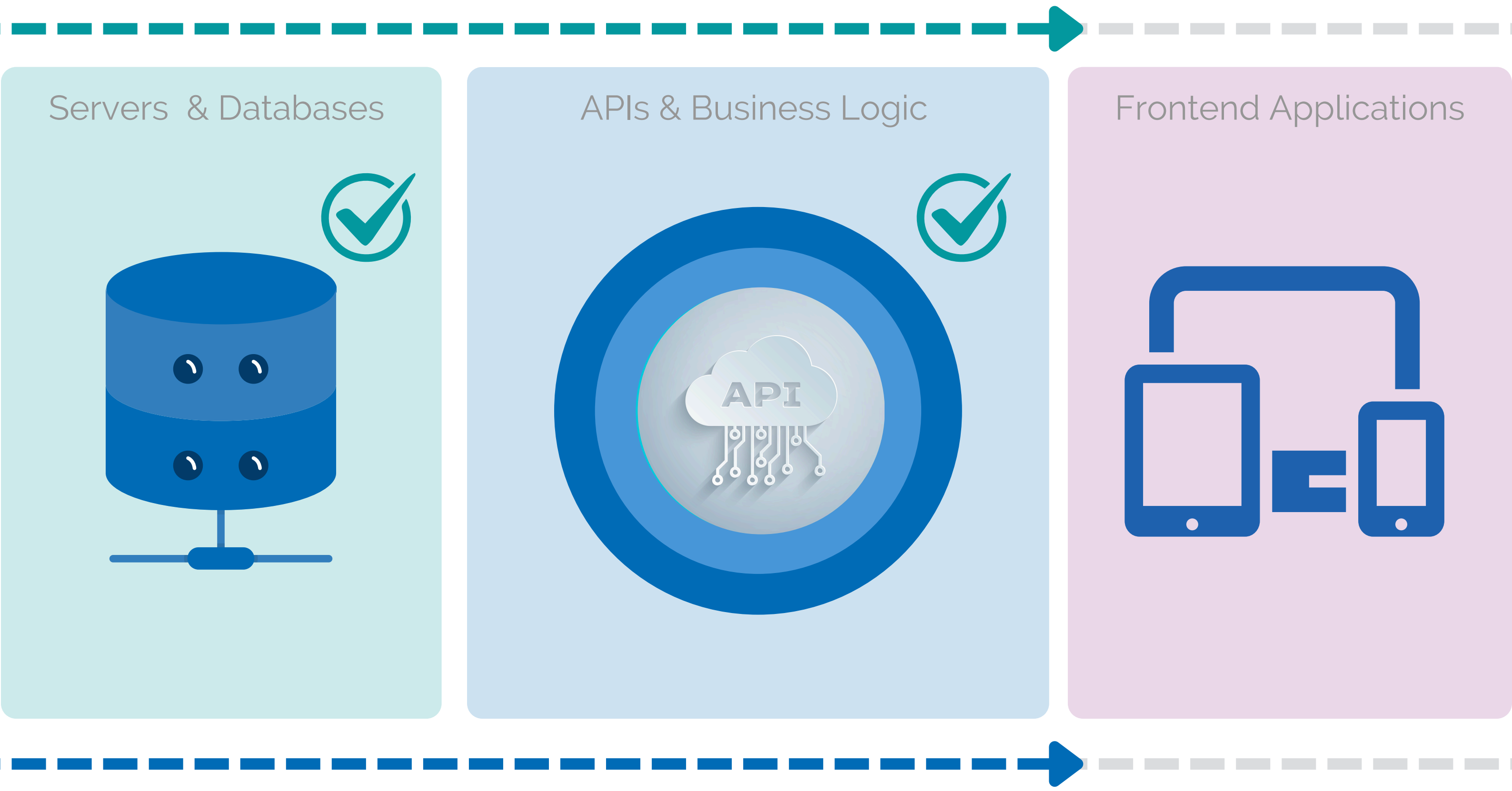
USER GUIDE

N-CAPIE

NO-CODE API ECOSYSTEM



Accelerate and Simplify

Ostia
No-Code API Ecosystem

WELCOME MESSAGE

N-CAPIE: No-Code API Ecosystem is a standards based service designed to accelerate and simplify Enterprise Level API Ecosystem innovation and deployment.

Key Benefits:

- **Collaboration:** Enhances collaboration across teams and partners
- **Innovation:** Improves capacity for innovation
- **Speed:** Ensures quicker deployment/Go-To-Market times
- **Strategy**: Facilitates creation and implementation of modern API strategy
- **Resource Optimisation**: Optimises resource allocation and use
- **One-To-Many:** One backend to service many frontends
- **Cost:** Greatly reduce the cost of API Ecosystem configuration and deployment

We are committed to helping you improve your API Ecosystem configuration and deployment.

Best Regards,

John Power
CEO

Leo Cullen
CPO

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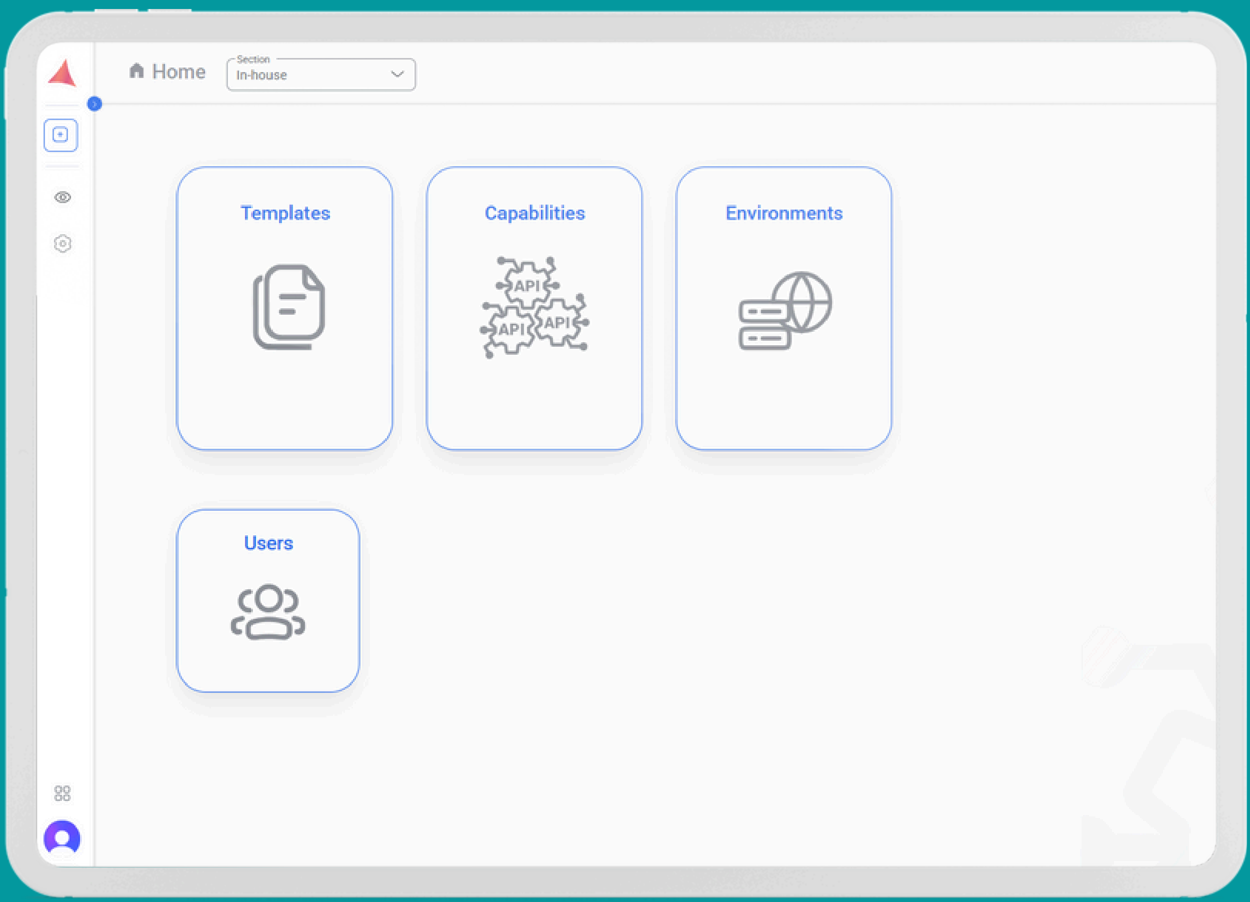
N-CAPIE

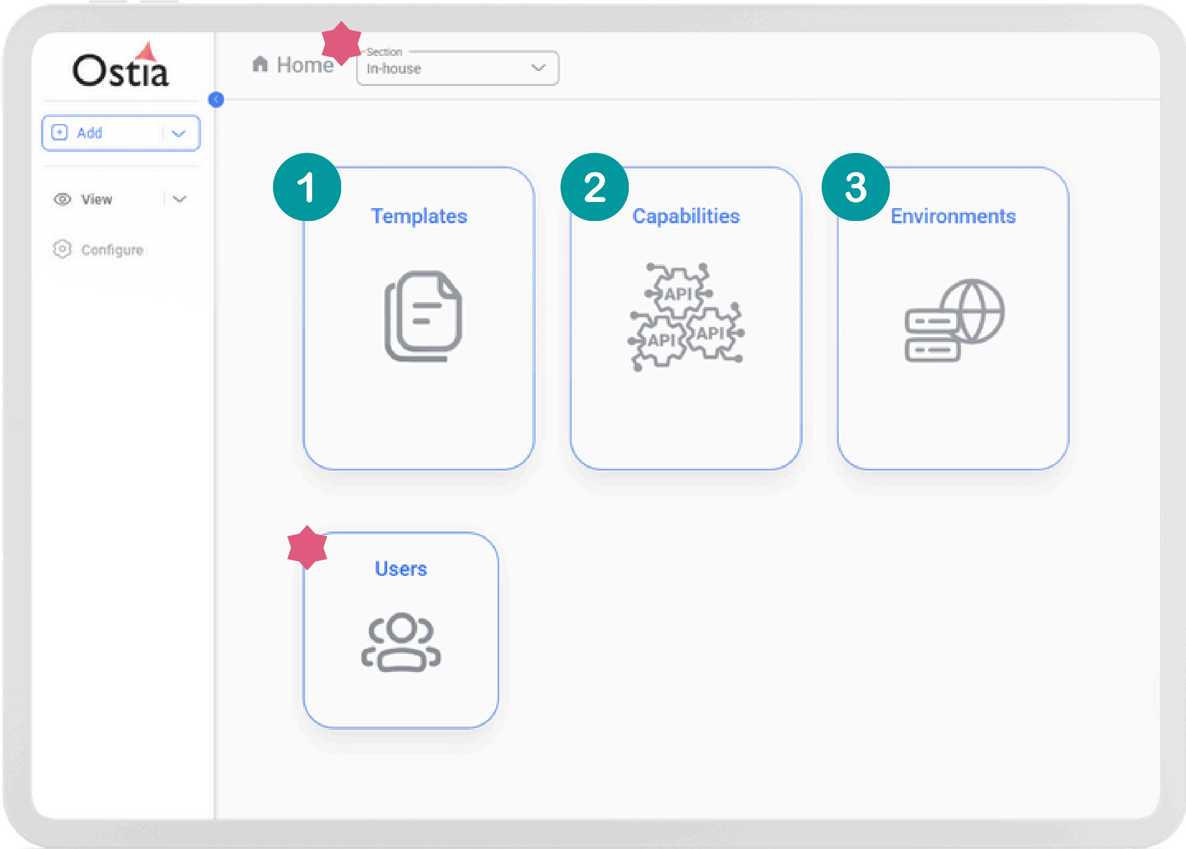
USING THE SERVICE

A simple and intuitive interface makes the configuration and deployment of your API Ecosystem very straightforward.



USING THE SERVICE

Main Menu



The 3 main sections of the service are indicated here:

1. **Templates**

   The Templates section enables the standardisation of Field, Data Object and Error templates.

2. **Capabilities**

   The Capabilities section enables you to configure the business logic that defines your Business and Digital Capabilities.

3. **Environments**

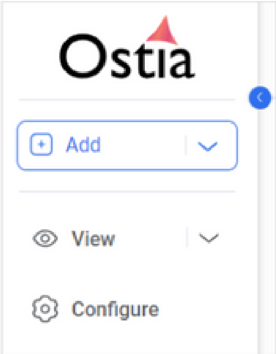
   The Environments section enables the one-click deployment of your Business and Digital Capabilities across Sandbox, Test and Production Environments.

- **Sections:** Allows you to move between projects / team areas.
- **Users:** Allows you to manage user profiles.

USING THE SERVICE

Side Menu

Add/View and Edit functionality is available using the collapsible side menu.



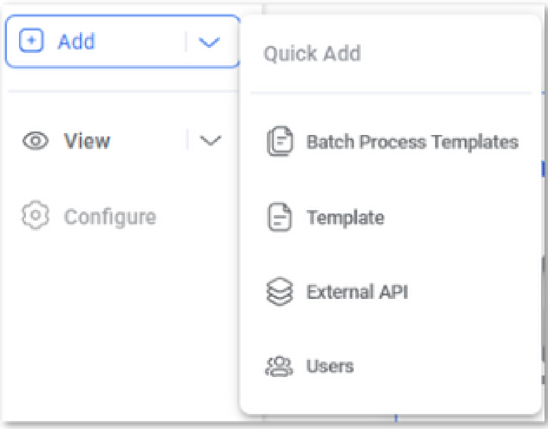
To return to the Main Menu, click on the logo.

To add a Business Capability, click on Add.

To view all Business Capabilities, click on View.

Highlighted when you are editing a Digital Capability.

There is additional 'Quick Add' functionality available through the dropdown on the Add button.



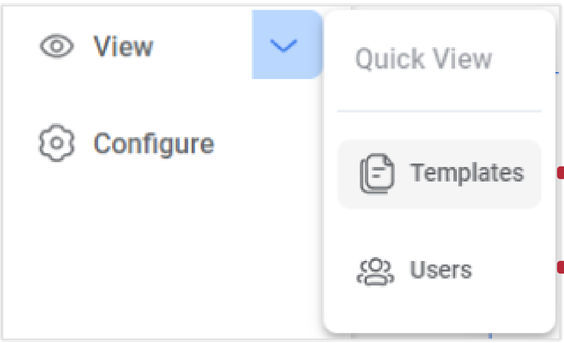
Add multiple Templates by batch processing.

Add a single Field, Data Object or Error Template.

Add an External API.

Add/manage Users.

Similarly, there is additional 'Quick View' functionality available through the dropdown on the View button.

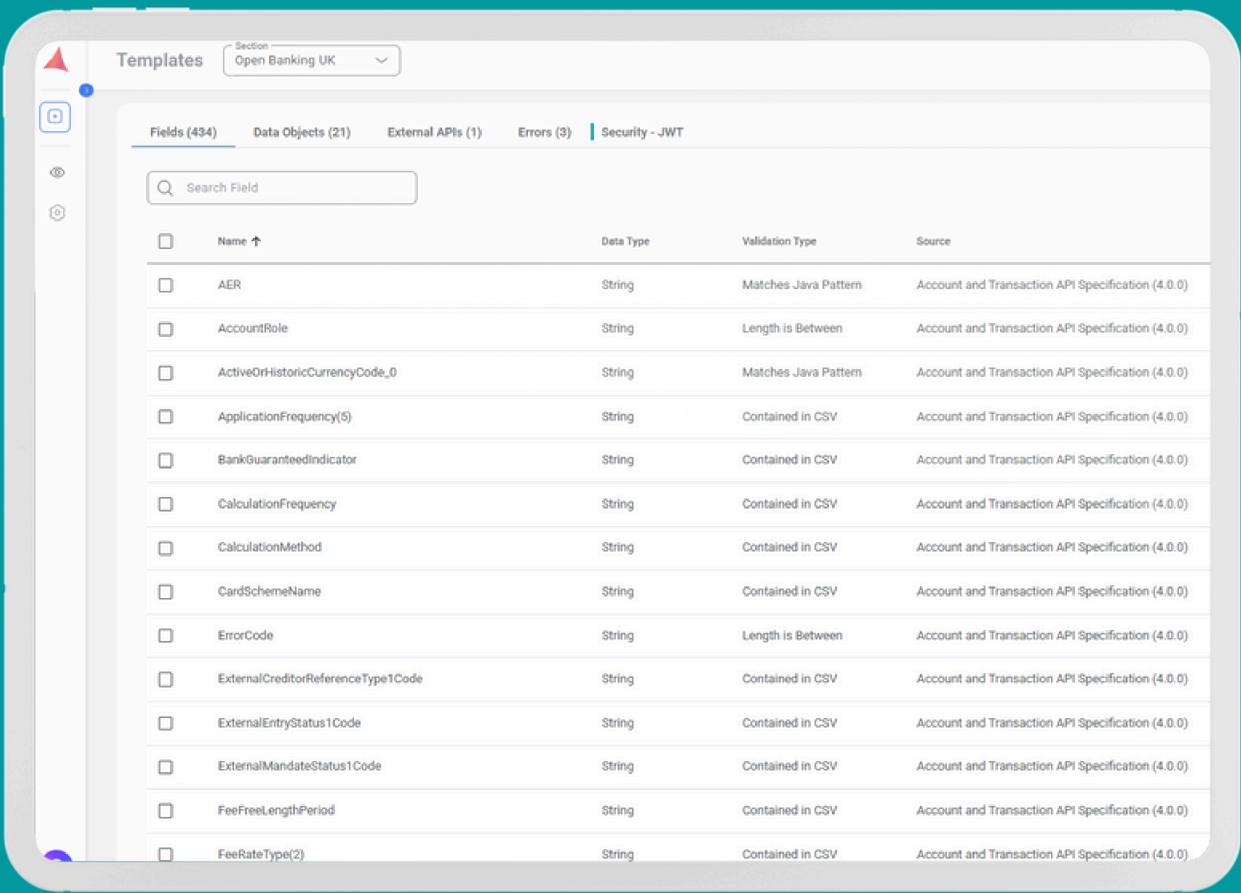


View all Templates.

