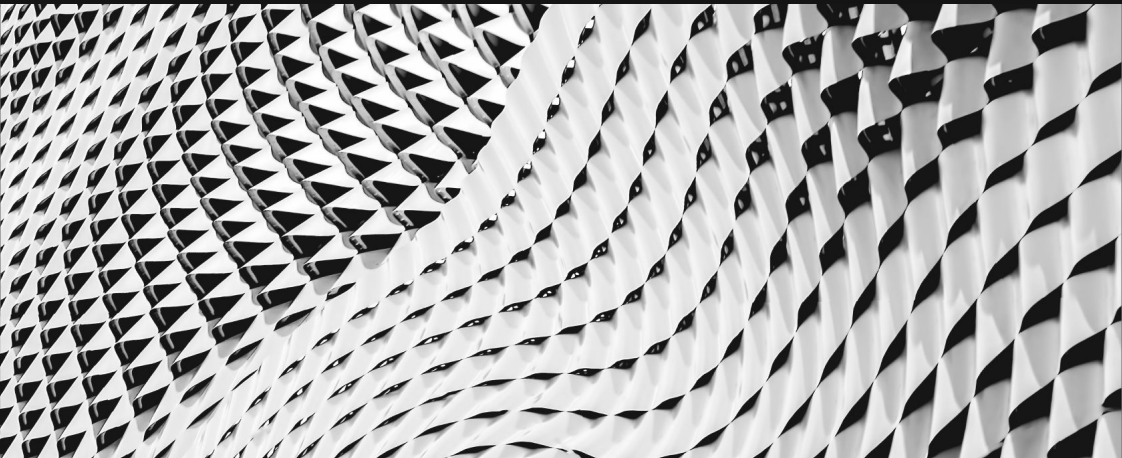


# My Teams Should Be Moving Faster!



- Continuous Integration
- Pipelines
- Continuous Testing
- Microservices
- Continuous Delivery
- CHAOS
- Integration Issues
- Misunderstandings
- Waiting
- Blockers



“Reminder: If you're building microservices,  
you're building a distributed system.”

- Jez Humble

# Why You Should Be Doing Contract-First API Development

---

Deven Phillips  
Senior Consultant  
@infosec812

# Why Contract-First?

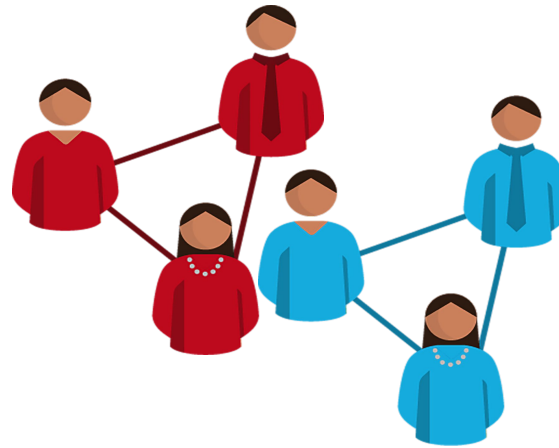
- Because you want to allow people to work independently
- Because you want to ensure consistency
- Because you need strong guarantees about service contracts
- Because you, your team, your colleagues, your customers, and your partners can collaborate
- Because you can save time by using code generators and testing tools

## The Traditional Workflow



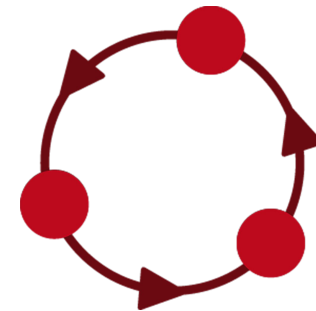
### Project Planning

The business experts spend time writing up a project plan for a series of services and potentially a user interface



### Send To Developers

The various development teams attempt to interpret the project plan and implement their code so that they are compatible



### Iterate And Integrate

The developer teams iteratively try to resolve integration issues and spends lots of time ensuring compatibility

## What's The Workflow?



### Build An API Specification

Using a tool like **OpenAPI**, write an API specification **FIRST**



### Publish The API Specification

Using a tool like **Swagger** or **Apicur.io**, publish the API specification where others have access and can collaborate



### Generate Code Contracts

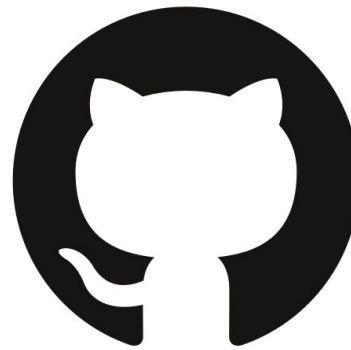
Using a tool like **OpenAPI Generator**, create the API stubs for both client and server applications. You can also generate “mock” services and client SDK libraries!

