github.com/raml-org/raml-spec - Full spec
 - youtube.com/watch?v=5o_nExedezw – RAML overview with Uri Sarid (CTO of MuleSoft)

Simulating an API

- You can use simulate an API to test it before it is implemented
 - Useful to get early feedback from developers
- Use the API console and the mocking service to run a live simulation
 - Use RAML to specify example responses for your API
 - Can be used in the API Designer and in API portals

Walkthrough 10-2: Use API Designer to simulate an API

- In this walkthrough, you will:
 - Use the API console in API Designer
 - Use RAML to specify example responses for your API
 - Use the API Designer mocking service to run a live simulation of your API



13 | All contents



Using Anypoint Studio to create RESTful web services from RAML files

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Creating RESTful web services

- Use Anypoint Studio and APIkit to generate a RESTful web services from a RAML file
- APIkit is an open-source, declarative toolkit created to facilitate REST API implementation
 - Integrated with Anypoint Studio to create a RESTful interface based on a RAML file
 - It generates a main routing flow and flows for each of the API resources
 - You add processors to the resource flows (often Flow References) to hook up to your backend logic

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Using Anypoint Studio to create RESTful interfaces

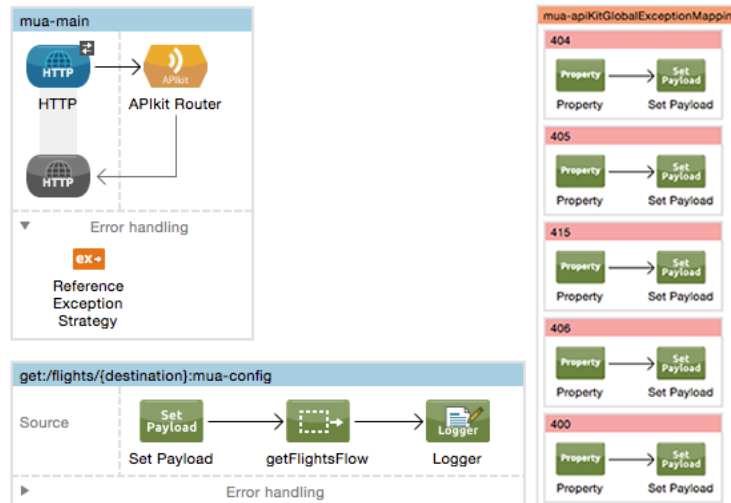
- In a new project
 - Specify a RAML file when you create the project
- In an existing project
 - Add a RAML file to the project
 - Right-click and select APIkit > Generate Flows



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The generated application



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APIkit anatomy

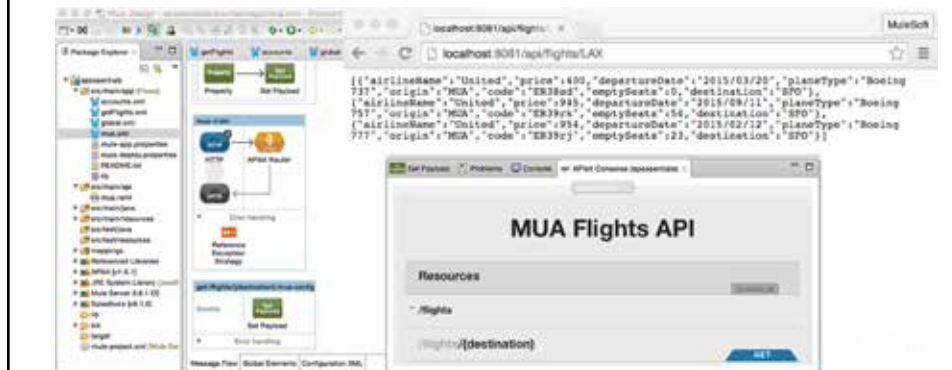
- Three main parts that together form a RESTful API
 - Interface
 - The mediator between the service exposed to the world and the internal assets that need to be exposed
 - Defines the data to which end users have access, and specifies the actions against the data (GET, PUT, etc.)
 - Main flow
 - Exposes the API via HTTP or Jetty
 - Routes requests between the interface (defined in RAML) and the backend flows (defined in XML)
 - References exception strategies specially designed to produce HTTP-status-code-friendly responses
 - Backend flows
 - Do the "heavy lifting", performing the actions the interface defined

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Walkthrough 10-3: Use Anypoint Studio to create a RESTful interface from a RAML file

- In this walkthrough, you will:
 - Add a RAML file to your apessentials project
 - Use Anypoint Studio and APIkit to generate a RESTful web service interface from a RAML file
 - Test the web service in the APIkit Consoles view and a browser



Walkthrough 10-4: Use Anypoint Studio to implement a RESTful web service

- In this walkthrough, you will:
 - Split the getFlightsFlow into two flows: one that transforms the form post data into a FlightRequest object and the other that gets all the flights
 - Determine how to reference the web service destination and airline values
 - Call the backend flow
 - Test the web service in the APIkit Consoles view and a browser



Summary

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Summary

- In this module, you learned to build a RESTful web service from a RAML API definition with Anypoint Platform for APIs
- Anypoint Platform for APIs includes web applications, tools, and frameworks for designing, testing, building, and managing RESTful APIs
 - API Designer, Anypoint Studio, APIkit, API Portal, API Manager
- Anypoint Platform RAML tooling includes API Designer, API Console, API Manager, and API Notebook
- Use the Anypoint Designer and API Console to define and simulate an API with RAML

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Summary

- Use Anypoint Studio and APIkit to generate a RESTful web services from a RAML file
- APIkit is an open-source, declarative toolkit
 - Created to facilitate REST API implementation
 - Integrated with Anypoint Studio to create a RESTful interface based on a RAML file
 - It generates a main routing flow and flows for each of the API resources
 - You add processors to the resource flows (often Flow References) to hook up to your backend logic