View Users.

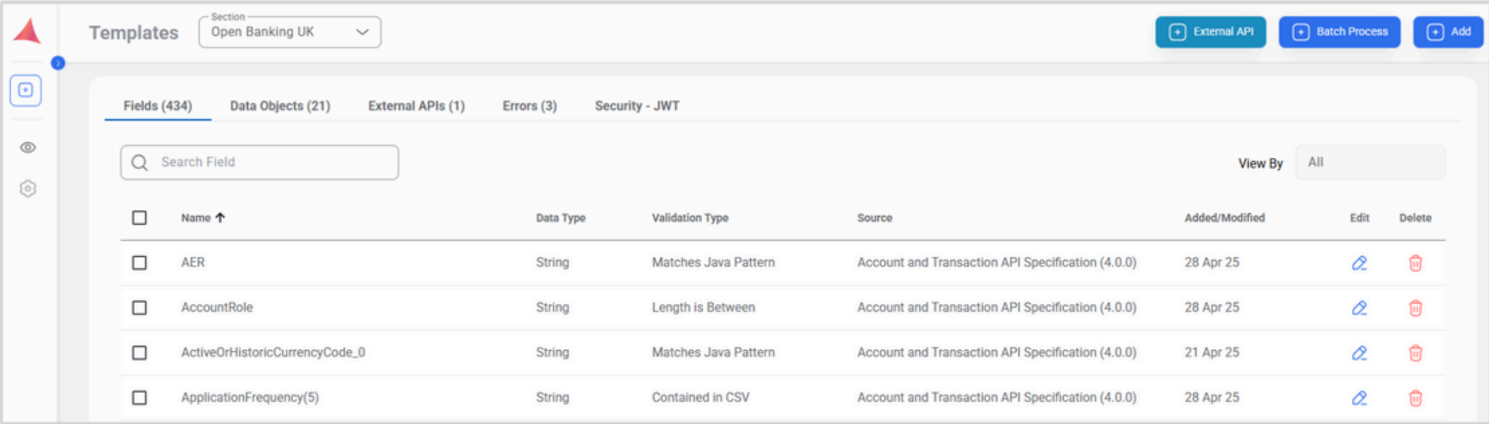
TEMPLATES SECTION

Ensure that the core building blocks of your projects and API Ecosystem are in place.



TEMPLATES

In the Templates Section, you are able to add and configure templates that are used in the configuration of Business and Digital Capabilities.

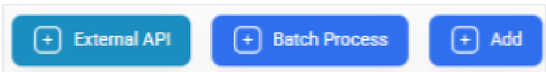


The types of template:

- Fields
- Data Objects
- External APIs
- Errors
- Security - JWT

Adding Templates

Templates are added to the service in the following manner:



- Fields and Data Object templates are most commonly added to the service by batch processing but can also be added individually.

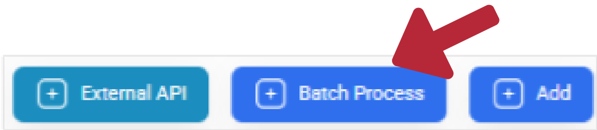
- External APIs are added individually.

- Error and Security - JWT templates are added at the time of onboarding a client.

Ostia works closely with you to ensure the effective creation of a full taxonomy of templates. This includes creation and configuration of the Field and Data Object templates and tailoring of the Error and JWT templates, to fully meet your requirements.

TEMPLATES

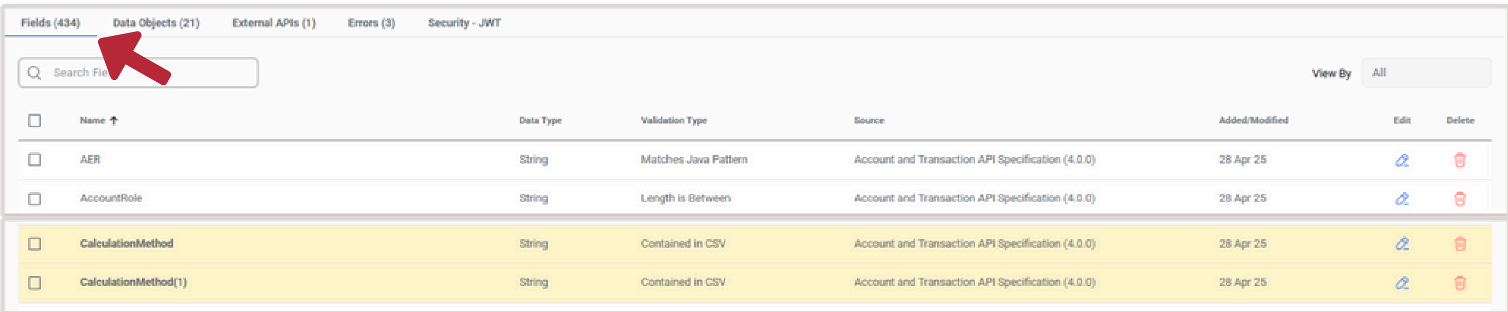
Batch Processing



It is possible to batch process using OpenAPI Specification (OAS) documents in order to create your taxonomy of Field and Data Object templates. N-CAPIE is essentially a configurable data dictionary; Fields and Data Object templates play a foundational role.

To 'Batch Process' using OpenAPI Specification (OAS) documents, you click on the 'Batch Process' button to the top right of the Templates screen. This will open a new Window where you can select the OAS documents you wish to process and click 'Add'.

When the batch processing is complete, you will be taken to the Fields Tab to review and finalise configuration, before advancing to the Data Object tab to also finalise their configuration.



You will notice that the 'Fields Tab' contains the number of Fields that have been processed.

Each Field has information under the following headings -

Name: (In alphabetical order)
Data Type: (String, Date, Decimal, Numeric, URI)
Validation Type: (The type of data validation in use)
Source: (The name of the source OAS or WSDL document)
Date Added/Modified: (The date on which the template has been added/edited)

To complete configuration, you must look for any duplicate Fields that have been created. Such Fields are easy to notice as they are highlighted as in the example above - 2 Fields indicated for "Calculation Method".

Simply, click on 'Edit' for each field to review the Data Validation details included, and choose which one is preferred, or configure new details.

TEMPLATES

Batch Processing Cont'd...

The next step is to ensure that you are fully happy with the configuration of the Field Templates.

The Field Templates are the core building blocks of this service. They will be used by default in all Business and Digital Capabilities that you create. This greatly assists in creating consistency and interoperability across your API Ecosystem.

When you are edit / view a Field Template, a new Window opens to enable configuration.

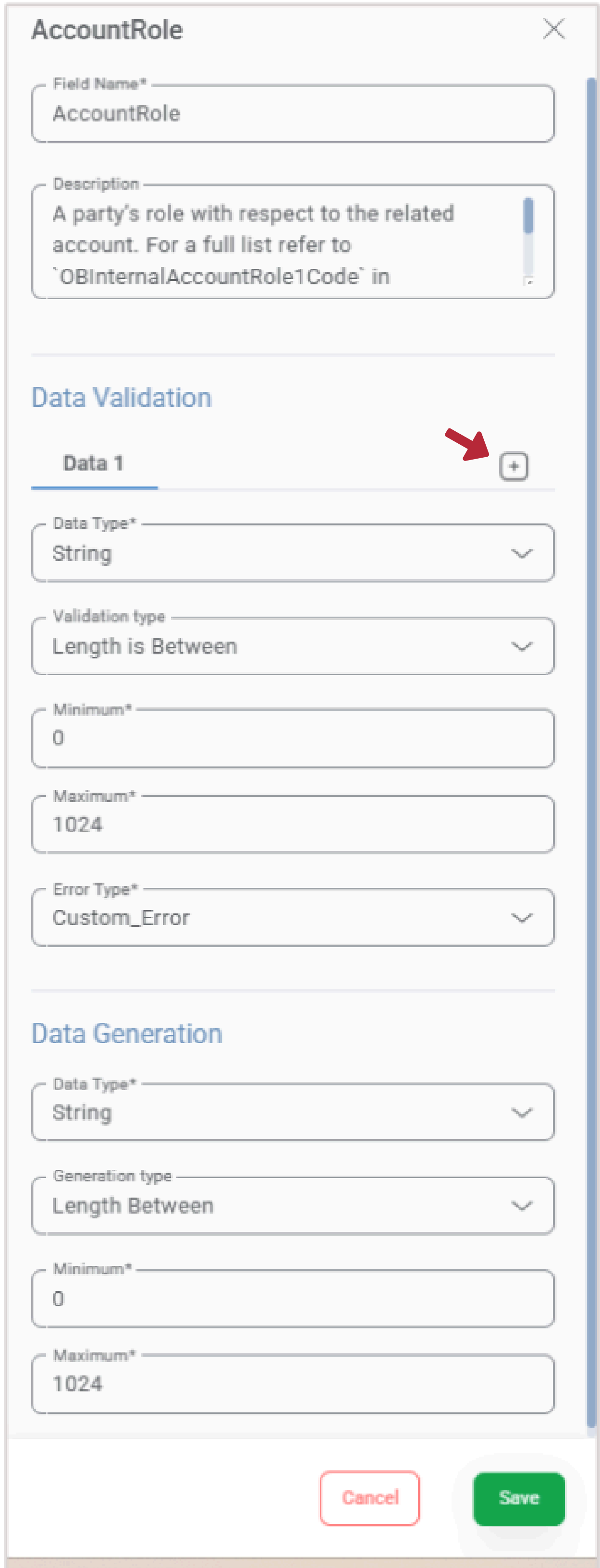
Firstly, you will see the name and description of the Field.

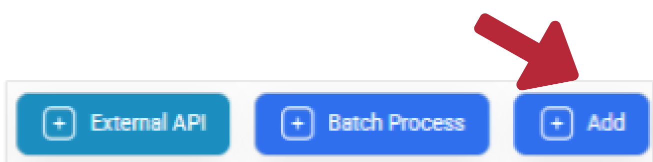
Secondly, you will see the Data Validation details. If you change the Data Type (String, Date, Decimal, Numeric and Record.), the remaining fields will adjust to relate to that selection.

It is possible to add more than one set of Data Validation requirements by clicking on the '+' symbol highlighted here.

Finally, you will see the Data Generation fields. These are set as a mirror image of the configuration in the Data Validation (but it is possible to change where required).

It is also possible to Add Field Templates individually by clicking on the 'Add' button at the top of the screen.

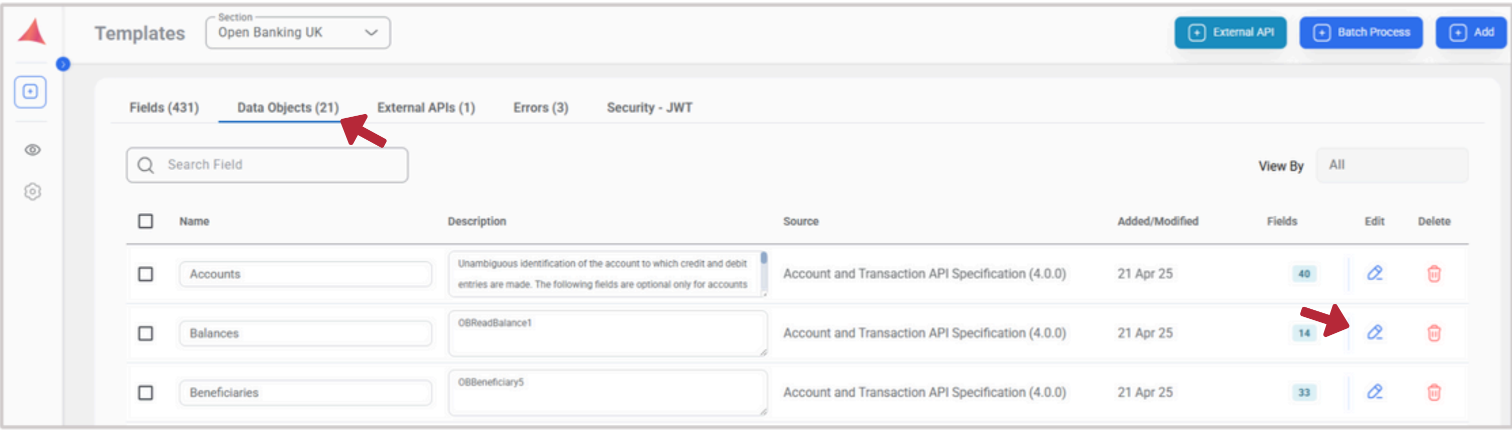




TEMPLATES

Data Object Configuration

Now you will carry out a similar exercise with the Data Object Templates to ensure that each template is configured as required.



Again, you will notice that the 'Data Objects Tab' contains the number of Data Objects that have been processed.

Each Data Object has information under the following headings -

Name: (In alphabetical order - editable)
Description: (A brief outline of the purpose of the Data Object - editable)
Source: (The name of the source OAS or WSDL document)
Date Added/Modified: (The date on which the template has been added/edited)
Fields: (The number of Fields in the Data Object)

These Data Objects are the key resource in all Digital Capabilities created within the service so we will now provide a brief overview of how they are edited.

In order to view/edit the Data Object, you click on the 'Edit' button.

A new Window now opens - which you will see on the next page.

TEMPLATES

Data Object Configuration

At the top of the Edit Window, you will see the name of the Data Object; in this case 'Balances'.

Below this you see the contents and structure of the Data Object under the headings 'Name' and 'Type'.

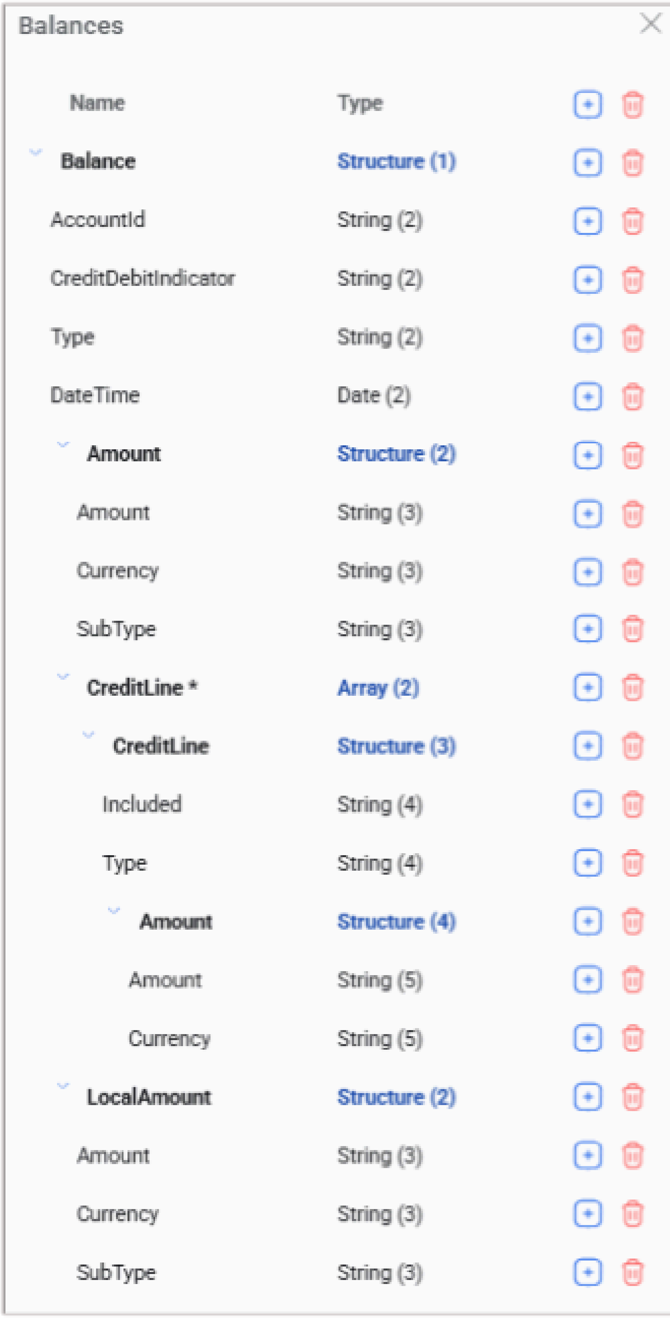
In addition to Fields, you will also see Structures and Arrays.