## What's The Workflow?



### Build An API Specification

Using a tool like **gRPC**, write an API specification  
FIRST



### Publish The API Specification

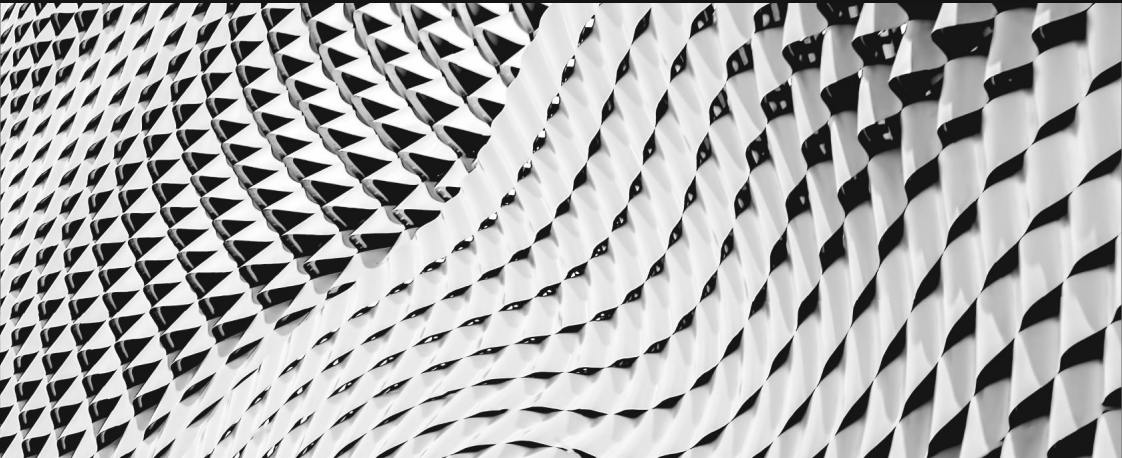
Write your specification in **protoc** format and  
publish it to a public repository



### Generate Code Contracts

Using a tool like **protoc**, create the API stubs for  
both client and server applications. You can also  
generate “mock” services and client SDK  
libraries!

# Learning OpenAPI



- Types
- Endpoints
- Verbs
- Parameters
- Security
- Extensions



# API Description:

```
---
openapi: 3.0.2
info:
  title: Petstore
  description: 'This is a sample Petstore API.'
  termsOfService: http://redhat.com/terms/
  contact:
    email: open-innovation-labs@redhat.com
  license:
    name: Apache 2.0
    url: http://apache.org/licenses/LICENSE-2.0
version: 1.0.0
```

```
externalDocs:
  description: Find out more about OpenAPI
  url: http://swagger.io
servers:
- url: https://petstore.swagger.io/v2
- url: http://petstore.swagger.io/v2
tags:
- name: pet
  description: Everything about your Pets
  externalDocs:
    description: Find out more
    url: http://swagger.io
```

# Type Definitions:

```
components:
  schemas:
    Order:
      type: object
      required:
        - id
        - petId
      properties:
        id:
          type: string
          format: uuid
        petId:
          type: integer
          format: int64
        quantity:
          type: integer
          format: int32
```

```
    shipDate:
      type: string
      format: date-time
    status:
      type: string
      description: Order Status
      enum:
        - placed
        - approved
        - delivered
    complete:
      type: boolean
      default: false
    xml:
      name: Order
```

# Endpoints:

```

/store/order:
  post:
    tags:
      - store
    summary: Place an order for a pet
    operationId: placeOrder
    requestBody:
      description: order placed
      content:
        '*/*':
          schema:
            $ref: '#/components/schemas/Order'
      required: true

```

```

responses:
  200:
    description: successful operation
    content:
      application/xml:
        schema:
          $ref:
            '#/components/schemas/Order'
      application/json:
        schema:
          $ref:
            '#/components/schemas/Order'
  400:
    description: Invalid Order
    content: {}

```

# Parameters:

```
/store/order:  
  get:  
    summary: Retrieve all orders  
    operationId: getOrders  
    parameters:  
      - in: query  
        name: startDate  
        required: false  
        schema:  
          type: string  
          format: datetime
```

```
      - in: query  
        name: endDate  
        required: false  
        schema:  
          type: string  
          format: datetime
```

```
/store/order/{orderId}:  
  get:  
    summary: Retrieve all orders  
    operationId: getOrderById  
    parameters:  
      - in: path  
        name: orderId  
        required: true  
        schema:  
          type: string  
          format: uuid
```

# Security:

```
components:  
  securitySchemes:
```

```
    BasicAuth:  
      type: http  
      scheme: basic
```

```
    BearerAuth:  
      type: http  
      scheme: bearer
```

```
    ApiKeyAuth:  
      type: apiKey  
      in: header  
      name: X-API-Key
```

```
    OpenID:  
      type: openIdConnect  
      openIdConnectUrl: https://ex.io/oid-config
```

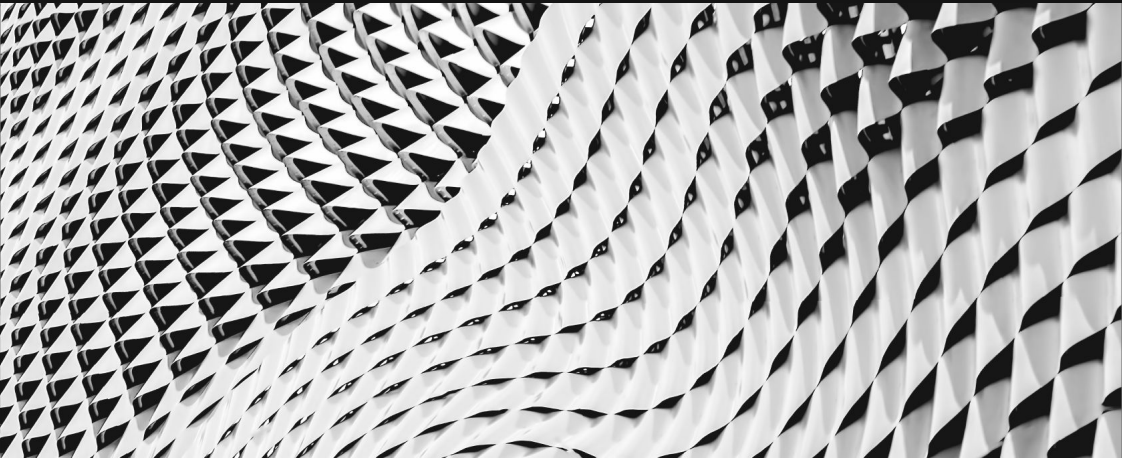
```
OAuth2:  
  type: oauth2  
  flows:  
    authorizationCode:  
      authorizationUrl: https://ex.io/oauth/auth  
      tokenUrl: https://ex.io/oauth/token  
      scopes:  
        read: Grants read access  
        write: Grants write access  
        admin: Grants admin access
```

# Extensions:

```
/store/order:
  post:
    tags:
      - store
    summary: Place an order for a pet
    operationId: placeOrder
    x-vertx-event-bus:
      address: com.myapp.store.order
    requestBody:
      description: order placed
      content:
        '*/*':
          schema:
            $ref: '#/components/schemas/Order'
      required: true
```

```
  responses:
    200:
      description: successful operation
      content:
        application/xml:
          schema:
            $ref:
              '#/components/schemas/Order'
        application/json:
          schema:
            $ref:
              '#/components/schemas/Order'
    400:
      description: Invalid Order
      content: {}
```

# OpenAPI Tools



- Editors
- Server Implementations
- Client Implementations
- Testing Tools
- Mocking Tools

# Editors:

- APICurio (apicur.io)
- Swagger Editor (editor.swagger.io)
- VSCode
- IntelliJ
- Eclipse



# Server Implementations:

- OpenAPI Generator
- Vert.x Web API Contract/Web API Service
- MicroTS
- @smartrecruiters/openapi-first

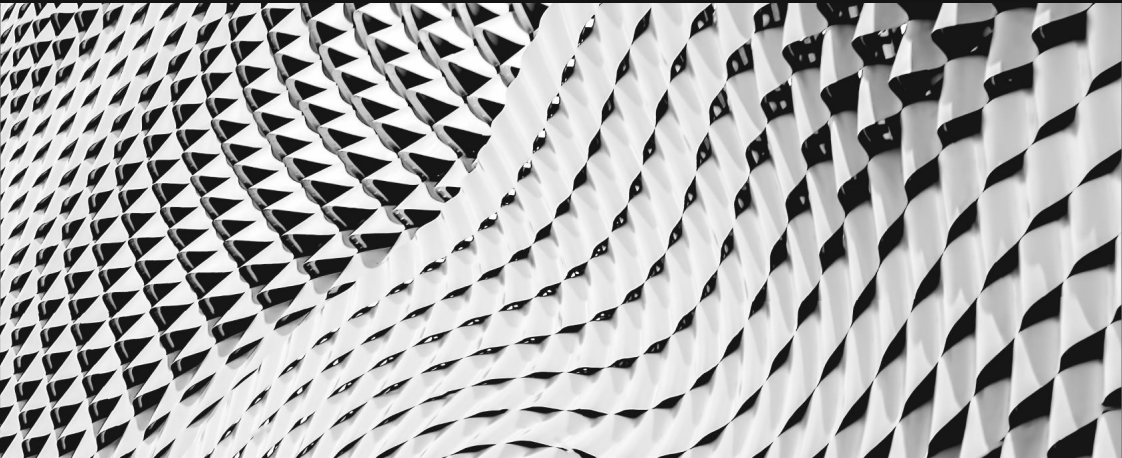
# Client Implementations:

- OpenAPI Generator
- Vert.x Web API Contract
- APIMATIC
- openapi-client-axios

# Testing Tools:

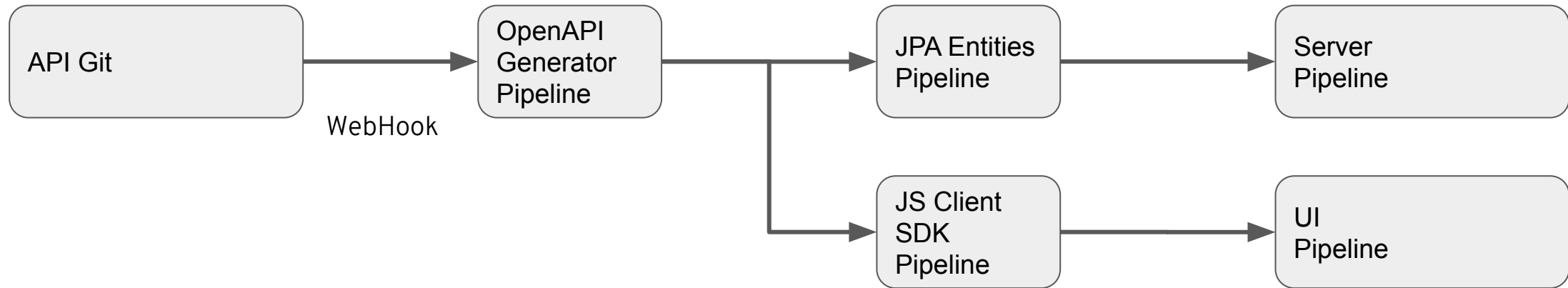
- Dredd
- Chai OpenAPI Response Validator
- hikaku
- Assertible