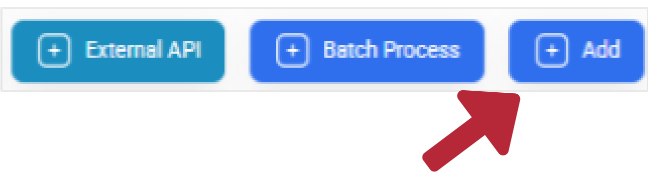
The level at which they reside is indicated by the number in brackets beside each: in this example, the 'Balance' Structure is at Level 1, while the Amount and Currency Fields are at Level 5.

When adding a new Field you are required to choose from a list of available Fields. When adding a Structure or an Array, you must create a name for it.

When deleting Structures or Arrays, you will be provided with the option to delete or retain the children / nested elements.

It is also possible to individually add a Data Object. To do so, click on the 'Add' button to the top right of the screen.

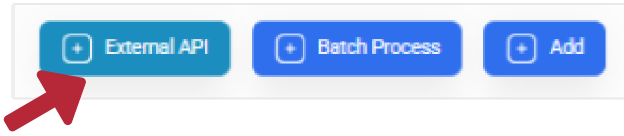




Then choose Data Object from the dropdown box, provide a Name and Description and click Add. The Data Object will then become available for configuration in the Data Objects Tab, as described above.

Add External API

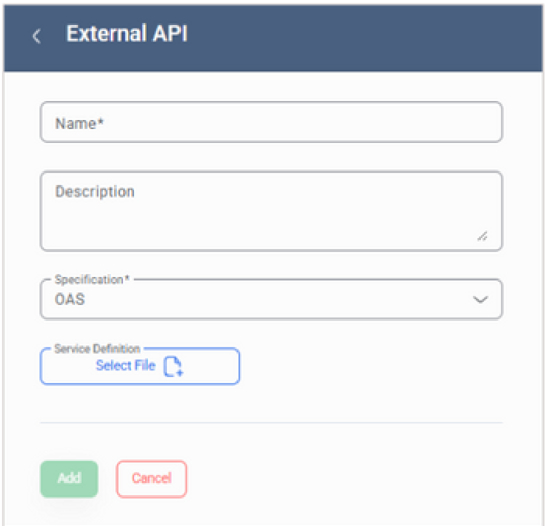
External APIs allow you to use pre-existing functionality available form an external source.



To make an External API available for configuration within the service, click on the 'Add External API' button to the top right of the screen.

A new Window opens and it is then as simple as:

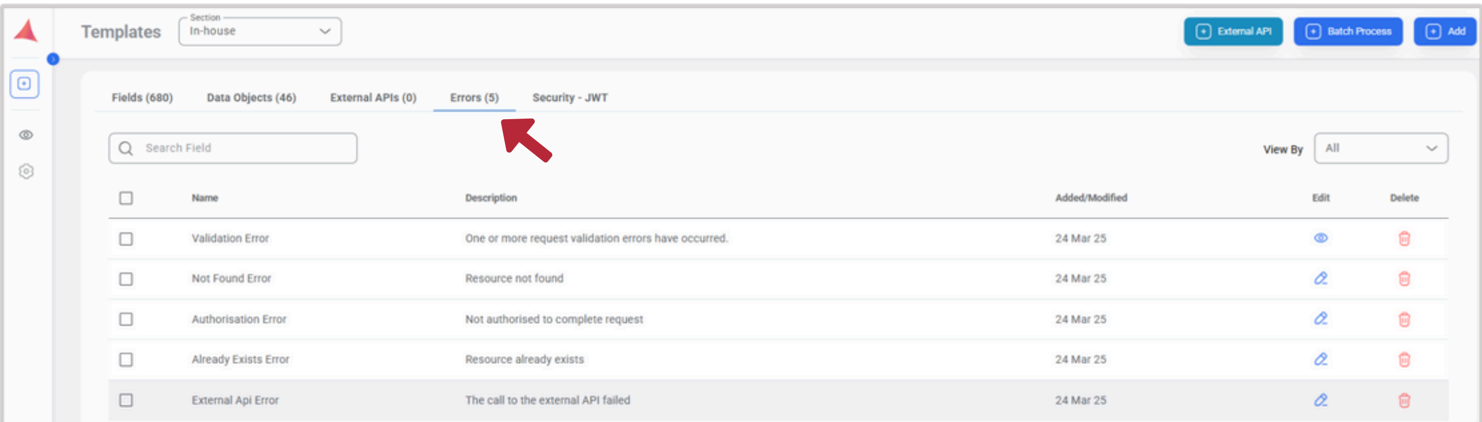
1. providing a Name and Description
2. selecting the OAS or SOAP Specification and relevant file that relates to the External API you wish to access
3. clicking the 'Add' button.



Each of the External APIs that you add to the service become available for review under the 'External API Tab'. Each one contains a list of Method Types and Endpoints.

Errors

At the time of onboarding, Ostia configures your Error templates (each company tends to have its own format for Errors).

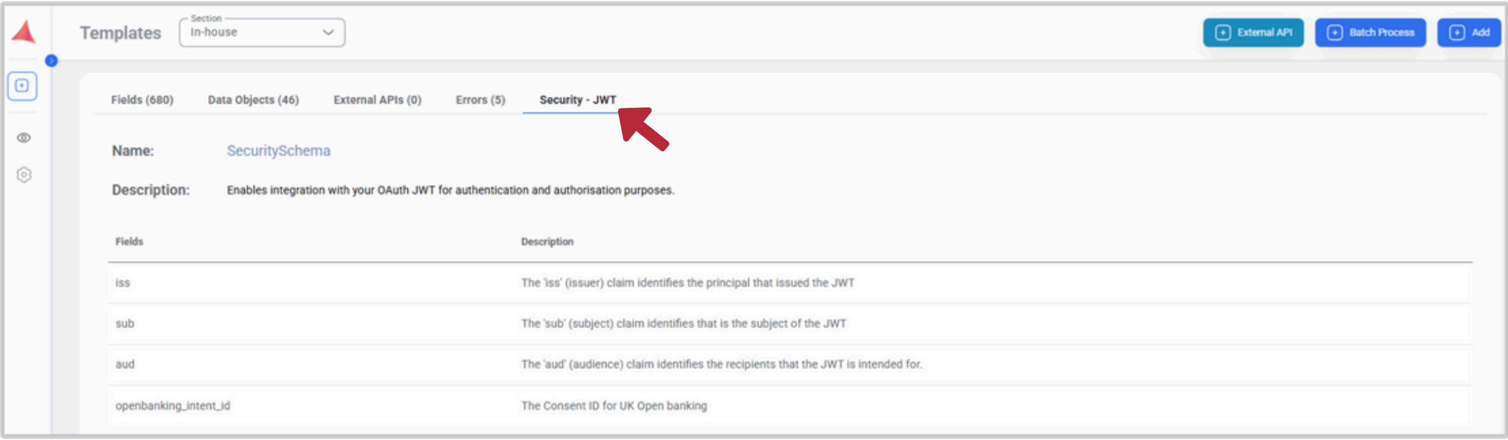


The errors indicated above are our default Error Templates and include 'Validation Errors', 'Not Found Errors', 'Authorisation Errors', 'Already Exists Errors' and 'External API Errors'.

TEMPLATES

Security - JWT

At the time of onboarding, Ostia also configures your required Jason Web Token (JWT) fields for use in securing your APIs.

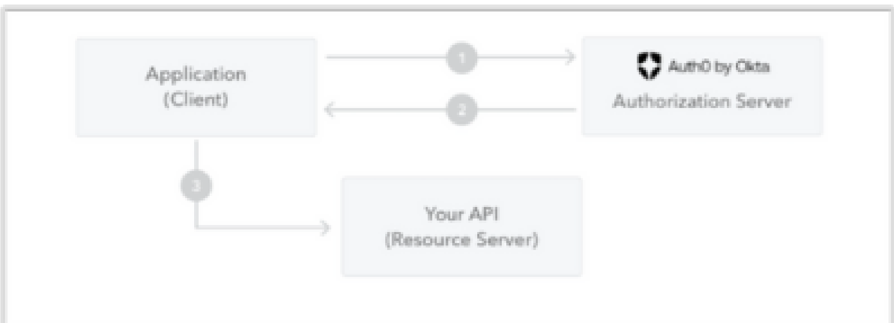


JSON web token (JWT), pronounced "jot", is an open standard (RFC 7519) that defines a compact and self-contained way for securely transmitting information between parties as a JSON object. (Because JWTs are a Standard it mean that all JWTs are tokens, but not all tokens are JWTs.)

JWTs are used within an API to securely transmit user identity and permissions, enabling:

1. Stateless authentication – no need to store session data on the server.
2. Scalability – tokens can be verified independently by any server.
3. Authorization – the token can include roles or scopes to control access.
4. Interoperability – easy to use across different services and platforms.

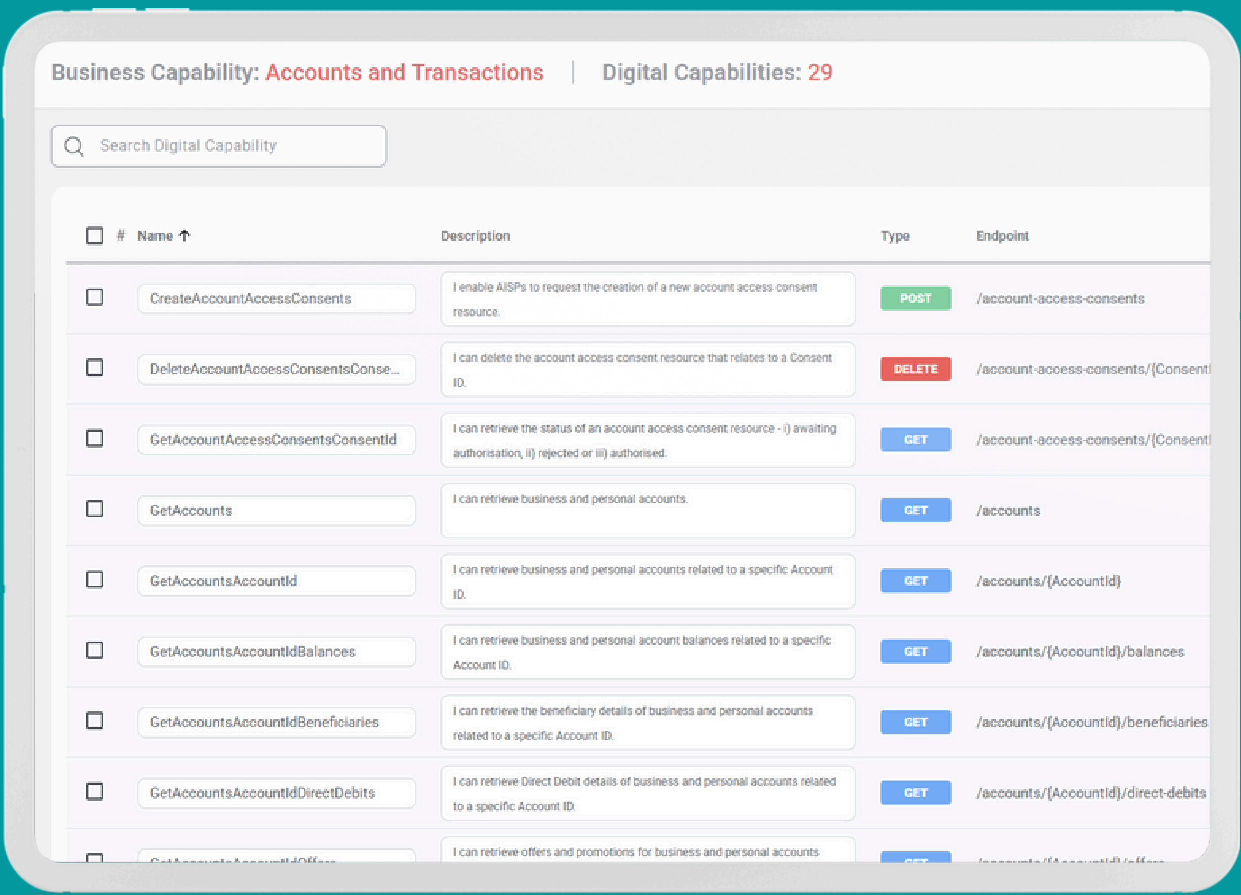
They works as follows:



There are various Authentication/Authorisation service providers (including Okta as indicated here) - all can be used with N-CAPIE.

CAPABILITES SECTION

No-Code allows you to quickly configure the business and digital capabilities required for your API Ecosystem.

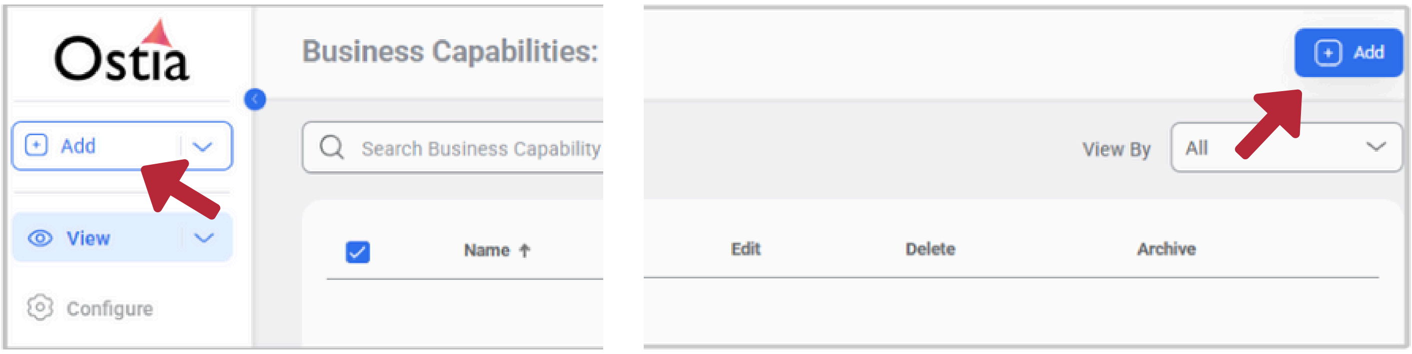


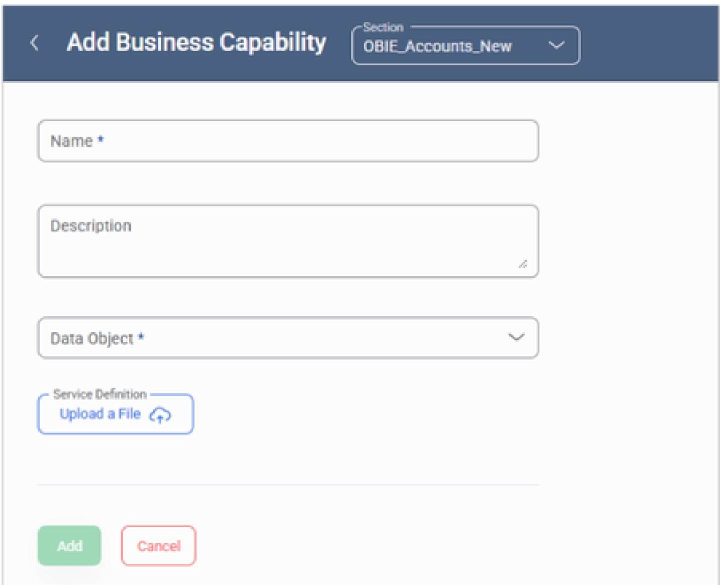
CAPABILITIES

Add a Business Capability

A Business Capability is a grouping of Digital Capabilities that enables a business objective.

Business Capabilities are added within the service using an OpenAPI Specification document, as follows:





1. Name the Business Capability that you wish to create. (maximum 50 characters).
2. Provide a succinct description of its purpose. (maximum 200 characters).
3. Choose the 'Data Object(s)' related to the Business Capability.
4. Select the requisite OpenAPI Specification document (aka Swagger).
5. Click Add.

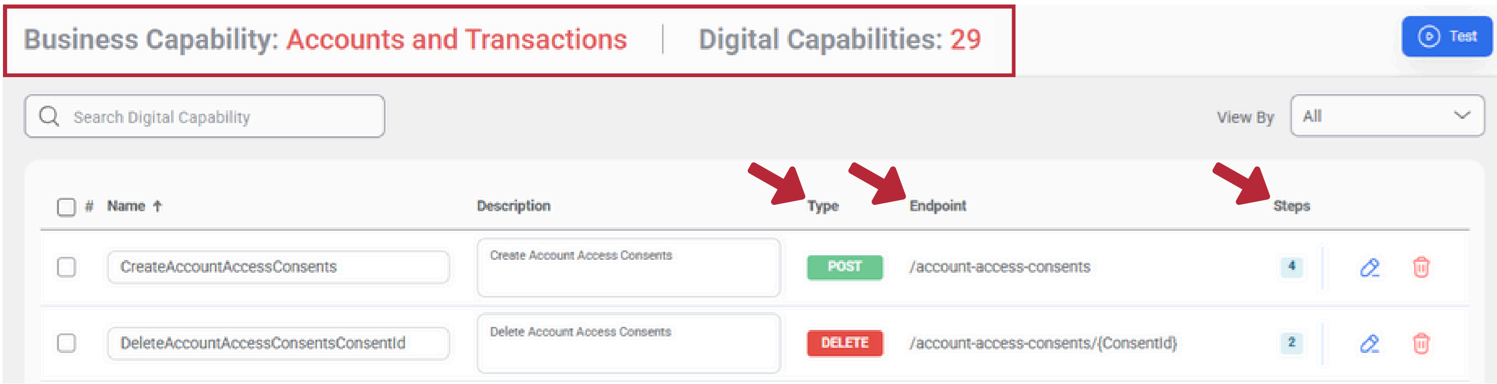
NB: Field Rule and Data Object Templates must be configured in the Templates Section before Business Capabilities can be created / edited.

CAPABILITIES

Edit Digital Capability

A Digital Capability is an individual API-driven service that performs a specific task. Each Digital Capability includes its own Method Type, Endpoint and Payloads.

Once the OpenAPI Specification document has been processed, you see the Name of the Business Capability and the number of Digital Capabilities it contains. Each Digital Capability is available to be edited (business logic configuration).



The information provided here, includes:

1. The **Name** of each Digital Capability (editable).
2. The **Description** of each Digital Capability (editable).
3. The **Type** of Method - Post, Put, Patch, Get or Delete.
4. The **Endpoint**.
5. The number of **'Steps'** taken to configure the 'Happy Path' of the Digital Capability. This initial number will often increase as required business logic is added.

(On processing the OAS, a baseline configuration of the Digital Capability - the 'Happy Path' - is automatically provided. You can add 'Alternative Paths' using Conditions / Tailored Conditions. The Alternative Paths relate to Errors, Exceptions and Permissions.)

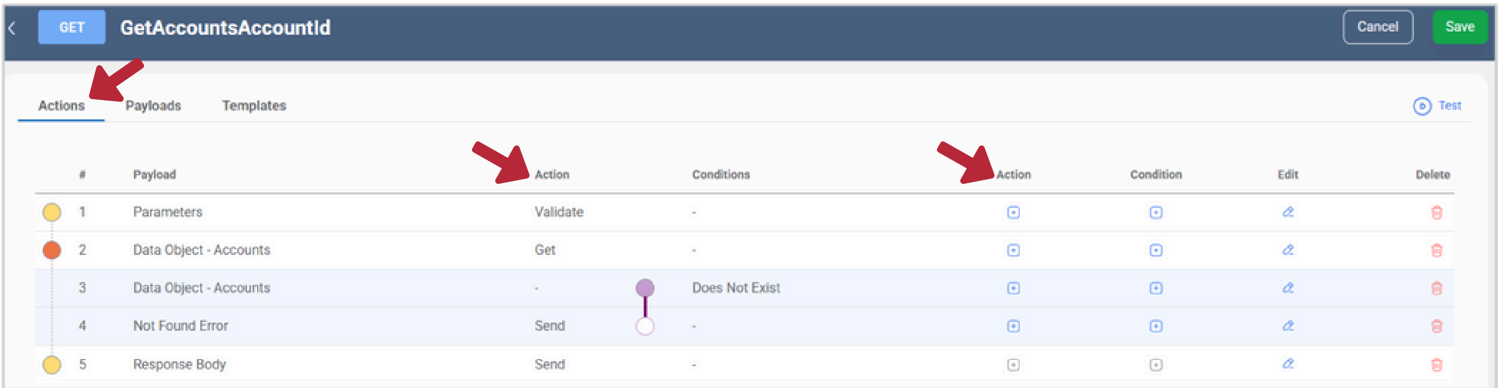
Tools:

Test: Allows you to test the Endpoints.
Search: Allows you to quickly search for Digital Capabilities.
View By: Allows you to view selected Digital Capabilities.

Edit Digital Capability - Actions

When you select the Digital Capability that you wish to edit, you see three tabs: Actions, Payloads and Templates.

The Actions tab allows you to configure all of the Actions and Conditions related to the Payloads within the selected Digital Capability.



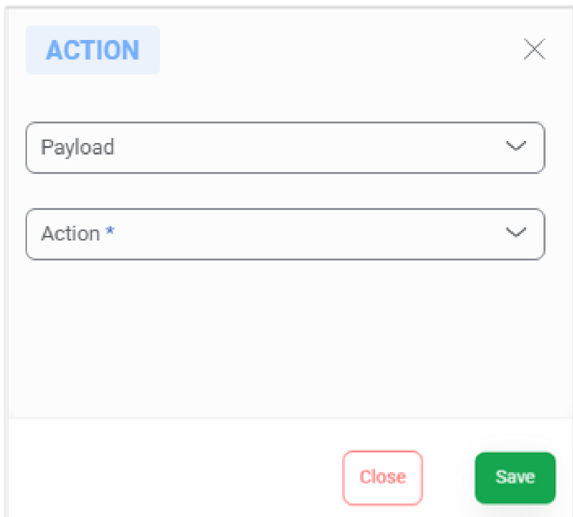
The first time that you enter into this section, you will see the baseline configuration of the 'Happy Path'. If required, you can then add further Conditions and Actions to build out the business logic and include 'Alternative Paths', as required.

Add an Action

To add an Action to a Payload, you will choose where you wish to add the Action and click the '+' symbol. When you do so, an edit window appears to the left of the screen.

Each Payload has the following actions available to it:

Parameters:	Validate	(Field Data)
Request Body:	Validate	(Field Data)
Response Body:	Send	(Response)
Errors:	Send	(Error)
Data Object:	Add, Update, Get, Get Multiple, Delete	



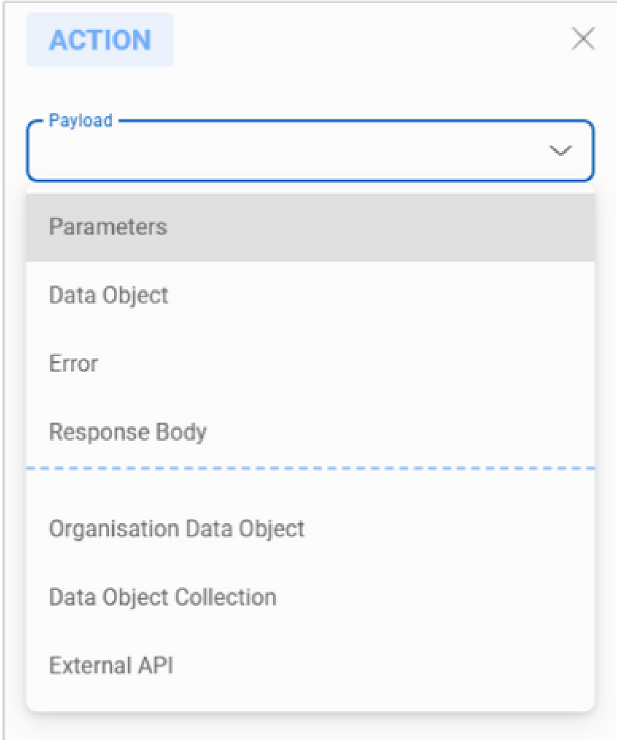
NOTE: A Data Object is a business object that you wish to add to, update, retrieve from, delete from the database. You will note that Data Objects have 5 related Actions, while the other payloads have 1 each.

Add an Action (Cont'd)

There are 3 further 'Payload' types that can be selected when configuring Actions, these are:

1. Organisation Data Objects
2. Data Object Collections
3. External APIs

(Organisation Data Objects and External APIs are configured in the 'Templates Section'.)



Organisation Data Objects provide access to data sources within the same Section - related to specific other Digital Capabilites.

Data Object Collections are arrays of Data Objects. They are created and named inside a GET Multiple Action, and become available in subsequent configuration Steps as an Action Payload.

External APIs are pre-defined API calls that allow you to access data and functionality from outside the Business Capability and from third-party providers.

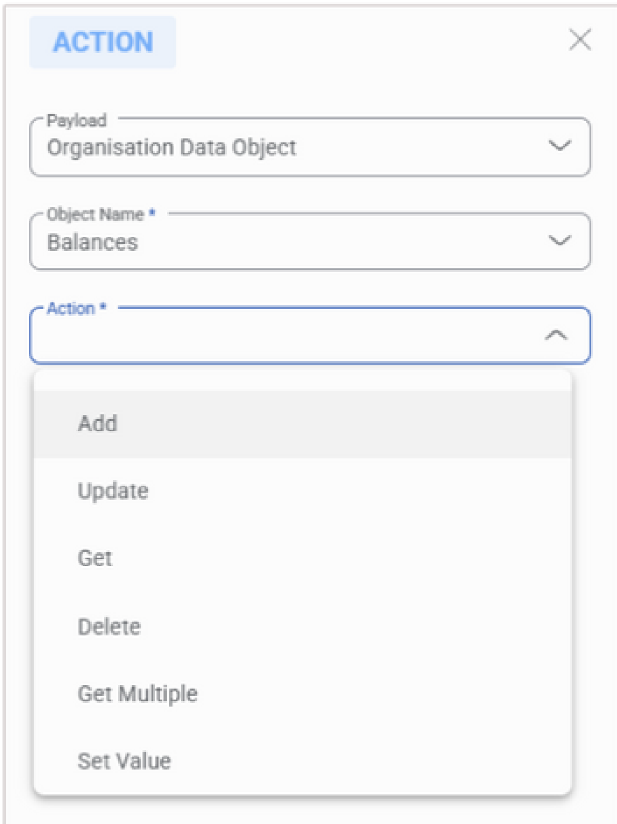
These Payloads enable the following Actions:

Organisation Data Object: Add, Update, Get, Get Multiple, Delete, Set Value(s)

‘

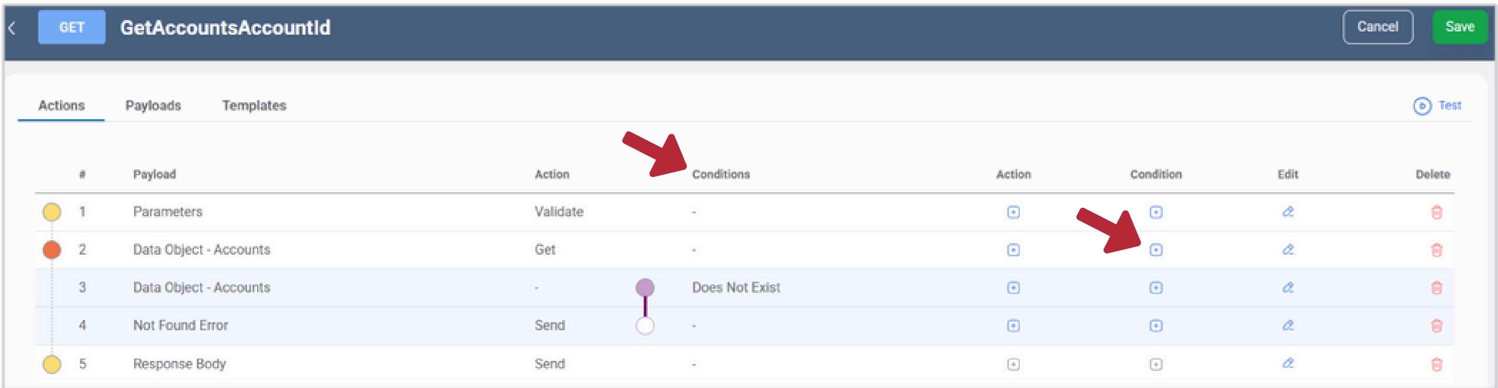
Data Object Collection: Add, Update, Get, Delete.

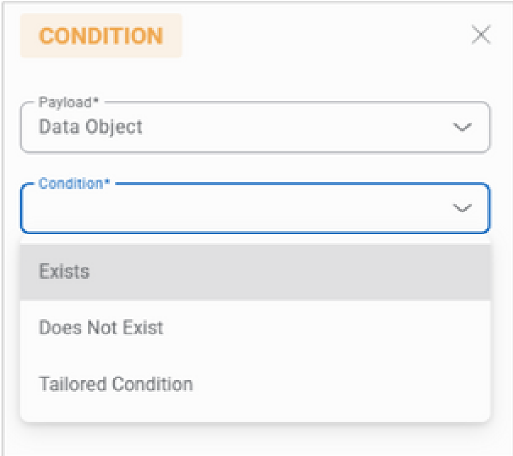
External API: (Pre-defined Methods to call out to external data source.)



CAPABILITIES

Add a Condition





To add a **Condition**, click the '+' at the Step before you wish to add the Condition. When you do so, an edit window appears to the right of the screen.

3 'Condition' options exist for each Payload:

- Exists (relates to the Payload)
- Does Not Exist (relates to the Payload)
- Tailored Condition (relates to Fields in the Payload)

By adding a Condition or Tailored Condition, you create 'Alternative Paths' with which to specify Errors, Exceptions or Permissions. Alternative Paths are utilised if the specified condition(s) are met.