# Demonstration



- Writing A Specification
- Server Implementation
- Client Implementation
- Testing
- Mocking

# CI/CD For API:



# Thank you

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Presenter's Name  
Title

# Thank you

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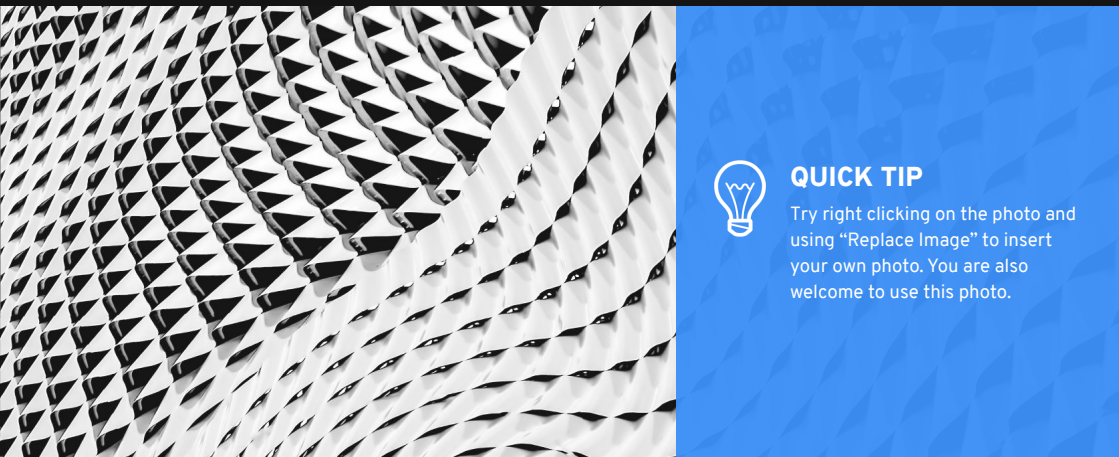
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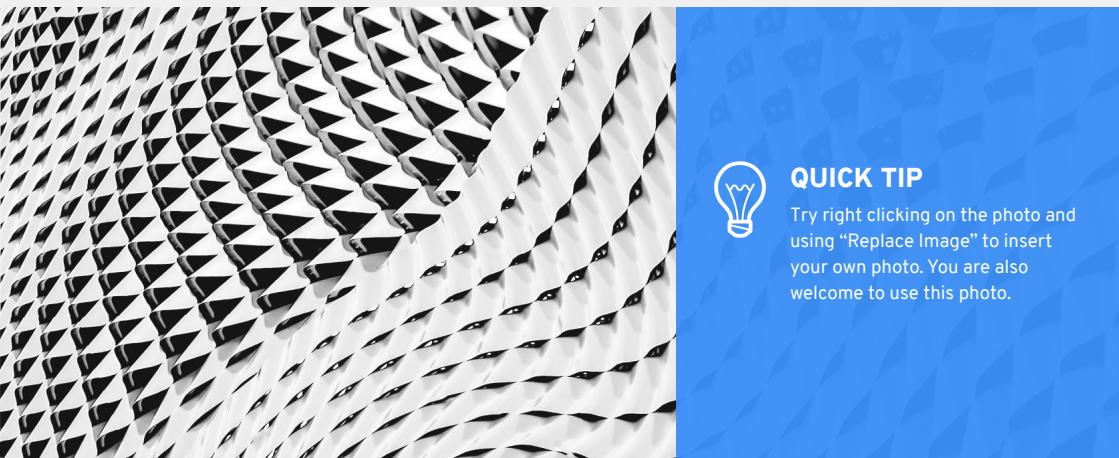
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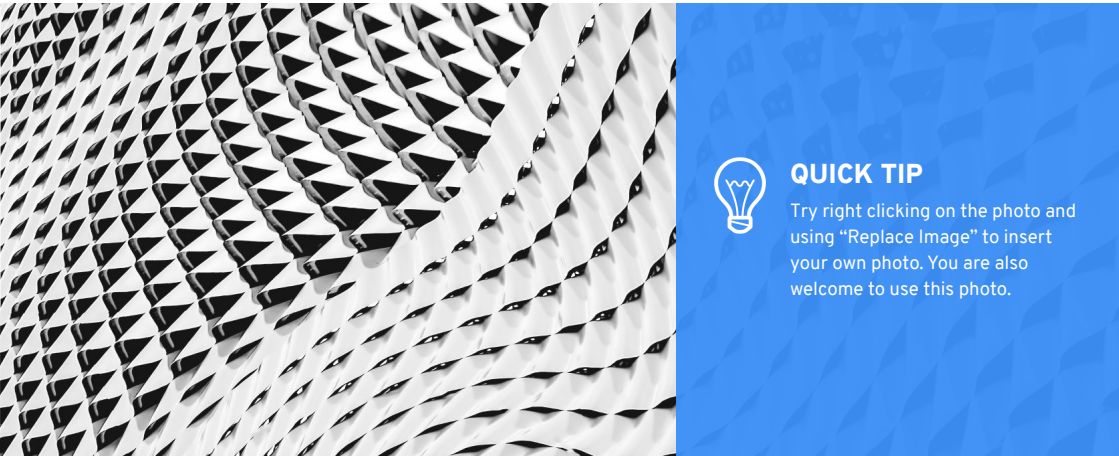
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Agenda slide templates