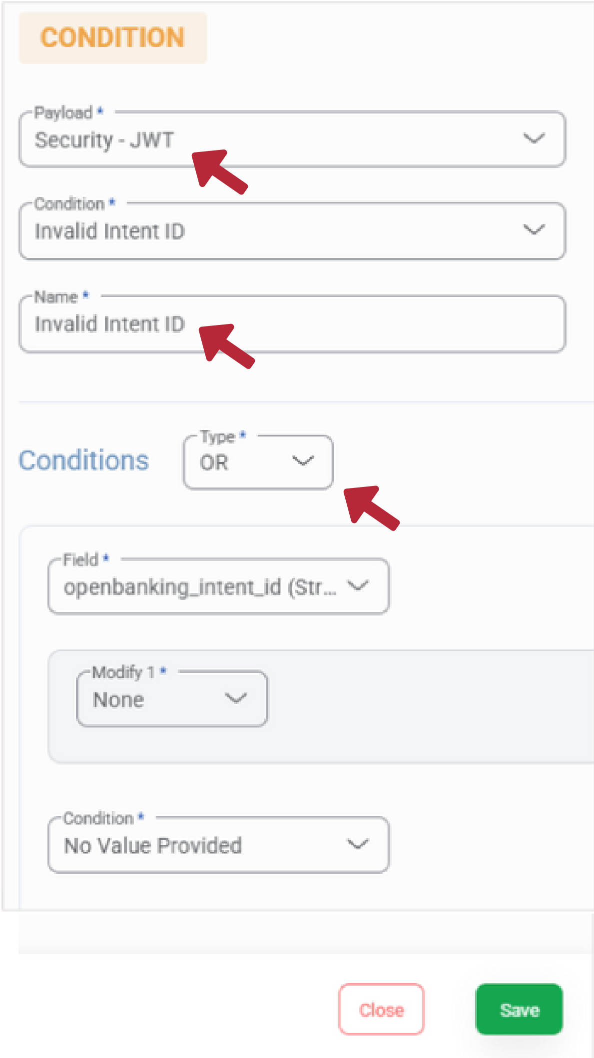
Tailored Condition

When you select Tailored Conditions, the following Conditions become available to selected Fields to Fields in other Payloads or directly attribute a value:

Equal To:	Value is equal to the comparative value
Not Equal To:	Value is not equal to the comparative value
Less Than:	Value is less than the comparative value
Less Than or Equal To:	Value is less than or equal to the comparative value
Greater Than:	Value is greater than the comparative value
Greater Than or Equal To:	Value is greater than or equal to the comparative value
Starts With:	Value starts with the comparative value
Ends With:	Value ends with the comparative value
Contains:	Value contains with the comparative value
Within List:	Value is in the list provided as the comparative value
Not Within List:	Value is not in the list provided as the comparative value
Not Provided:	No value provided
Provided:	Value provided

Add a Condition (Cont'd)

Within the Tailored Condition configuration, there is an additional Payload that becomes available for use as a data source: **Security - JWT.**

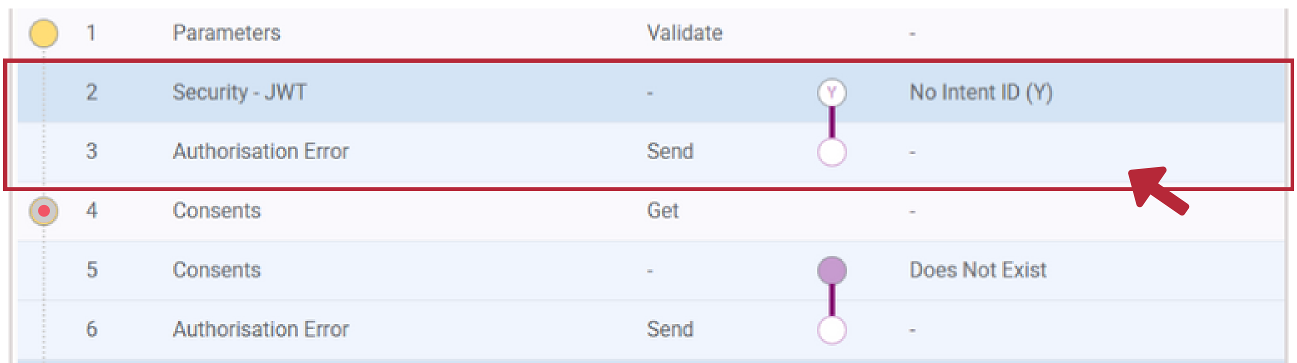


This Payload relates to JSON Web Tokens (JWTs). JWTs are very commonly used for User Authorization to govern access to resources.

When creating 'Tailored Conditions', it is important to provide a name that clearly describes the purpose of the condition (maximum 200 characters). In this instance, the Condition relates to a situation where no valid Intent ID is provided. The name of the Condition is descriptive... Invalid Intent ID.

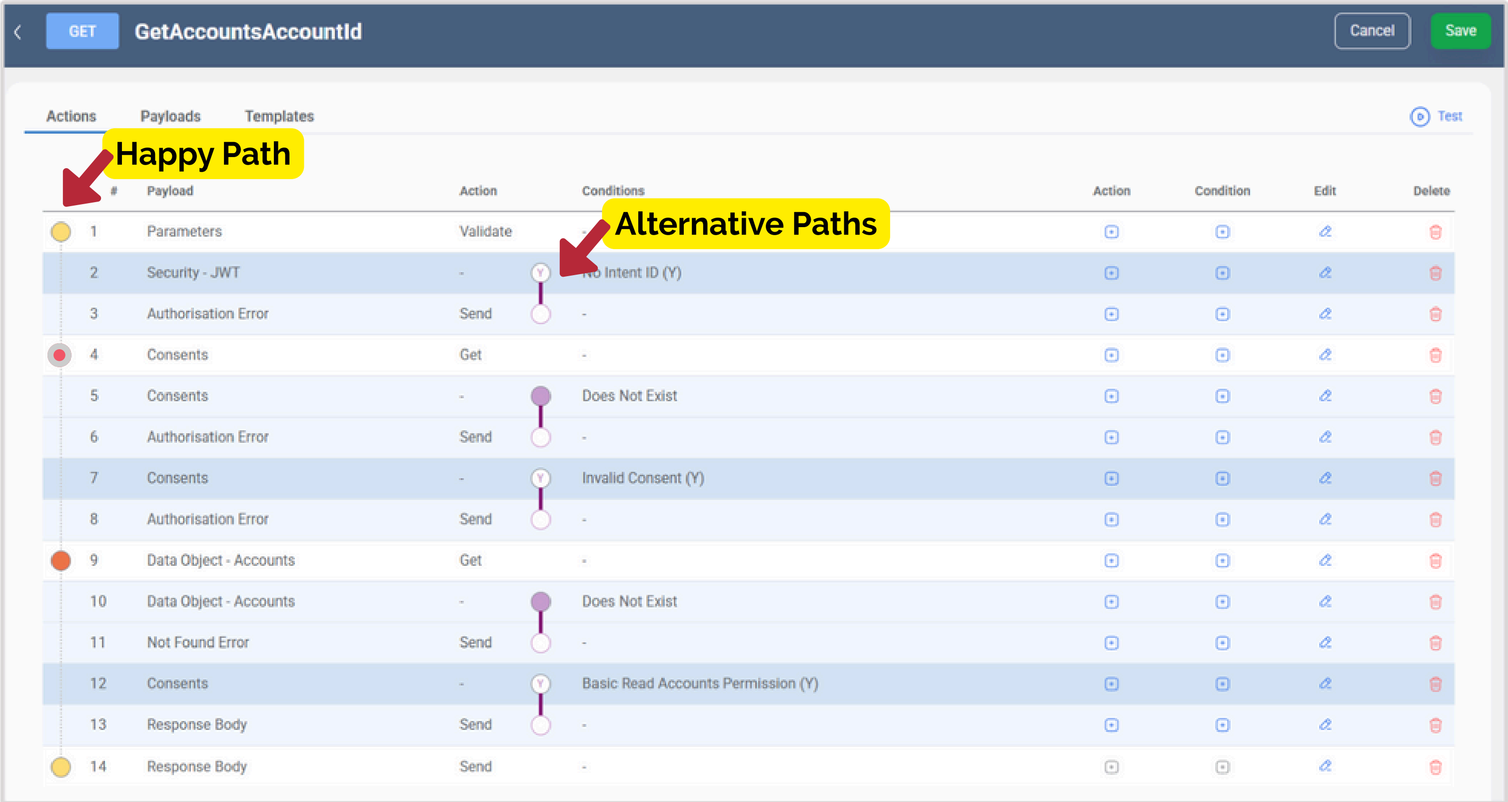
Where specifying multiple Conditions, it is possible to select 'OR' (default) or 'AND' Where 'OR' is selected, the Alternative Path is utilised where **any one** of the specified conditions is True. Where 'AND' is selected, **all** of the conditions must be True.

These Tailored Conditions can be generated in Yes/No pairs. The Yes (Y) condition is the first one configured. The No (N) condition is available for use directly after the Yes (Y) Condition, if required. In some instances, as in this case, it is quicker to simply add the negative condition as the Yes (Y) condition, as the positive condition naturally follows the Happy Path.



1	Parameters	Validate	-
2	Security - JWT	-	No Intent ID (Y)
3	Authorisation Error	Send	-
4	Consents	Get	-
5	Consents	-	Does Not Exist
6	Authorisation Error	Send	-

Configuration



Let's look at a completed Digital Capability to become familiar with the layout.

On initially entering a Digital Capability, the basic Steps of the 'Happy Path' are completed. Occasionally, no further Steps are required and configuration is complete:

Post: 4 Steps
Delete: 6 Steps
Get: 5 Steps
Get Multiple: 3 Steps

However, sometimes additional data sources are required in the form of i) Organisation Data Objects or ii) External APIs. These are added using Actions, e.g., Step 4 above.

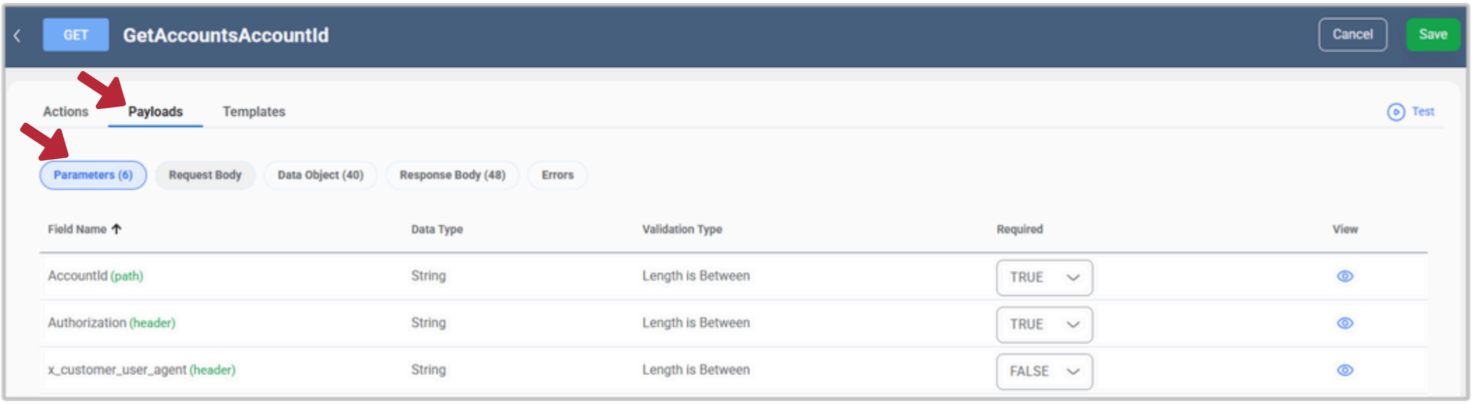
And often, 'Alternative Paths' need to be added to cover Errors, Exceptions and Permissions. These Alternative Paths are added using the Conditions - Exists, Does Not Exist and Tailored Conditions. The Steps that comprise each Alternative Path are clearly indicated.

Each Alternative Path ends with an Action to send either an Error or a Response Body.

CAPABILITIES

Edit Method - Payloads

The Payloads tab gives you access to the Method's Parameters, Request Body, Data Object, Response Body and Errors - and the number of Fields is indicated in each tab, where relevant. If a Payload is not present within a Method, its tab will be inactive.



Parameters

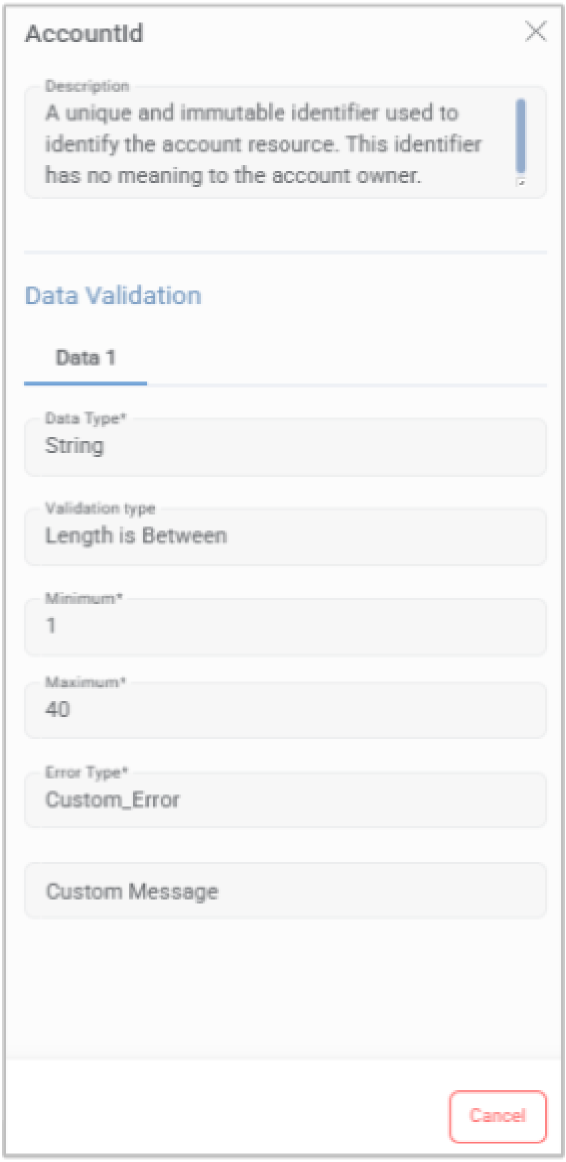
You can quickly see the number of Fields, and the content of the Parameters payload under the following headings:

- Field Name
- Data Type
- Validation Type

Each Field indicates if it relates to a Path (part of the endpoint structure), a Query (used for filtering) or a Header (often related to security/compliance).

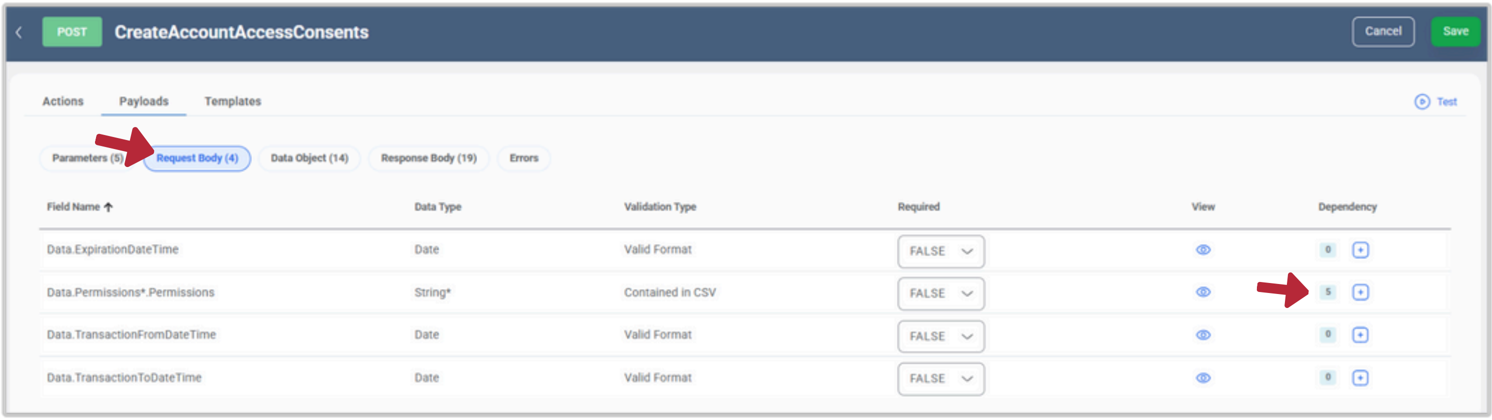
You can configure whether or not any field is required by selecting True/False (the only configurable item in Parameters).

There is also a 'read only' view of the 'Data Validation' configuration of each Field - as illustrated to the right here. This information has been previously configured in the Templates Section.



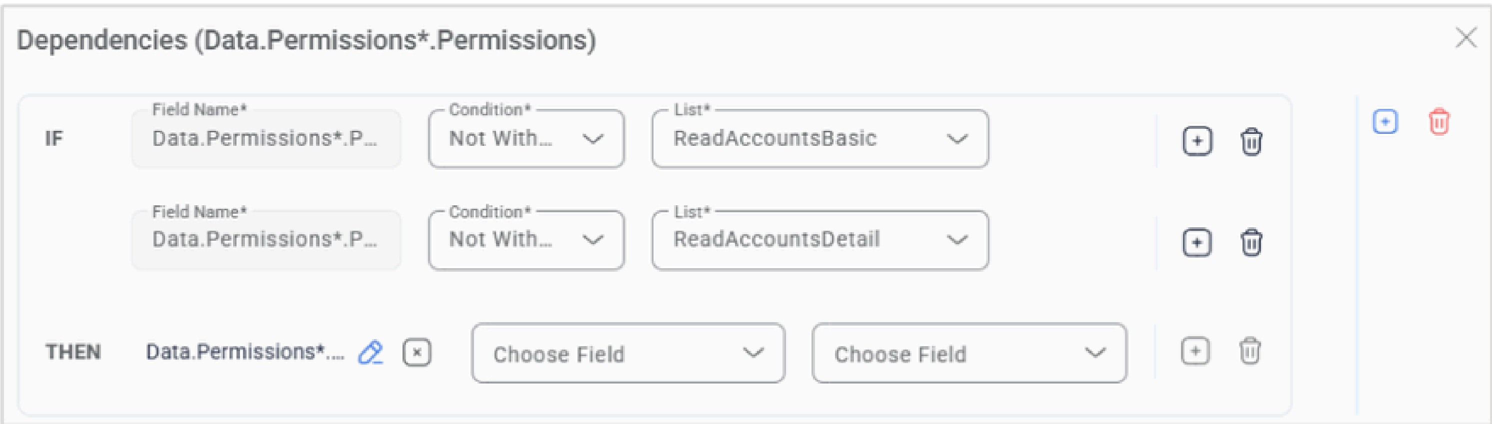
Request Body

The format of the Request Body Payload is identical to the Parameters Payload - and contains Field Name, Data Type and Validation Type, However, the Request Body typically has many more Fields and there is additional functionality to configure Dependencies, as required.



Dependencies are configured in the following manner:

1. Select the Field to which you wish to add a Dependency(ies) and click on the '+' symbol. An Edit Window will appear with the following fields for completion:



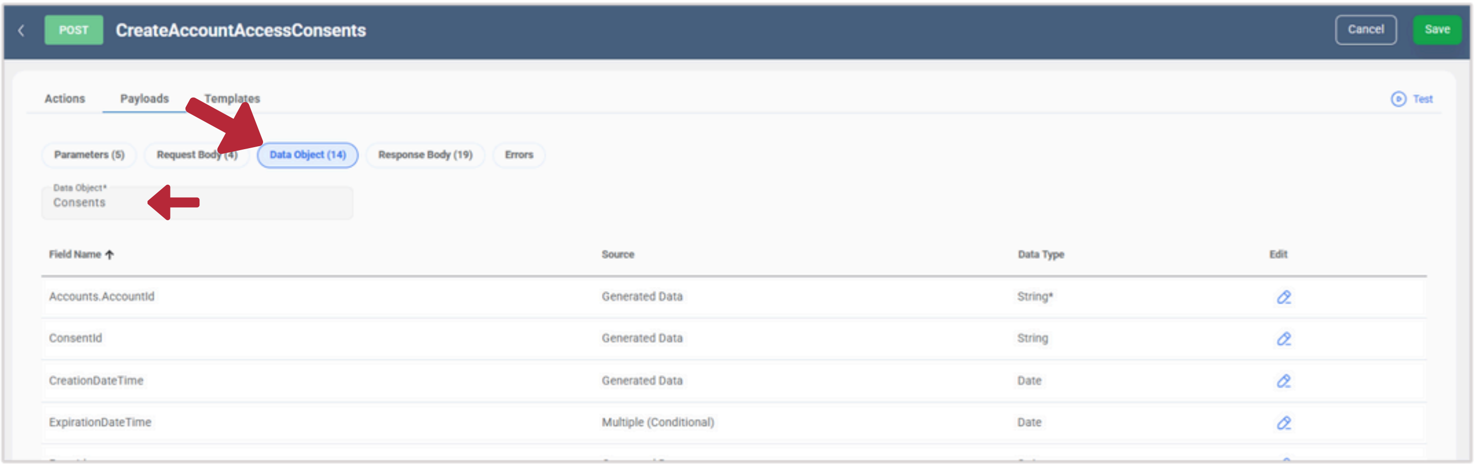
2. Complete the 'If Statement' for the Field by selecting the appropriate Condition and stipulating the requisite Field or specifying the required Value amount. Or in the case of an Array, as above, by choosing the appropriate value from the provided list.

3. Then choose the dependent Field(s) and configure the Data Validation requirements as appropriate. Within the configuration of the Field, there is also the option to select where the Field is Optional, Mandatory, Prohibited or Invalid.

It is possible to add as many Dependencies and Dependent Fields as required.

Data Object

The Data Object is a business object that you wish to add to, update, delete or retrieve from the database. Data Objects are created in the Templates Section. This is the key payload for configuration of the Digital Capability.



You can quickly see the number of Fields, and the content of the Data Object payload under the headings Field Name, Source and Data Type.

The first time you visit the Data Object payload, you have the option of confirming the provided Data Object, or selecting a different Data Object from the dropdown list.

While the previous Payloads we have examined (Parameters and Request Body) are populated as part of the Request being made under the Method, the Data Object Fields' are populated from various Sources, namely:

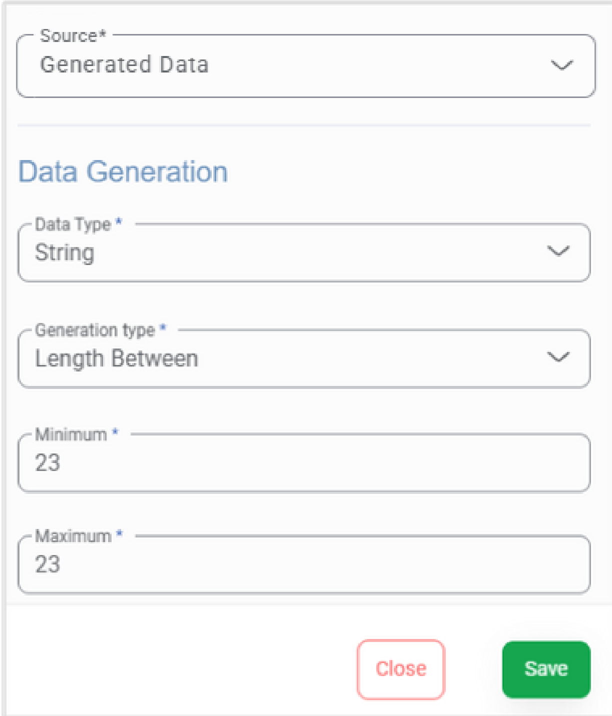
1. **Parameters** (Fixed Field Value)
2. **Request Body** (Fixed Field Value)
3. **Security - JWT** (Fixed Field Value)
4. **Generated Data** (Used where no appropriate Fixed Value is available)
5. **Organisation Data Object** (Fixed Field Value)
6. **External API Response** (Fixed Field Value)
7. **Multiple (Conditional)** (Fixed Field Value - condition dependent)

In order for a Field to have the Source 'Organisation Data Object', 'External API' or 'Multiple (Conditional)', it must be specifically configured as such.

When Organisation Data Objects or External APIs are selected as part of the configuration in the Actions Tab, their constituent Fields become available to be used as a Source.

Data Object (Cont'd)

The Source of all Fields within the Data Object can be edited by clicking on the relevant Edit Button. When Parameters, Request Body, Security - JWT, Organisation Data Objects or External APIs are selected, it is a simple matter of selecting the Field that you wish to be the Source.

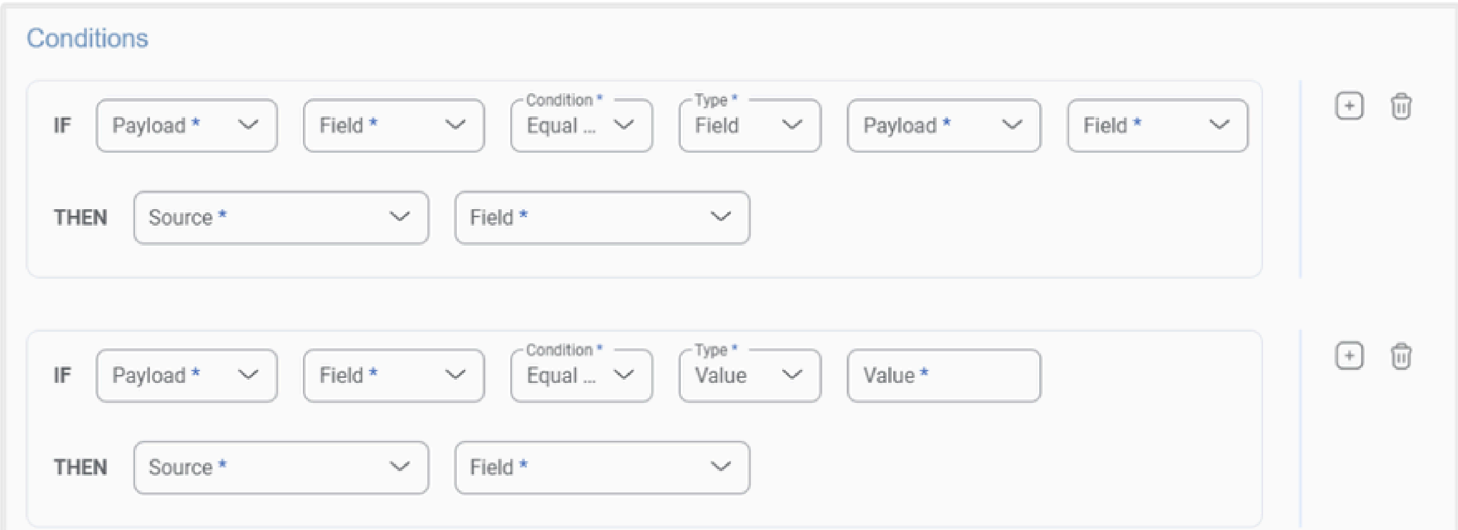


Where 'Generated Data' is selected as the Source (as illustrated here), you will select the 'Data Type' and complete the Fields that are presented based on that selection.

The Data Type options available for selection are: String, Date, Decimal, Numeric and Record, URL, Merge Fields and Message.

Multiple (Conditional) Source

If 'Multiple (Conditional)' is chosen as the Source, an Edit Window will appear will appear with the following Fields to be completed.

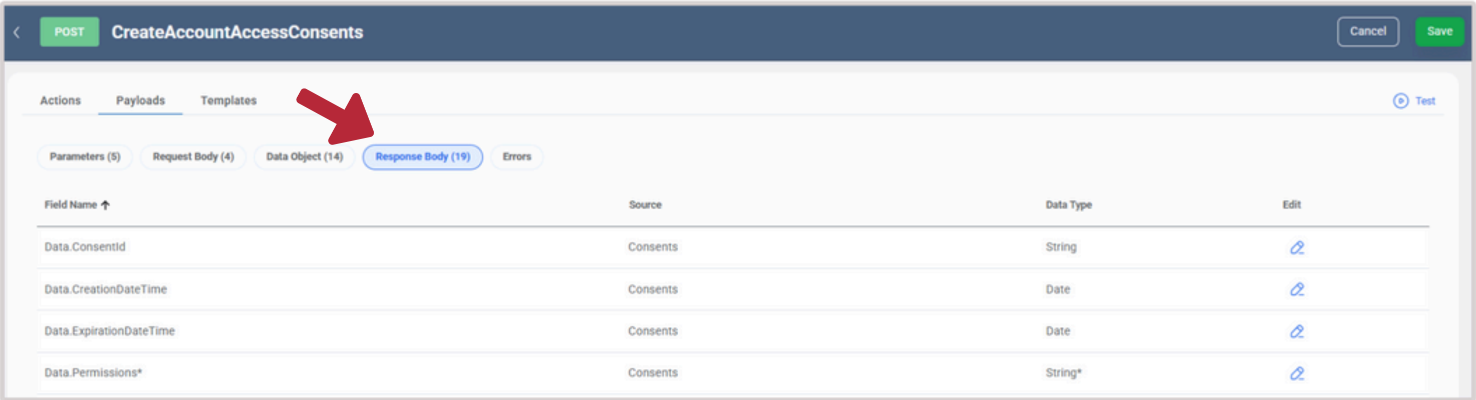


As the name suggests, the Source of the Field will depend upon the configuration of at least 2 Conditions - as indicated above. This 'Source-type' covers situations where there are multiple options for the source of the Field data based on the data in the Parameters and Request Body, or where the inclusion of certain data in the Request is optional, Generated Data.

CAPABILITIES

Response Body

The format, content and configuration of the Response Body mirrors the Data Object. Again, you can quickly see the number of Fields, and the content of the Response Body payload under the headings Field Name, Source and data Type.



All of the data sources that were available under the Data Object are also available under the Response Body - with the key addition of the Data Object itself:

1. **Parameters** (Fixed Field Value)
2. **Request Body** (Fixed Field Value)
3. **Security - JWT** (Fixed Field Value)
4. **Data Object** (Fixed Field Value)
5. **Generated Data** (Used where no appropriate Fixed Value is available)
6. **Organisation Data Object** (Fixed Field Value)
7. **External API Response** (Fixed Field Value)
8. **Multiple (Conditional)** (Fixed Field Value - condition dependent)

The Source of Fields in the Response Body will predominantly be Fields from the Data Object (in the example above 'Consents) and Generated Data.

Errors

The Errors Payload displays the Errors that relate to the Digital Capability being viewed / edited.

In this example, we are looking at 2 Errors :

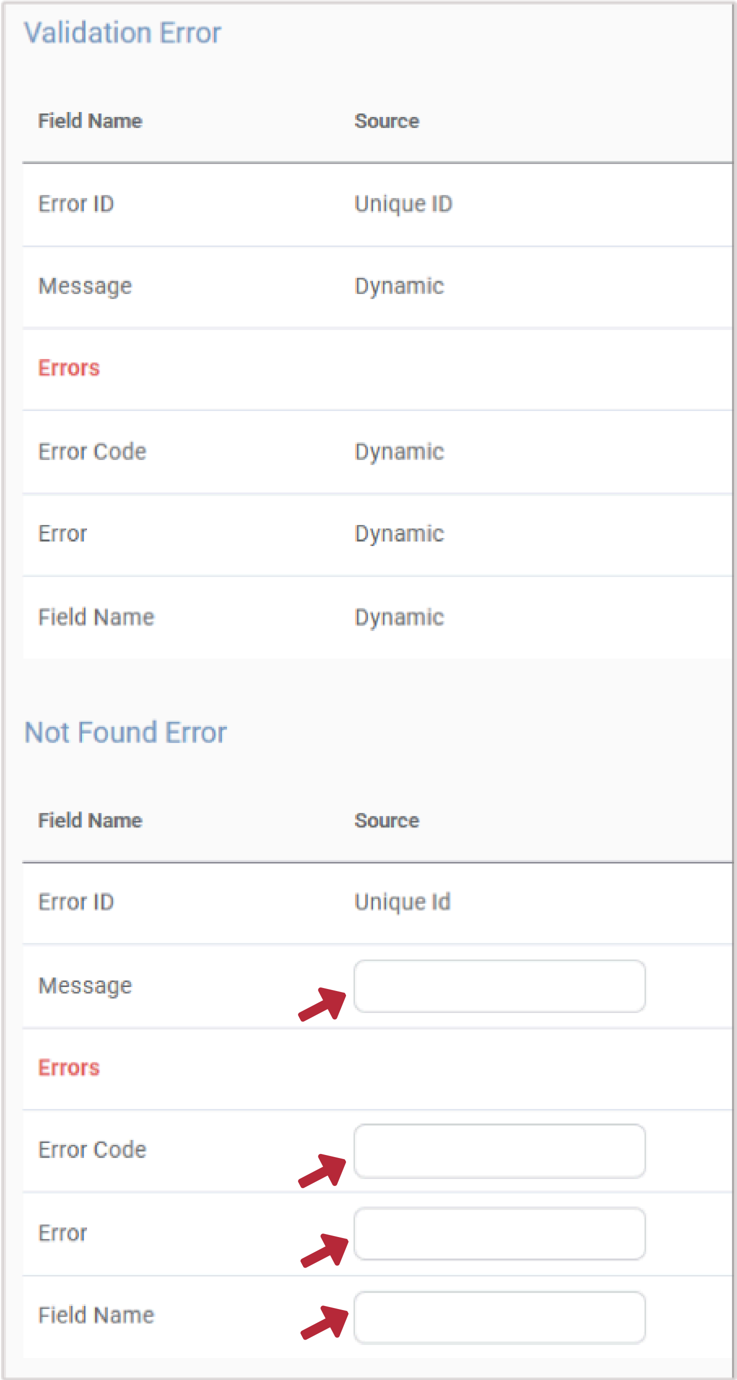
1. Validation Error
2. Not Found Error

The Fields for the Validation Error are fixed and cannot be edited.

Four Fields of the 'Not Found Error' are optionally editable. If no content is added here, the default values as configured in the Template Section are used.

(The format and content of Errors is different from organisation-to-organisation; they are defined and configured within the service when a client is being onboarded.)