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# What we'll be discussing today

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# What we'll be discussing today

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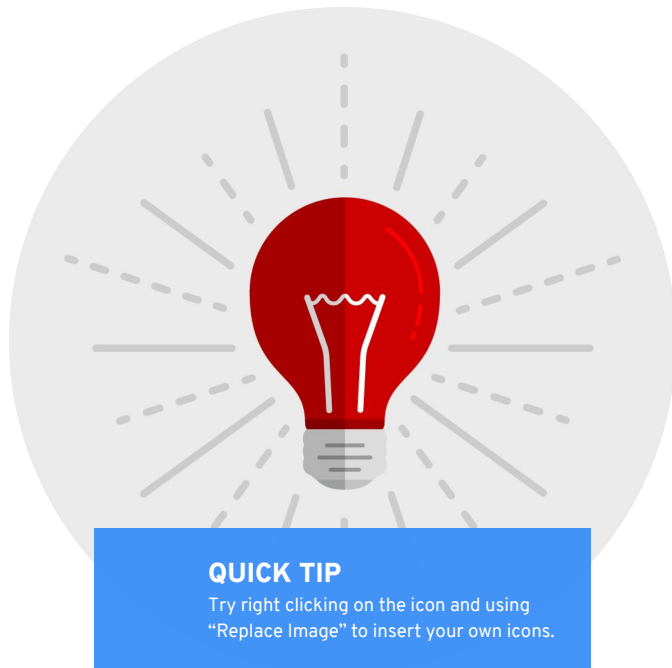
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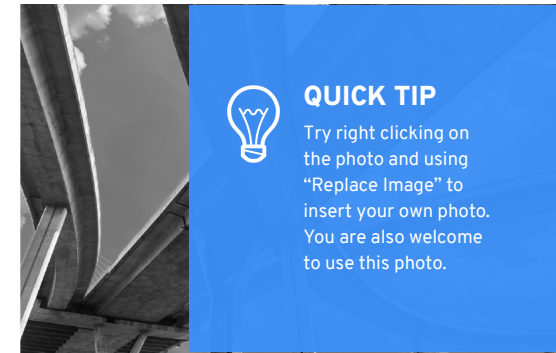
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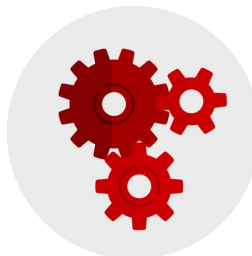


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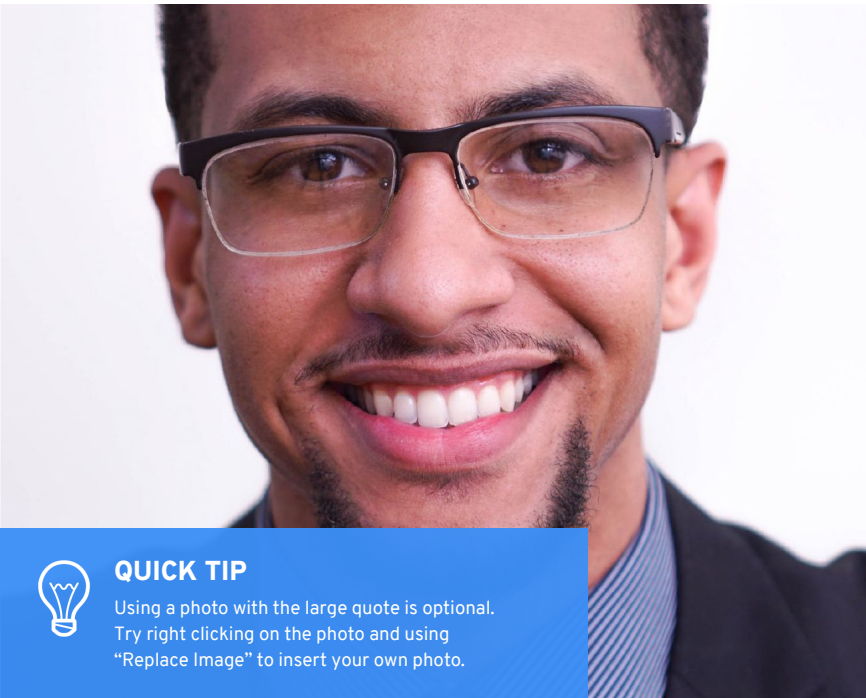
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CTO, Acme Unlimited

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**John Doe**

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**Jane Doe**

CTO, Acme Unlimited

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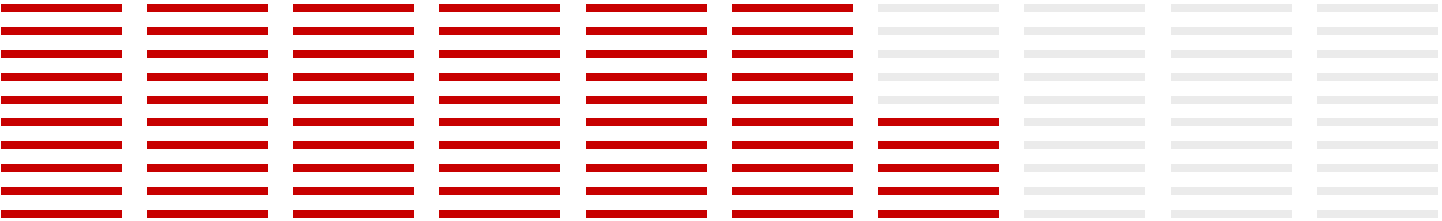
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Data slide templates

Table slide templates

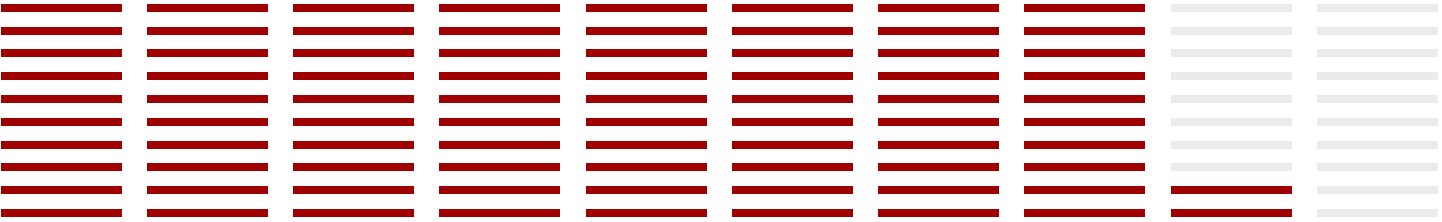
Timeline slide templates

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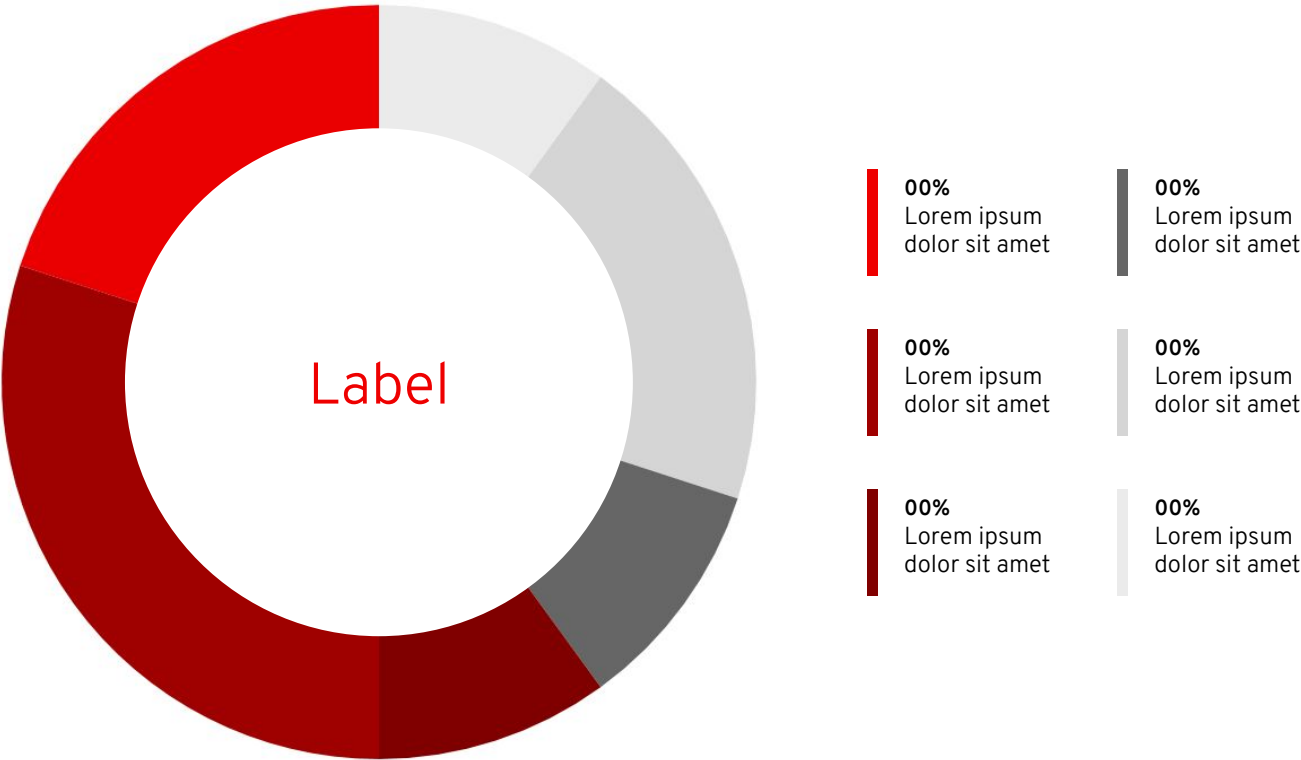