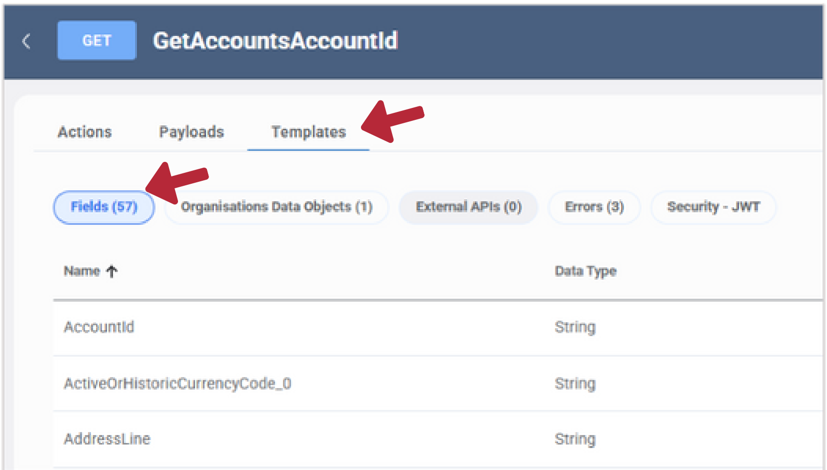
The default content of the Errors is available to be viewed in the Templates Tab.



CAPABILITIES

Templates Tab

The Templates Tab gives you access to Method-specific Field Templates, Organisation Data Objects and External APIs (where selected for use), Error Templates and your organisation's 'Security - JWT' Template.

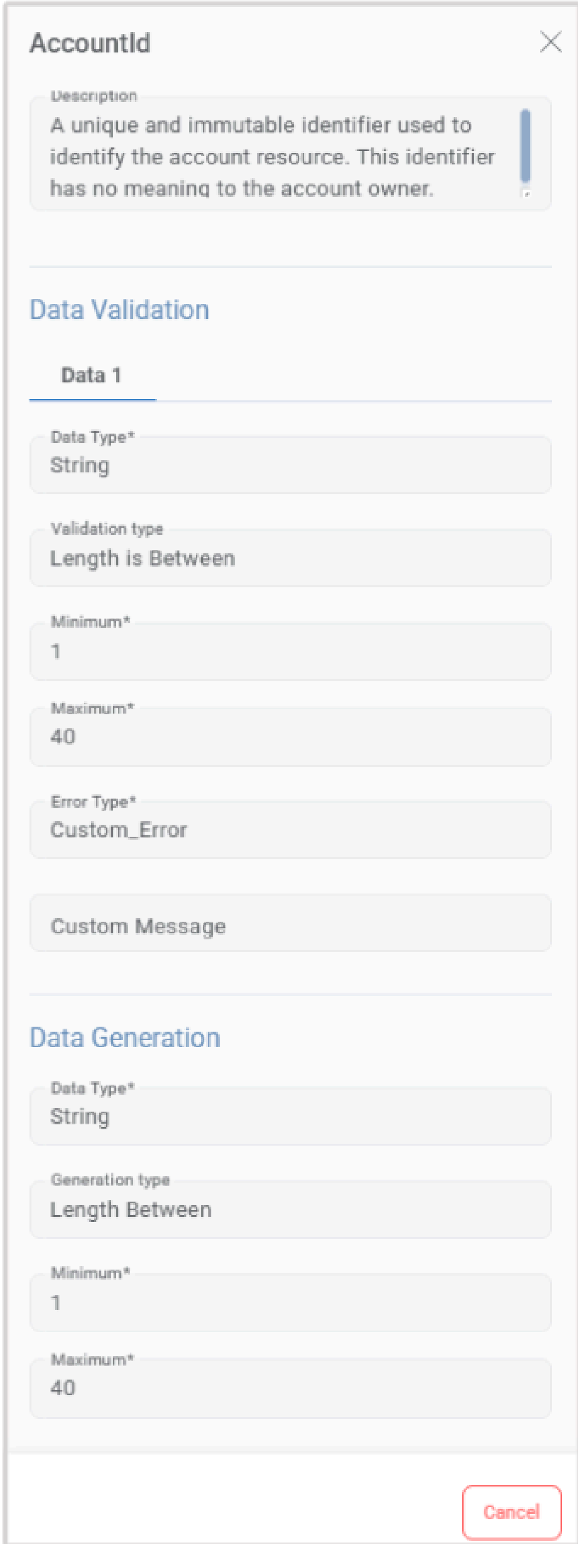


Field Templates

You can quickly see what Field templates are used within the Digital capability that you are viewing/editing.

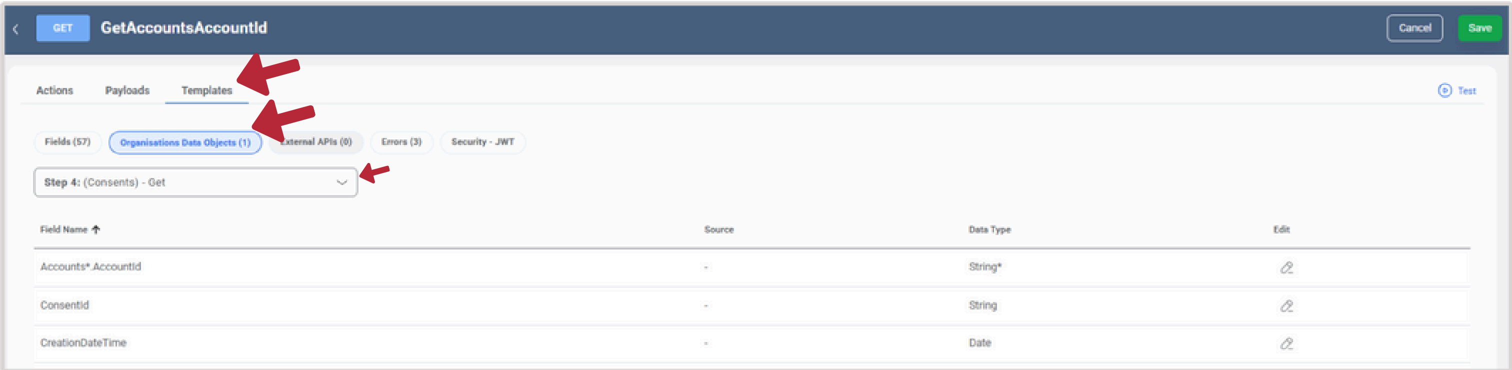
They are arranged alphabetically by name and the Data Type and Validation Type are indicated for each Field.

By clicking on the View Button, you can view the Data Validation and Data Generation configuration for each Field Template.



Organisation Data Objects

If an Organisation Data Object is used within the configuration of a Digital Capability, in the Actions Tab, then it is displayed under the Templates Tab. Where more than one is used, each will be available to View in the Dropdown Box and will indicated the Step Number at which it is introduced into configuration.



An Organisation Data Object has the same layout as the Data Object Payload (it is the data Object of a different Digital Capability within the same project/team Section).

Where it relates to an Add or Update Action (as configured in the Action Tab), the Source of each of its Fields' data is indicated and editable.

Where it relates to a Get Action (as configured in the Action Tab), there is no 'Source' configuration required and the information will be View Only - and not editable.

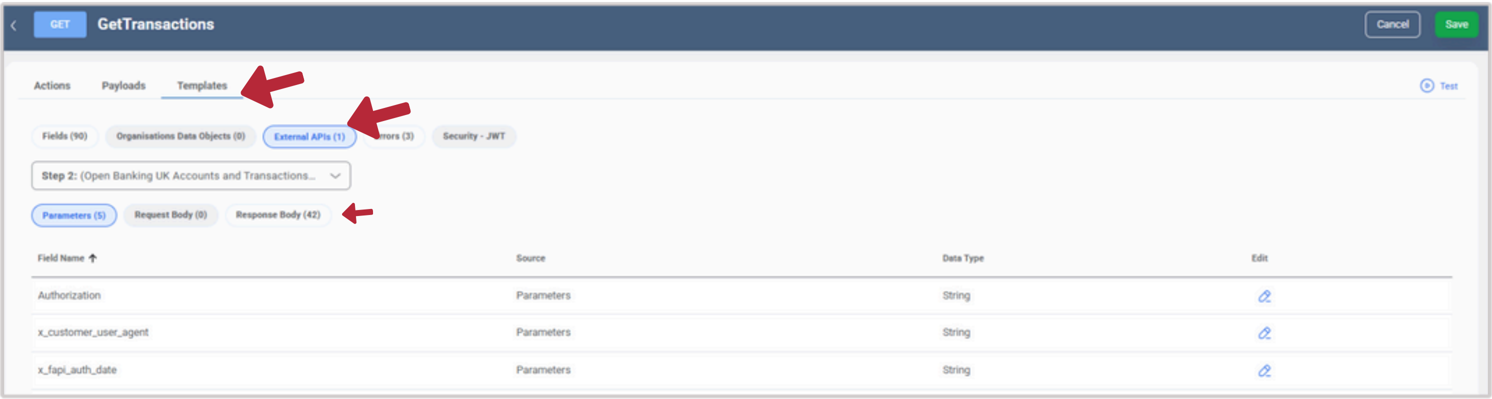
The data from the Organisation Data Object is available for use in the 'Source' configuration of the Data Object and Response Body of the Digital Capability.

There maybe several Organisation Data Objects used within the configuration of a Digital Capability; each will be displayed separately.

In fact, it is possible for the same Organisation Data Object to be displayed several times, if it relates to a number of Actions (Add/Update/Get) within the same Method.

External APIs

External APIs are displayed within the Templates Tab when they have been used in configuration in the 'Actions' Tab, They are pre-configured external API calls.



External APIs can relate to OpenAPI Specification (OAS) documents or Web Services Description Language (WSDl) documents as configured within the Templates Section.

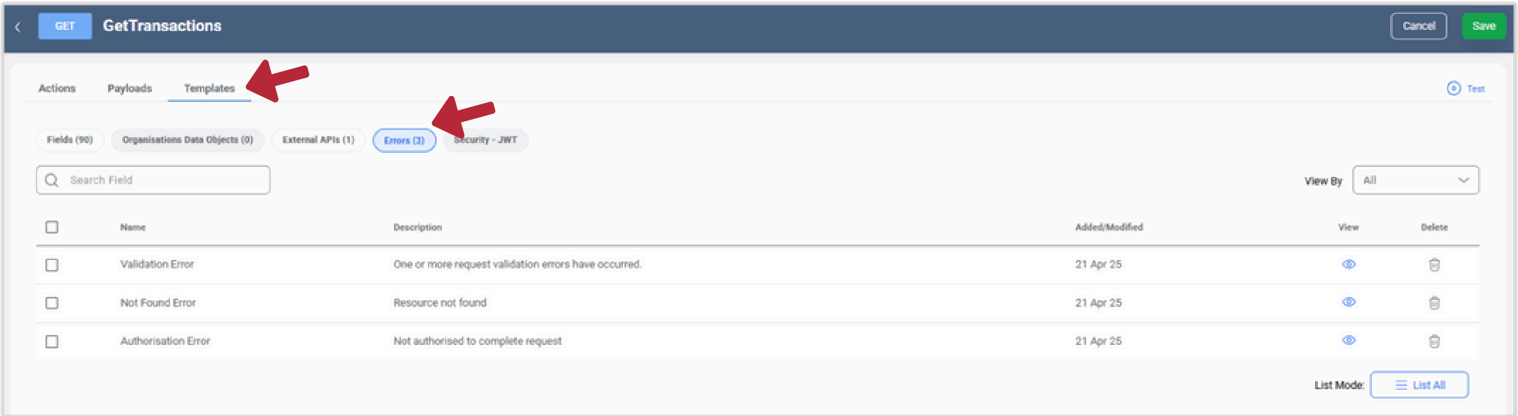
OAS configured External APIs will display a Parameter and Request Body; the source of each Field is configurable in a similar manner to the Data Object payload. A non-editable Response Body is also displayed.

The data from the External API Response Body is available to use as a Source in the Data Object and Response Body of the Digital Capability.

WSDL configured External APIs are configured in an identical manner but rather than being displayed as Parameter, Request Body and Response Body - you will see the equivalent Payloads: SOAP Header & SOAP Request and SOAP Header and SOAP Response.

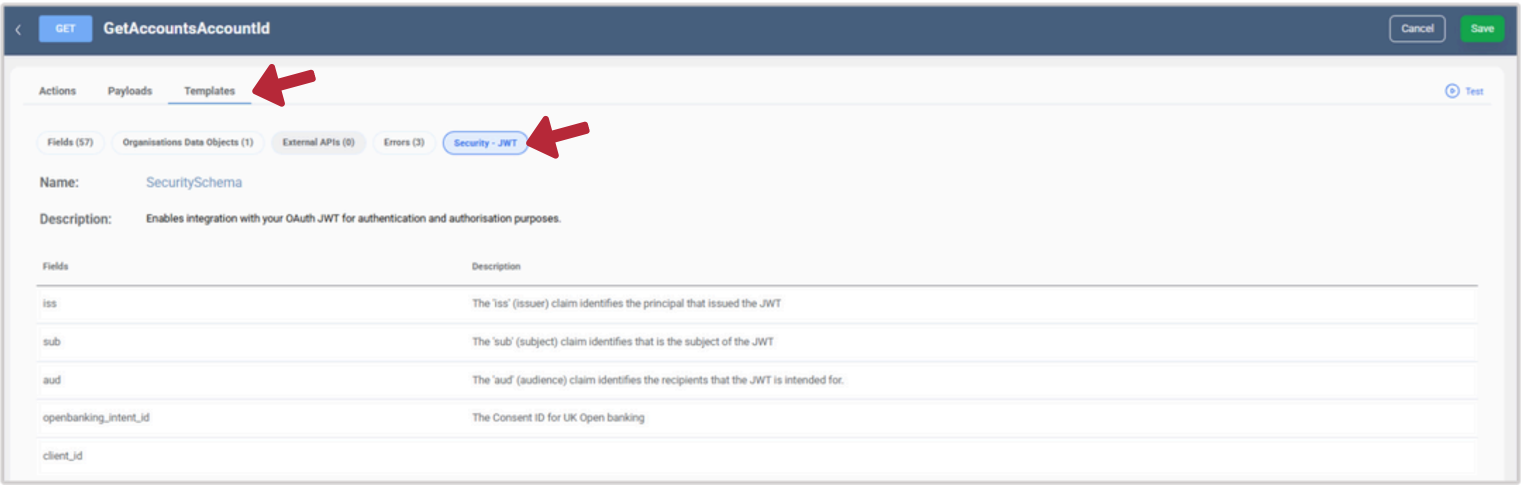
Error Templates

All Error Templates available within the service are available to view (Read Only) under the Templates Tab.



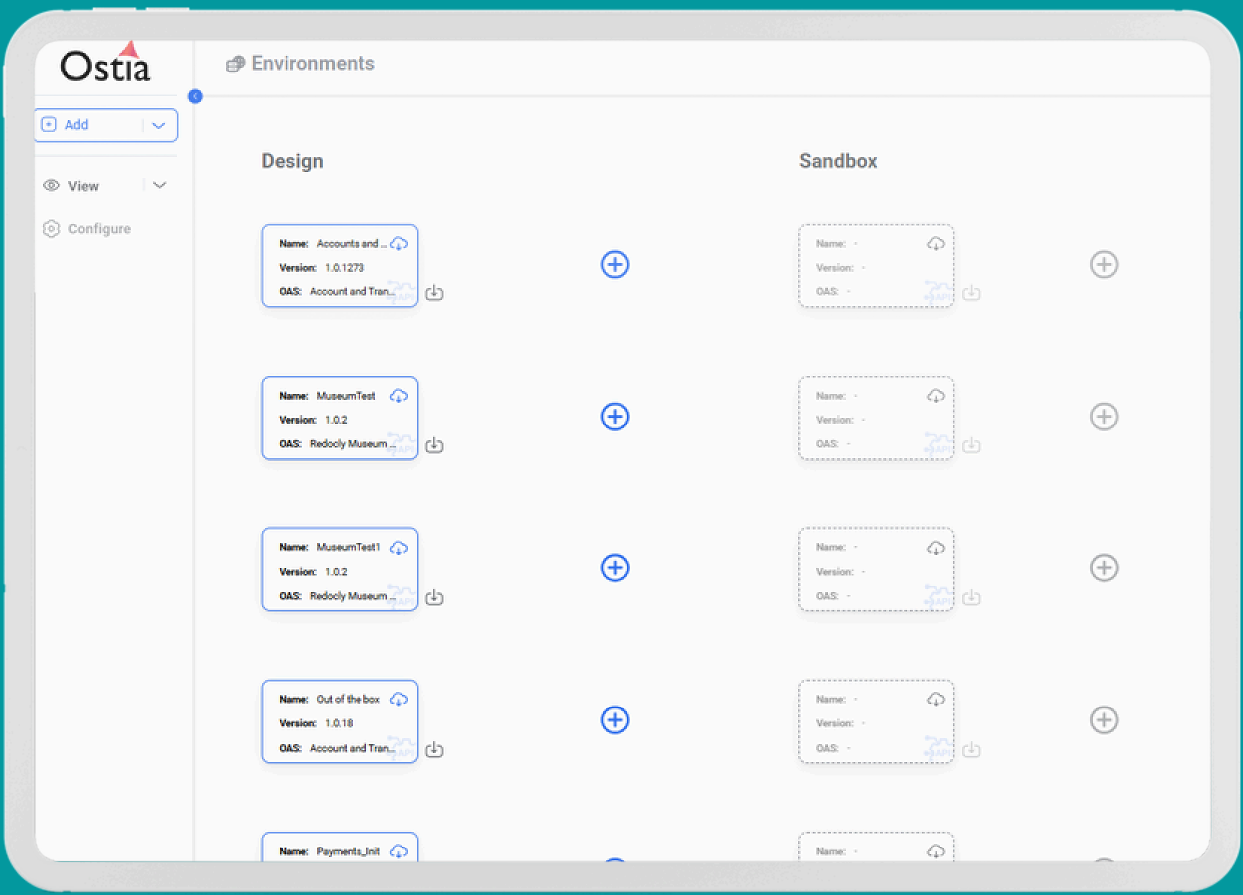
Security - JWT

The JSON Web Token (JWT) Template is available to view (Read Only) under the Templates Tab.