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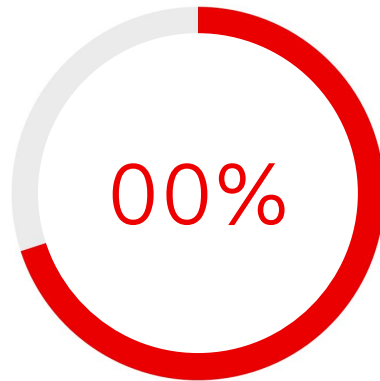
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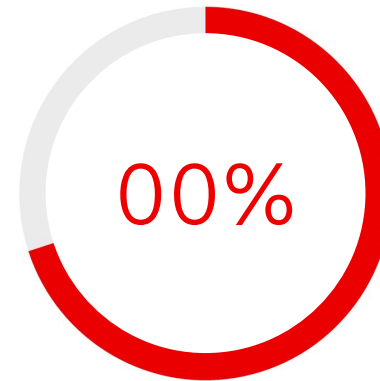
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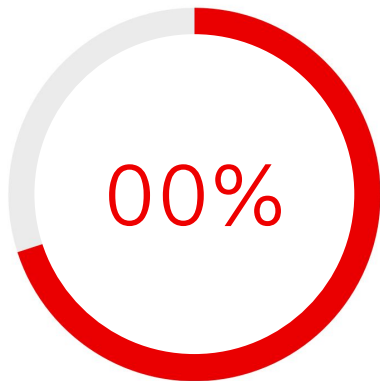
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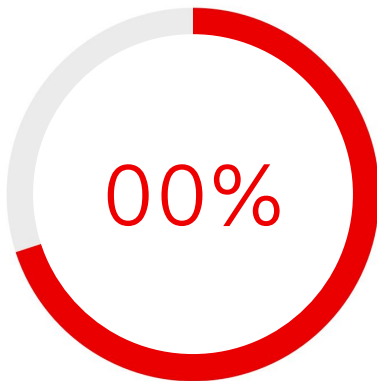
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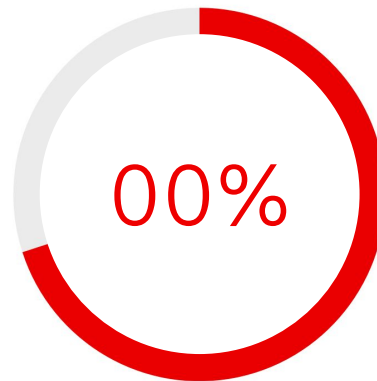
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**QUICK TIP**

Use the “Width Scale” in the “Size & Position” pane of the format options panel to adjust the percentage of the bar.

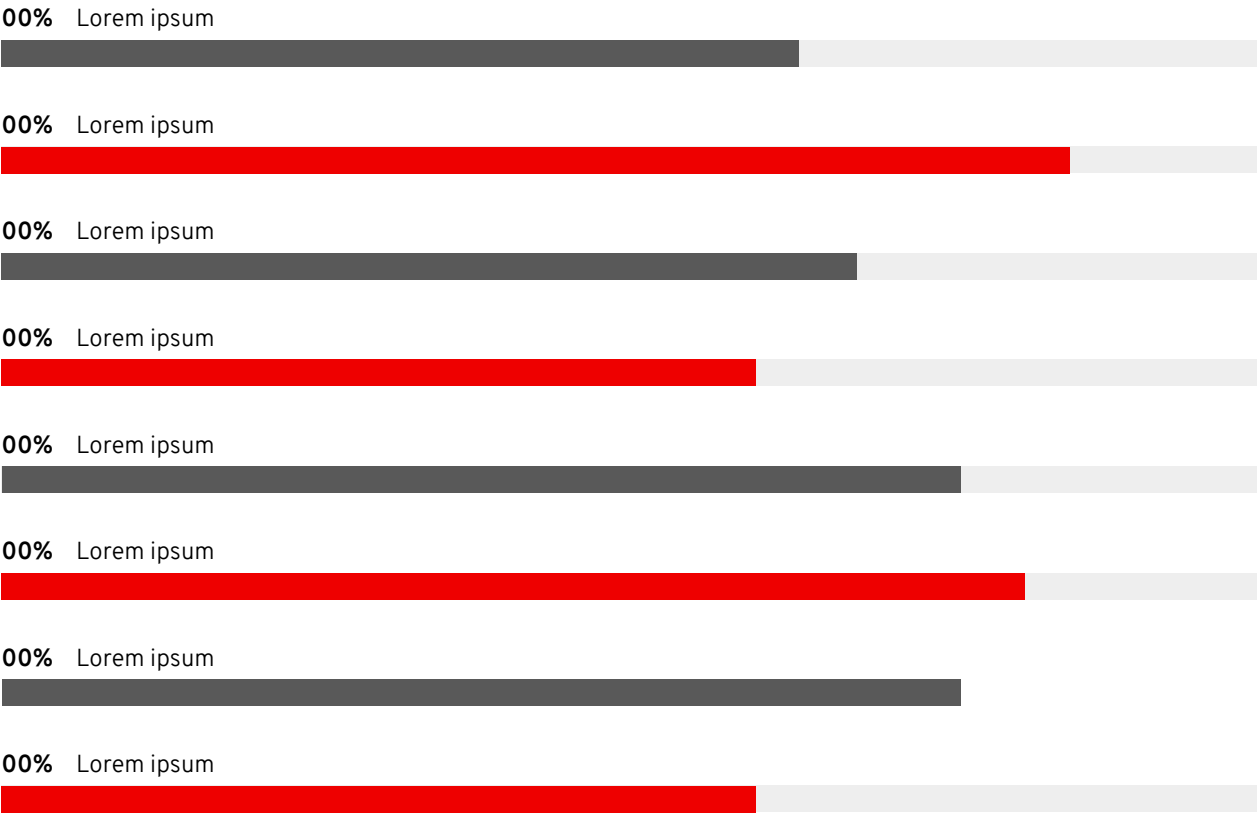
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**QUICK TIP**

Use the “Width Scale” in the “Size & Position” pane of the format options panel to adjust the percentage of the bar.

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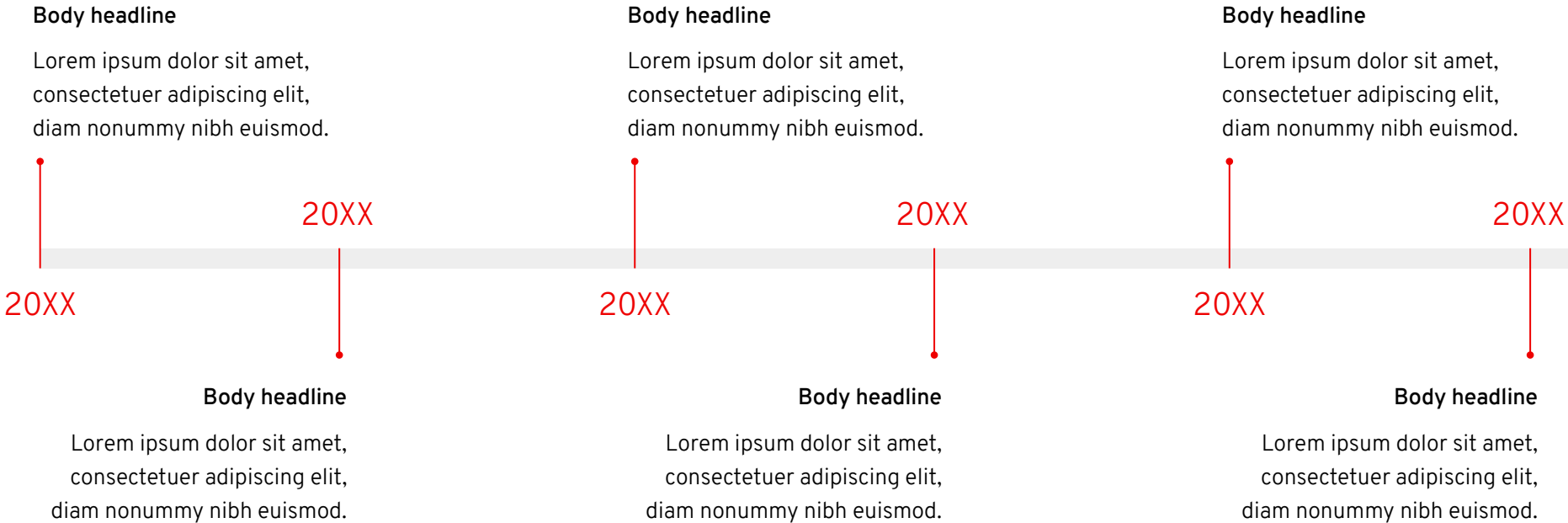
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#### QUICK TIP

Try right clicking on the photo and using "Replace Image" to insert your own photo. You are also welcome to use this photo.



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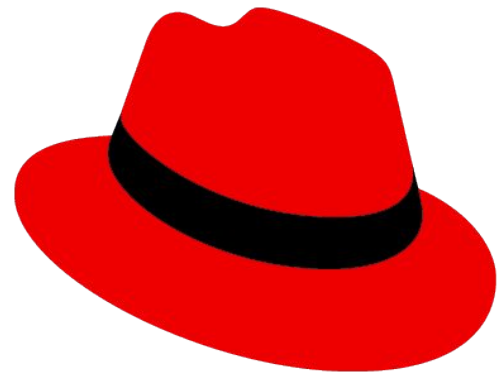
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# Red Hat

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Divider slide templates

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# Presentation title should not exceed two lines

Optional subheading

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Presenter's Name  
Title

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Presenter's Name  
Title