ENVIRONMENTS SECTION

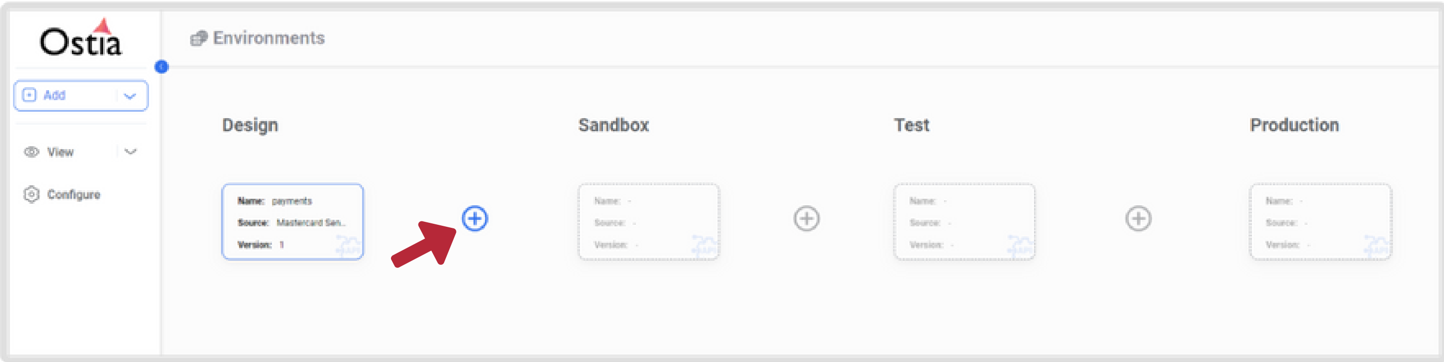
Ensure consistency of configuration and performance across your Sandbox, Test and Production Environments while simplifying delivery processes



DEPLOY SECTION

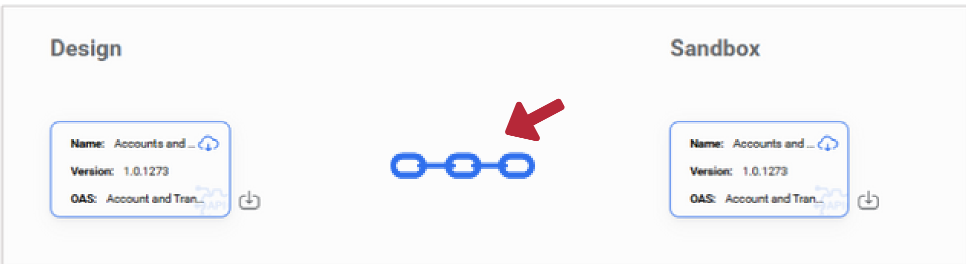
Environments

Once you are finished the design of a Business Capability, you can deploy it into Sandbox, Test and Production Environments sequentially.



Sequential promotion across environments is as easy as clicking on the '+' symbol that is highlighted.

Where promotion has occurred, a blue link appears between the environments to indicate that they represent the same Version of the Design. The Version number displayed also indicates whether they represent the same or a different design. This is illustrated as follows:



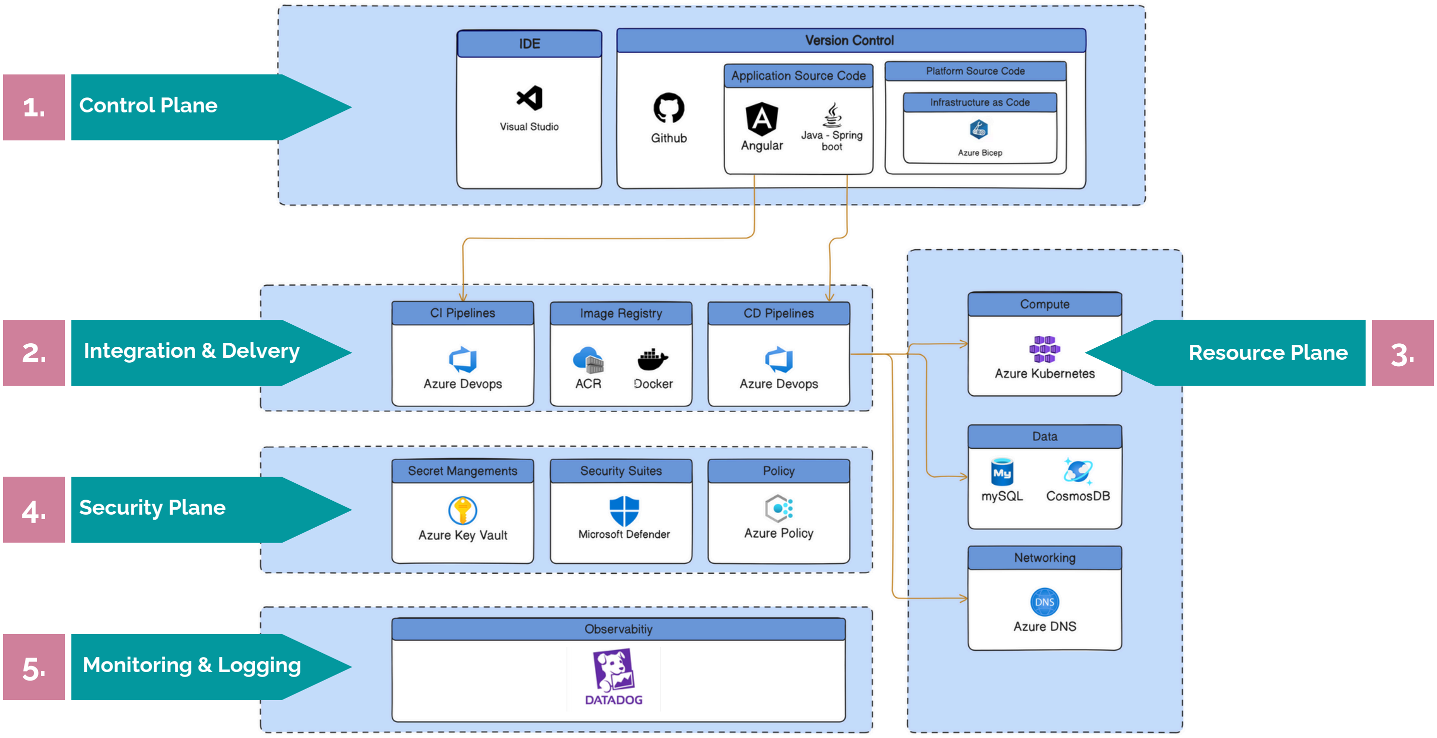
Where there is a difference between the Versions across the Environments it will be displayed using a red chain link and '+' symbol, as illustrated below. This difference between Versions can occur where changes are made to the Design Environment, that have yet to be promoted across all of the Environments.

TECHNOLOGY & SECURITY

N-CAPIE offers powerful, secure and scalable infrastructure for the deployment of your API Ecosystem

TECHNOLOGY & SECURITY

N-CAPIE's combination of Internal Developer Platform (IDP) and No-Code configuration enables small, autonomous, cross-functional teams to self-serve everything they need to deploy API Implementations / Digital Capabilities into their API Ecosystem. The IDP architecture is as follows:



1. Control Panel

Github is used for Version control. Both the N-CAPIE and platform source code are stored in Git. The platform source code represents the configuration of the platform and is maintained using the IaC framework Azure Bicep.

2. Integration & Delivery Plane

Azure Devops handles continuous integration (CI Pipeline) functionality to build and test the developed code. It then pushes new images to the Azure Container registry. Azure Devops also handles deployment (CD Pipeline).

3. Resource Plane

Azure Devops handles continuous integration (CI Pipeline) functionality to build and test the developed code. It then pushes new images to the Azure Container registry. Azure Devops also handles deployment (CD Pipeline).

4. Security Plane

Azure Key Vault, Microsoft Defender, and Azure Policy provide a comprehensive view of security configurations, compliance status, and threat protection.

TECHNOLOGY & SECURITY

Single Tenancy

Each N-CAPIE Instance is dedicated to a single tenant which means that the environment is fully tailorable to exactly meet the client's requirements. All the server resources are dedicated to the client and all data is kept completely separate from other users.

Server Portability

Use Your Own Cloud: N-CAPIE can be deployed for use on any existing, or preferred, Cloud Provider(s). And is designed to be easily portable across all environemnts.
On-Premise: N-CAPIE can additionally be hosted within your on-premise environment.

Integration

N-CAPIE can connect with any service that uses an API and is designed to be fully integratable within your existing CI/CD processes: Identity Provider, API Gateway, automated testing, API performance measurement and the like.

Auto-Documentation

N-CAPIE automatically documents your API Implementations using OpenAPI Specification when they are promoted to the Sandbox Environment to ensure seamless collaboration with partners and developers.

Version Control

N-CAPIE manages granular Version Control across all environments (this is possible because the same configuration is used within the Design, Sandbox, Test and Production environments).

One Back-End to Power Multiple Front-Ends

The No-Code configuration of Methods and API Implementations, means that your back-end is available to service multiple front-ends and projects through the high level of composability achieved across your API Ecosystem.

Push-Button Deployment

Once API Implementation designs are completed/approved, promotion into Sandbox, Test and Production Environments is (literally) as easy as the click of a button - server environments are pre-configured and architecture deployment is automated.

TECHNOLOGY & SECURITY

OAuth

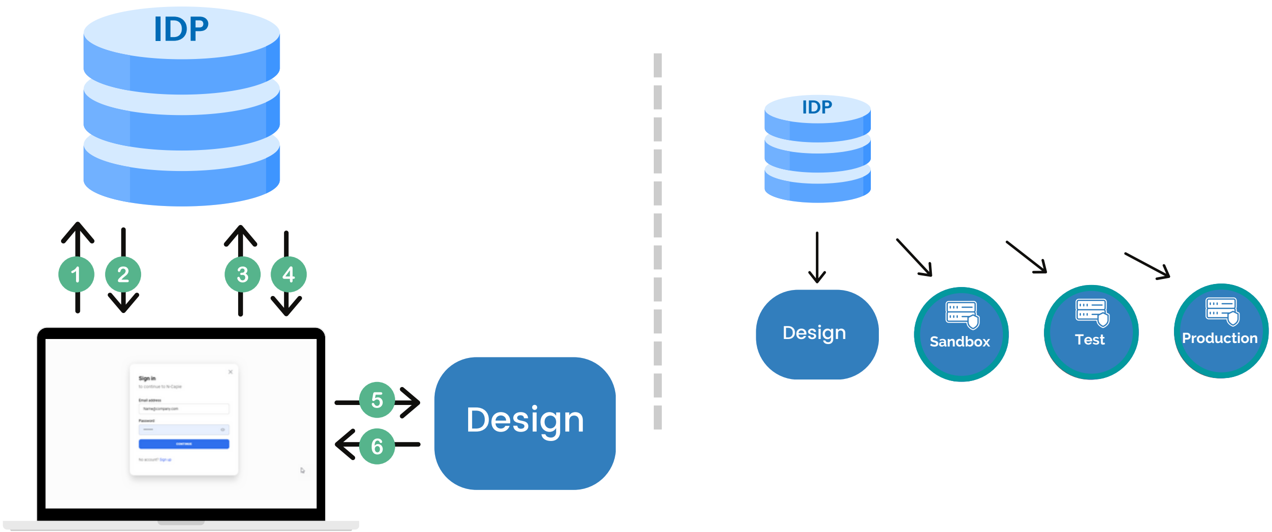
OAuth enhances security by providing a more secure and controlled way to grant and manage access to resources, reducing the risks associated with traditional authentication and authorization methods.

N-CAPIE uses OAuth 2.0 for:

1. Authentication of Users & Access to Runtime Environments
2. API Accessors (applications attempting to access N-CAPIE APIs)

N-CAPIE can integrate with any Identity Provider (IDP) implementing the OAuth standard. We configure the service for each client's specific security integration requirements at the time of Onboarding.

1. Authentication of Users & Access to Runtime Environments

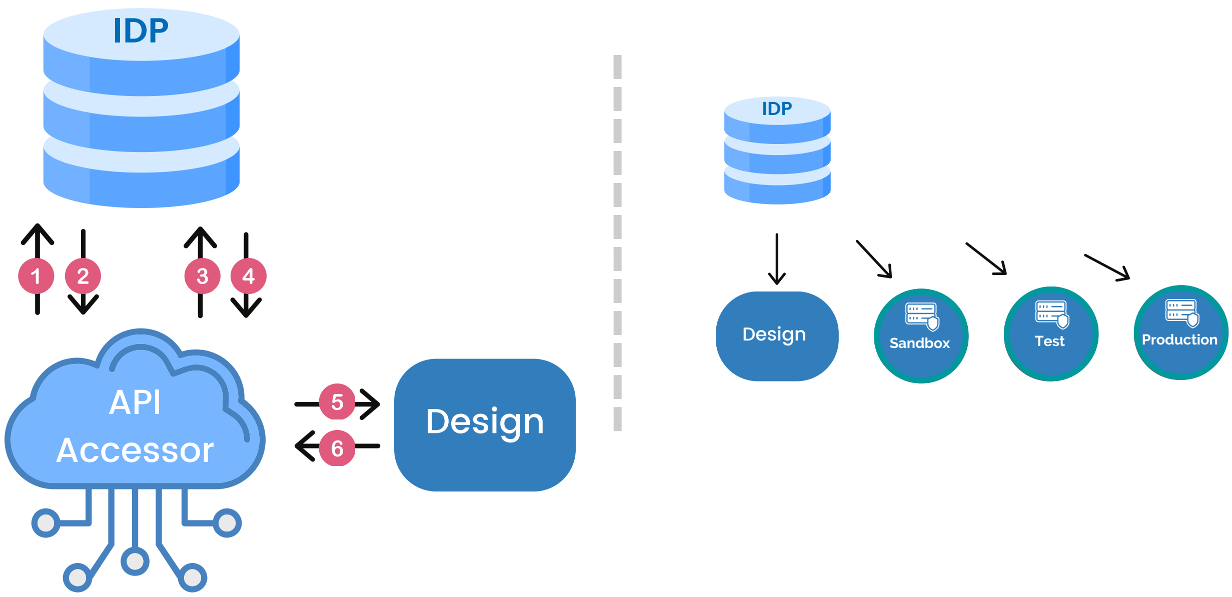


1. Users Login credentials are redirected to IDP for Authentication
2. Once Authentication occurs, the IDP sends an Authorization Code
3. N-CAPIE requests the IDP to exchange the Authorization Code for a JWT
4. IDP validates the Authorization Code and returns a valid JWT
5. N-CAPIE sets the JWT into the HTTP Authorization Header and sends requests to the Design Environment
6. The Design Environment validates that the JWT is valid, processes the API request and returns the response to N-CAPIE.

JSON Web Key Set (JWKS): When each environment is started, it downloads a JWKS from the IDP which is used to validate JWTs sent to the environment.

OAuth (Cont'd)

2. API Accessors (applications attempting to access N-CAPIE APIs)



1. The API Accessor redirects to IDP for Authentication
2. Once Authorization occurs, the IDP returns an Authorization Code
3. The API Accessor requests the IDP to exchange the Authorization Code for a JWT
4. IDP validates the Authorization Code and returns a valid JWT
5. The API Accessor then sets the JWT into the HTTP Authorization Header and sends requests to the Design Environment. (Where the UI must access the other Environments, this token must also be provided).
6. The Design Environment validates that the JWT is valid, processes the API request and returns the response to N-CAPIE.

Ostia

Your API Strategy Partner